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DO SALES BELOW COST LAWS PROTECT  
SMALL BUSINESSES?

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in partial fulfillment of the requirements for the

degree of

Doctor of Philosophy

BY

JEREMY DAVID OLLER  
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DO SALES BELOW COST LAWS PROTECT  
SMALL BUSINESSES?

A DISSERTATION APPROVED FOR THE  
DEPARTMENT OF ECONOMICS

BY

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Abstract

DO SALES BELOW COST LAWS PROTECT SMALL BUSINESSES?

by Jeremy

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This paper examines whether state laws to prevent below cost sales provide protection for small businesses beyond the protection afforded by the federal antitrust laws. The paper first identifies the theoretical implications of state sales below cost laws. I find that there are various circumstances when the state law will provide additional protection to the federal predatory pricing laws. The uniqueness of the empirical section of this paper is based on the functional form of the tests and the distinctive features of the state laws used to discern the laws impact on small businesses. I find that state laws do have a small impact on the viability of small businesses in certain industries. Additionally, the differences among the state laws also have an impact on the percentage of small businesses in a state. However, the effects of these laws are relatively understated and potentially inconsistent with the goals of competition.

## *I n t r o d u c t i o n*

The 1930's saw the rapid expansion of chain stores.<sup>1</sup> States responded to this changing business climate by creating legislation forbidding sales of goods below cost (SBC), which twenty-nine states adopted by 1941. Some states enacted SBC laws to protect small businesses by preventing firms from selling goods below cost with the intent of injuring competitors, competition or deceiving consumers, while others simply forbid loss leader selling practices.<sup>2</sup>

States enacted SBC laws despite the fact that federal legislation already prevented monopolization and attempts to monopolize. SBC laws differed from the federal laws at their time of inception because actual or potential monopolization was never requisite for a violation of the state laws. The distinction between the state and federal laws became more profound as the interpretation of federal predatory pricing laws evolved.

While authors have studied federal predatory pricing extensively, significantly less attention has focused on the state legislation. The state laws have been empirically examined three times. Studies by Houston (1981), Anderson and Johnson (1999) empirically tested the effects of SBC laws in cross-sectional regressions, while Skidmore, Peltier, and Alm (2005) utilized a panel data set. This dissertation examines whether SBC legislation impacted the viability of small businesses using a panel data approach that accounts for differences in state SBC laws. I seek to answer several questions in this dissertation. Do SBC laws provide protection for small businesses beyond coverage of the

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<sup>1</sup> Thomas W. Ross, *Store Wars: The Chain Tax Movement*, 29 *Journal of Law and Economics* 125,125 (1986), discusses the magnitude of growth of chain stores. Francis M., Dougherty, *Validity, Construction, and Application of State Statutory Provision Prohibiting Sales of Commodities Below Cost- Modern Cases*, 41 *A.L.R.* 4<sup>th</sup> 612 (2000), addresses the intent behind the creation of SBC laws.

federal laws? Do provisions affecting the application of varying state laws yield more protection for small businesses? Did the evolution of predatory pricing alter the effectiveness of state SBC laws?

The results of this study indicate that SBC laws did protect small businesses in certain industries, however the impact is relatively small. Some specific state provisions of state laws resulted in even greater protection for small businesses, while other provisions had little to no impact. Finally, the tests illustrate that the initial changes to federal predatory pricing laws resulted in greater small business protection by SBC laws, however, it is questionable whether SBC laws have become more attractive as a result of the most modern federal interpretations of predatory pricing.

This study is organized as follows. Chapter One provides a review of the relevant literature. Chapter Two provides a legal analysis of federal predatory pricing, state sales below cost laws, and resale price maintenance. Chapter three offers a theoretical discussion of the application of SBC laws compared with the federal standard of predatory pricing. Chapter Four provides empirical tests of the state SBC laws. The last chapter concludes the study.

The below-cost sales laws have not received the same notoriety as predatory pricing in either legal or economic journals. The vast majority of legal publications tend to discuss the constitutionality of the state laws<sup>3</sup>; however, one author does attempt to empirically

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<sup>2</sup> See, Cal Bus. & Prof Code §§ 17030, 17044 (2003)

<sup>3</sup> Francis M. Dougherty, *Validity, Construction, and Application of State Statutory Provision Prohibiting Sales of Commodities Below Cost- Modern Cases*, 41 A.L.R. 4<sup>th</sup> 612 (1985); Note, *State Legislation Prohibiting Sales Below Cost*, 52 Harv. L. Rev. 1142(1939); Oler, *Statutory Inhibition against Sales Below Cost* 43 Dick. L. Rev. 112 (1939); Note, *Constitutionality of Statute Prohibiting Sales at Less than Cost*, 47 Yale L.J. 1201 (1939); Note, *Statutory Bans Against Selling Below Cost: The Latest Antidote for Big Business*, 25 Va. L. Rev., 699 (1939)

evaluate the impact of below-cost sales laws in the context of gasoline-specific SBC laws.<sup>4</sup> This article recognizes that these laws do not attract significant attention in the literature, while acknowledging that these claims are more likely to be successful and often provide remedies differing from their federal counterparts.<sup>5</sup>

The purpose of this dissertation is to illustrate the fine dividing line between the federal and state laws, as well as to develop a theoretical model that explains why the state claims will have a tendency to produce results differing from a federal predatory pricing action. Finally, I intend to empirically demonstrate that the SBC laws give rise to protectionist outcomes, regardless of whether the conduct of the defendant was efficient.

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<sup>4</sup> Rod W. Anderson and Ronald N Johnson, Antitrust and Sales-Below-Cost Laws: The Case of Retail Gasoline, *Review of Industrial Organization* 14 189-204, 1999

<sup>5</sup> *Id.* at 190.

## Chapter 1

### FEDERAL PREDATORY PRICING, STATE SALES BELOW COST LAWS, AND FAIR TRADE

#### A. Introduction

“Predatory pricing claims are rarely tried, and even more rarely successful”.<sup>6</sup> This statement in the case *Matsushita Electric Industrial Co., v. Zenith Radio Corp.* is representative of the Court’s attitude towards predatory pricing claims over the past twenty years. While scholars and legal analysts still find much to debate regarding predatory pricing claims, courts now seem more reluctant to enforce claims of predatory pricing.

A claim of predatory pricing is enforceable under both Section 2 of the Sherman Antitrust Act and the Robinson-Patman Act. However, the federal antitrust laws are not the only avenues of litigation for firms that have fallen prey to predatory pricing. Numerous states enacted legislation frequently referred to as sales below cost laws or unfair sales acts, which specifically prohibit the type of pricing conduct that would violate either the Sherman Act or the Robinson-Patman Act. These state laws were typically enacted to protect small businesses<sup>7</sup> and prevent the use of loss leader selling.<sup>8</sup> The state enactments are broader than the federal laws because they do not require the same standard of injury to competition. For instance, state laws typically prohibit loss leader selling, which is a practice the federal laws condone. While the state laws were not specifically tailored to act upon the federal courts' reluctance to enforce predatory pricing claims, state laws give

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<sup>6</sup> *Matsushita Electric Indus. Co. v. Zenith Radio Corp.*, 475 U.S. 574, 589 (1986)

<sup>7</sup> Ronald N. Johnson, *The Impact of Sales-Below-Cost Laws on the U.S. Retail Gasoline Market*, A Report Prepared for Industry Canada, Competition Bureau, February 1999.

<sup>8</sup> Note, *Statutory Bans Against Selling Below Cost: The Latest Antidote for Big Business*, 25 Va. L. Rev., 699, 700 (1939)

potential defendants alternative avenues to attack a firm selling below cost, whether or not the conduct is actually predatory.

In this Sections B and C of this chapter, I first discuss the both the historical and current application of the federal antitrust laws to predatory pricing. Since the federal and state laws overlap on the issue of predatory pricing, I include the discussion of the federal laws to illustrate how the initial and modern interpretations of the federal laws can alter the significance of the state laws. I discuss the Court's interpretation of both the Sherman Act and Robinson-Patman Act with respect to predatory pricing, and illustrate how the Court has converged to the application of these two acts into a uniform standard for evaluating federal predatory pricing claims.

In section D of this chapter, I discuss the state sales below cost laws. This discussion illustrates how the state laws overlap with the federal laws and address conduct outside the scope of the federal laws as well. I also illustrate how the state laws attempt to promote small businesses by deterring various types of pricing conduct. Given that the state laws are not identical, I also present the various features and applications commonly found in the state acts, and discuss how these intricacies affect the states' goal of protecting small business.

## **B. Federal Predatory Pricing Under Section 2 of the Sherman Act**

### **1. Historical Treatment of Predatory Pricing Under the Sherman Act**

Section 2 of the Sherman Act provides:

Every person who shall monopolize, or attempt to monopolize, or combine or conspire with any other person or persons, to monopolize any part of the trade or commerce among the several States, or with foreign nations, shall be deemed guilty of a felony, and, on conviction thereof, shall be punished

by fine not exceeding \$10,000,000 if a corporation, or, if any other person, \$350,000, or by imprisonment not exceeding three years, or by both said punishments, in the discretion of the court.<sup>9</sup>

In addition, the federal antitrust laws allow for private parties to sue under the antitrust laws and receive treble damages if they manage to succeed in proving an antitrust violation.<sup>10</sup>

Traditionally, the antitrust laws evaluate predatory pricing as an attempt to monopolize under section two of the Sherman Act. The standards for an attempt to monopolize, while moderately difficult to prove, are certainly not insurmountable. A plaintiff must prove the following elements to establish an attempt to monopolize claim:

1. That the defendant has engaged in predatory or anti-competitive conduct;
2. With a specific intent to monopolize market;
3. And has a dangerous probability of success in achieving monopoly power in the market.<sup>11</sup>

The first element of an attempt to monopolize relates to the defendant's conduct. The offense requires anticompetitive behavior, and predation clearly falls into category of impermissible anti-competitive activity under section two of the Sherman Act.<sup>12</sup> The second element of this offense requires a showing that the defendant intended to gain monopoly power in the relevant market. As with any legal case involving an attempt to take an action, the defendant must have specific intent to bring about a result. General

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<sup>9</sup> 15 U.S.C. §2

<sup>10</sup> 15 U.S.C. §15.

<sup>11</sup> Lawrence A. Sullivan and Warren S. Grimes, The Law of Antitrust: An Integrated Handbook, West Group, 2000, p. 132.

<sup>12</sup> E. Thomas Sullivan and Jeffrey L. Harrison, Understanding Antitrust and its Economic Implications, Third Edition, Lexis Publishing, 1998, pp. 314-323.

intent is sufficient to establish a claim of monopolization. The difference between the two is that a plaintiff must show that the alleged illegal activity was not the result of an accident or mistake.<sup>13</sup> The last element of an attempt requires that the defendant have a dangerous probability of succeeding in gaining monopoly power. This requires a plaintiff to show that that defendant was dangerously close to creating or maintaining monopoly power in the relevant market. This evaluation hinges on the market share of the defendant firm, as well as the barriers to entry that exist in the market. A firm with little share of the market or no ability to deter entry into the market cannot reasonably succeed in attaining monopoly power. Thus, the plaintiff must adequately illustrate that a defendant has the ability to gain and maintain a monopoly, in order to establish an attempt to monopolize claim.<sup>14</sup>

Prior to 1975, the relevant inquiry under the Sherman Act for whether a firm attempted to monopolize utilizing predatory pricing was: 1) whether the accused predator reduced his price below his short-run average total cost; 2) whether this seemed to have been done with predatory intent; 3) whether the activity was successful in either eliminating a competitor, precipitating a merger, or improving market discipline.<sup>15</sup>

A case study on predatory pricing cases in 1971 demonstrated that 123 predatory pricing claims were filed beginning with the Standard Oil<sup>16</sup> and American Tobacco cases in 1911<sup>17</sup>. The courts found that the defendant engaged in predatory pricing in ninety-five of

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<sup>13</sup> Ibid. at 315.

<sup>14</sup> Ibid.

<sup>15</sup> Ronald H. Koller II, The Myth of Predatory Pricing: An Empirical Study, *Antitrust Law & Economics Review*, 4 *Antitrust Law and Economics Review* 105 (1971)

<sup>16</sup> *Standard Oil Co. v. U.S.*, 221 U.S. 1 (1911)

<sup>17</sup> *U.S. v. American Tobacco Co.*, 221 U.S. 106 (1911)



these instances.<sup>18</sup> Thus, plaintiffs regularly filed predatory pricing claims between the enactment of the Sherman Act and the year 1975, and often succeeded.

## **2. 1975 to 1986- The Areeda-Turner Test**

The law of predatory pricing took a significant turn in 1975 with the publication of the article “Predatory Pricing and Related Practices Under Section 2 of the Sherman Act”.<sup>19</sup> This article proposed the much debated and controversial average variable cost test. This test was sometimes used for the purpose of detecting predatory pricing without considering any other factors.

The Areeda-Turner Test criticized any finding of predation where the defendant did not price below average variable cost. According to the Areeda-Turner Test, the court should not find prices at or above marginal costs predatory, because they are consistent with a firm’s profit maximizing strategy. Additionally, prices above average total cost are not predatory because the firm is profitable. Thus, a price below marginal cost was stated as the appropriate measure of cost, because it is not consistent with a firm’s current profit maximizing strategy. Areeda and Turner proposed using average variable cost as a proxy for marginal cost since marginal cost is typically not observable.<sup>20</sup>

The Areeda-Turner Test had a profound effect on how courts addressed predatory pricing claims. First, the test actually added a higher hurdle in terms of proving price

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<sup>18</sup> Koller II, *supra* note 15, at 111 (1971)

<sup>19</sup> Phillip Areeda and Donald Turner, *Predatory Pricing and Related Practices Under Section 2 of the Sherman Act*, 88 Harv. L. Rev. 697 (1975).

<sup>20</sup> Ibid.

below cost. Courts were willing to adopt the Areeda-Turner average variable cost test,<sup>21</sup> rather than using the higher estimate of cost at average total cost that the courts previously accepted. However, apparently some courts took the average variable cost test to mean that the element of dangerous probability of success was also satisfied when a firm priced below cost.<sup>22</sup> While the Areeda-Turner Test was originally applied to a firm that was already a monopolist, thus eliminating the need for an analysis of a dangerous probability of success, the courts applied the same logic even when the defendant firm did not have monopoly power at the time it priced below cost.<sup>23</sup> In fact, this oversight by the courts may have contributed to why the Areeda-Turner test corresponds empirically with an increase in predatory pricing litigation. In the period between the inception of Areeda-Turner and the Supreme Court's decision in *Matsushita* in 1986, fifty-five predatory pricing claims were filed in the federal courts and twenty-seven journal articles were written on the subject.<sup>24</sup> Furthermore, it is possible that out of the fifty-five cases filed in the federal courts, only three might have survived dismissal under the *Matsushita* standard announced several years later.<sup>25</sup>

### **3. 1986-Present- Matsushita**

With the case *Matsushita Electric Industrial Corp V. Zenith Radio Corp.*, in 1986, the Chicago School of Economics finally won out in predatory pricing litigation. Judge

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<sup>21</sup> Herbert Hovencamp, *Antitrust*, 3<sup>rd</sup>. Edition, West Group, 1999, p.121; See also, *Pacific Engineering & Prod. Of Nevada v. Kerr-Mc-Gee Corp.*, 551 F.2d 790 (10<sup>th</sup> Cir. 1977); *William Inglis & Sons Baking Co. v. ITT Continental Baking Co., Inc.*, 668 F.2d 1014 (9<sup>th</sup> Cir. 1981)

<sup>22</sup> Hovencamp, *supra* note 42, at 121.

<sup>23</sup> *Id.*

<sup>24</sup> Wesley J. Liebler, *Whither Predatory Pricing? From Areeda and Turner to Matsushita*, 61 *Notre Dame L. Rev.* 1052, 1052 (1986)

<sup>25</sup> *Id.* at Appendix B

Easterbrook claimed long before the Court's decision that predatory pricing does not merit legal attention, because of the rarity and rationality of the practice.<sup>26</sup> In addition, Judge Posner contends that in the long run, entry will vanquish a predator's attempt to recoup losses.<sup>27</sup> Given the substantial investment resulting from selling below cost, and an increased quantity sold at a loss, rational firms would not partake in this behavior.<sup>28</sup>

The Court particularly doubted that a firm could rationally absorb losses for a period of time long enough to eliminate rivals, and then successfully recoup the losses incurred during the predatory conduct period.<sup>29</sup> As a result, the Court altered the standard of review in predatory pricing case. In order for a plaintiff to now recover on the grounds of predatory pricing under the Sherman Act, it must show that the defendant: 1) priced below an appropriate measure of the defendant's costs<sup>30</sup>, and 2) "had ... a dangerous probability of recouping its investment in below-cost prices."<sup>31</sup> The second element appears to be the real thorn of the new predatory pricing standard. It is not enough now that the defendant has a dangerous probability of success in gaining a monopoly, but additionally the defendant must show a high likelihood of recouping its investment as well. This new standard requires that the defendant's conduct must not only cause harm to rivals, but also be rational behavior on the part of the defendant. There is a paradox associated with this burden of proof because a plaintiff must be financially capable of incurring litigation

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<sup>26</sup> Frank Easterbrook, "Predatory Strategies and Counterstrategies", 48 U. Chic. L.Rev. 263 (1981)

<sup>27</sup> Richard A. Posner, *Economic Analysis of Law*, 4<sup>th</sup> Edition, Little, Brown, and Company, 1992, pp. 305-310.

<sup>28</sup> *Id.*

<sup>29</sup> *Matsushita Electric Indus. Co. v. Zenith Radio Corp.*, 475 U.S. 574, 590-591 (1986)

<sup>30</sup> *Brooke Group Ltd. v. Brown & Williamson Tobacco Corp.*, 509 U.S. 209, 222 (1993)

<sup>31</sup> *Id.* at 224

expenses while concurrently illustrating that it is on the verge of going out of business. It must then demonstrate that the predator can maintain the market structure for a period of time sufficient to recoup its losses. Thus, predatory pricing claims are essentially hypothetical assessments pertaining to a firm's ability to recoup losses in the future, making the claim difficult for small firms to pursue.

### **C. Federal Predatory Pricing Under the Robinson-Patman Act**

#### **1. Historical Treatment and Utah Pie**

The Robinson-Patman Act traditionally provides for an action against predatory pricing, in addition to the protection that the Sherman Act provides. The Robinson-Patman Act was enacted to prevent price discrimination, and it is applicable when a firm is selling the same good to two different customers at two different prices. In the context of the Robinson-Patman Act, predatory pricing is more commonly known as primary-line price discrimination. Primary-line price discrimination involves charging different prices to different customers with the intent of injuring a competitor.<sup>32</sup> The requirements necessary to support a claim under the Robinson-Patman Act prior to 1993 were:

1. Predatory intent;
2. Persistent sales below cost;
3. A declining price structure.<sup>33</sup>

The Utah Pie decision condemned behavior that supported a declining price structure, even when though the elimination of excess rents is a characteristic of a competitive market. The Robinson-Patman Act allowed plaintiffs an even simpler avenue

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<sup>32</sup> E. Sullivan, *supra* note 10, at 392.

to attack predatory pricing, because plaintiffs were not required to show that the plaintiff had a dangerous probability of achieving a monopoly position in the market. This doctrine outlasted the *Matsushita* decision, because the *Matsushita* decision pertained to the Sherman Act. This view of primary-line price discrimination continued until the Court's decision in *Brooke Group Ltd. v. Brown & Williamson Tobacco Corp.*, 509 U.S. 209 (1993).

## **2. Brooke Group and the Uniform Treatment for Predatory Pricing**

In 1993, the Court decided the case *Brooke Group Ltd. v. Brown & Williamson Tobacco Corp.*, and announced a more formal standard of review for predatory pricing under the Robinson-Patman Act. *Brooke Group* took the standards created in *Matsushita*, and generally applied them to cases involving primary-line price discrimination.

After *Brooke*, the only distinction between the Sherman Act and the Robinson-Patman Act is assessing the probability that the defendant can recoup losses. The Robinson-Patman Act requires a showing that the defendant has a reasonable prospect of recouping its losses, rather than dangerous probability of recouping its losses. This is often interpreted as meaning that the potential predator can be punished if it can recoup its losses by using predatory prices as a punishment mechanism to induce rivals to increase prices.<sup>34</sup> This standard is still distinguishable from predatory pricing under the Sherman Act, because the plaintiff does not need to show that the defendant will monopolize the market.

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<sup>33</sup> *Utah Pie v. Continental Baking Co.*, 386 U.S. 685, 702 (1967)

<sup>34</sup> Patrick Bolton and Joseph F. Brodley, *Predatory Pricing: Strategic Theory and Legal Policy*, 88 Geo. L.J. 2239, 2255 (August 2000).

The requirements of this test have proved demanding, as no plaintiff has recovered on the grounds of predatory pricing in federal court since *Brooke Group* was decided.<sup>35</sup>

If a case is brought on the grounds of predatory pricing it is unlikely that the plaintiff will have direct evidence that the defendant can recoup the losses sustained from predation. The 10<sup>th</sup> Circuit decided a case soon after *Brooke* that illustrated factors that are relevant to determining whether a defendant has a “dangerous probability of success”.<sup>36</sup> The relevant factors are: 1) Market Share; 2) Whether defendant is a multi-market firm; 3) The number and strength of other competitors; 4) Market Trends; 5) Entry Barriers; 6) Ability to Absorb Losses<sup>37</sup> While the 10<sup>th</sup> Circuit did state these numerous factors as a blueprint for a successful predatory pricing claim, the ability to prove these factors is still improbable, given the lack of a test illustrating what is required to prove recoupment.

The progression of predatory pricing claims shows that the offense has undergone radical transformations since the Sherman Act was enacted in 1890. As the federal laws of predatory pricing continue to erode, businesses will seek alternative remedies to protect themselves, and suing under the state laws may provide to be the adequate remedy, since it may be a plaintiff’s only viable source of protection from a rival’s attempt to drive it out of business.

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<sup>35</sup> Aaron S. Edlin, Stopping Above-Cost Predatory Pricing, 111 Yale L.J. 941, 941 (2002)

<sup>36</sup> *Multistate Legal Studies, Inc. v. Harcourt Brace Jovanovich Legal and Professional Publications, Inc.*, 63 F.3d. 1540, 1554 (1995)

<sup>37</sup> Ibid.

#### **D. State Below-Cost Sales Acts**

South Carolina enacted the first sales below cost provision in 1902, and since then thirty other states created similar legislation, primarily in the late 1930s. Nine states have since repealed their laws. The statutes are protectionist in nature and legislatures adopted them primarily to prevent loss leader selling and to protect small businesses from mass-merchandisers that could undercut the costs of the small retailers.<sup>38</sup> These laws typically came in a variety of forms. Some states passed laws applying to only specific commodities such as milk or cigarettes, while some states enacted general laws that prevented the sale of any merchandise by a retailer, and often wholesaler, below cost. The general sales-below cost laws are the primary focus of this study. The study is limited to these laws because very few authors choose to focus on the general laws, and elect to focus primarily on specific statutes instead. In particular, SBC laws specifically applying to gasoline garner the most attention. My goal is to address whether these laws of general application serve to deter pricing conduct that has the potential to harm small businesses of market structures and product lines.

The SBC laws condemn the same predatory pricing conduct that the Sherman and Robinson-Patman Acts prohibit, as well as potential anticompetitive behavior that is outside the scope of the federal laws.<sup>39</sup> Given that every state enacted its law after section 2 of the Sherman Act was adopted,<sup>40</sup> it is apparent that states sought to expand the scope of impermissible pricing practices beyond the Sherman Act. In particular, these laws penalize

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<sup>38</sup> Ronald N. Johnson, *The Impact of Sales-Below-Cost Laws on the U.S. Retail Gasoline Market*, A Report Prepared for Industry Canada, Competition Bureau, February 1999; Note, *Statutory Bans Against Selling Below Cost: The Latest Antidote for Big Business*, 25 Va. L. Rev., 699, 700 (1939)

<sup>39</sup> Letter to Delegate McDonnell of the Virginia House of Delegates from the Federal Trade Commission

below cost sales practices, regardless of whether the offender can recoup losses or imposes harm to competition. Given that these laws are far more inclusive than their federal counterparts, it should be the case that more actions are tried on state grounds than under a predation theory. Additionally, it should be the case that small retailers thrive to a larger extent in these jurisdictions, because the mass-retailers cannot use their financial backing to use predatory tactics.

### **1. Characteristics of the Below-Cost Sales Laws**

The below cost sales laws are enacted on a state-by-state basis and share many common attributes. However, there are various provisions that are common to numerous states that can significantly alter the effect of the law. Unlike the prior studies of SBC laws, I will examine different characteristics of state laws, which might alter the effectiveness of the state law. Up to this point, all of the studies pertaining to SBC laws treat the legislation as homogeneous.

All the state laws prohibit the selling of goods or merchandise below some appropriate measure of cost; however, the actual cost standard used to verify a below-cost sale varies from state to state. The measures of cost used by the states usually involve replacement cost, average variable cost, average total cost, or invoice cost. In addition to cost requirements, the state laws often require the intent to injure a competitor, competition, welfare, or the intent to divert trade from a competitor. However, the laws consider the conduct of pricing below cost prima facie evidence of intent to injure a competitor, destroy

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<sup>40</sup> South Carolina has the oldest SBC law



competition, divert trade, or cause other harms specified by the statutes.<sup>41</sup> Establishing intent based on the conduct of selling below cost is one of the grounds for constitutional objections.<sup>42</sup> These intent provisions pose a stark contrast from the federal predatory pricing laws that require specific intent to injure competition.<sup>43</sup> Thus, the group of sellers affected under the federal laws substantially differs from those under the state laws.

These laws do not regard efficiency as highly as the federal laws, but do highly value the protection of small firms in the market. In addition to restricting predatory pricing, the laws also prohibit the use of loss leader selling. Some states accomplish this by prohibiting the diversion of trade, while others specifically address loss leader selling.<sup>44</sup> A pure loss leader does not amount to a claim that would survive summary judgment in the federal courts, because many types of exclusionary practices are actually very efficient and socially beneficial.<sup>45</sup>

It appears as though some states do require that the below cost sales cause some kind of harm or unreasonable restraint of trade. This is frequently stated as an “adverse affect on competition” or “an injury to competition” in the relevant market. The interpretation of what constitutes an injury to competition under this law varies. The

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<sup>41</sup> For example, the Oklahoma law provides that Evidence of advertisement, offering to sell, or sale of merchandise by any retailer or wholesaler at less than cost to him, shall be prima facie evidence of intent to injure competitors and to destroy or substantially lessen competition. 15 *OK Stat. Ann.* 598.5 (2005). This seems to be the case with the majority of states except Arkansas and Maine. For more on the Arkansas intent requirement see *Wal-Mart Stores v. American Drugs, Inc.* 891 S.W.2d 30 (Ark. 1995)

<sup>42</sup> See, Dougherty, *supra* note 1, discussing how these provisions receive mixed treatment with respect to constitutional challenges.

<sup>43</sup> Herbert Hovencamp, *Antitrust*, 3<sup>rd</sup>. Edition, West Group, 1999, p.108; see also *Brooke Group Ltd. v. Brown & Williamson Tobacco Corp.*, 509 U.S. 209 (1993)

<sup>44</sup> For example, comparing the laws of Oklahoma to California illustrates this contrast. Oklahoma prevents diverting trade, whereas California specifically prohibits loss leader selling. Oklahoma courts specifically state that an intent of this law is to prevent loss leader sales. See, *So-Lo Oil Company*, *infra* note 52.

antitrust interpretation is that the conduct must injure the competitive process, but another school of thought is that injury to a single competitor is sufficient.<sup>46</sup> In Oklahoma, the court recently interpreted the law in a manner that is very unfavorable to firms that sell below cost. The court issued an injunction against Sam's Club under the state's Unfair Sales Act. The court reasoned that selling below cost inferred that the defendant substantially lessened competition under the statute.<sup>47</sup> This interpretation of the law infers that the sale of an item below cost alone is sufficient to establish a violation of the state SBC law. Table 1-1 is a summary of the state SBC laws and some of their relevant characteristics.

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<sup>45</sup> Id at 118.

<sup>46</sup> Samuel L. Perkins, *A Place for Fair Competition Acts in Motor Fuel Marketing*, 26 N. Ky. L. Rev. 211, 260 (Summer 1999).

<sup>47</sup> *Star Fuel Marts, LLC v. Murphy Oil Co.*, 2003 U.S. Dist. LEXIS 4545, 33 (2003)

Table 1-1:  
State Sales Below Cost Laws

State	Legislation	Enacted	Repealed	Damages	Retailer's Markup	Unconstitutional in whole or part	Unconstitutional defect remedied
Arizona	Ariz. Rev. Stat. Ann. § 44-1461	1937	1982		12%	1941	
Arkansas	Ar. Stat. § 4-75-201-11	1937		Treble			
California	Cal. Bus & Prof. Code § 17028, § 17019 17044	1935		Treble in 1959	6% in 1953		
Colorado	Col. Stat. Ann. § 6-2-105	1937				1955	1960
Connecticut	Ct. St. § 35-27	1949	1969		6%		
Hawaii***	Haw. Rev. Stat. § 481-3	1955		Treble	6%		
Idaho	Idaho Code § 48-401	1939		Treble	6% in 1955		
Kansas	50-401	1941	1961		6%	1959	
Kentucky	Ky. St. § 365-030	1936		Treble		1983	
Louisiana	La. Rev. St. § 51-422	1942			6%		
Maine	10 Me. St. § 1204-A	1939		Treble	6%	1956	
Maryland	Md. Comm. Law §11-404	1939/ 1957	1951		5%	1940	1957
Massachusetts	Mass. St. 93§14E	1938			6%		
Minnesota	Mn. St. § 325D.04	1937				1938	1939
Montana	Mt. St. § 30-14-209	1937		Treble			
Nebraska	Neb. Stat. 59-1201	1905	1972		6%		
New Hampshire	N.H. Stat. Chapter 358	1941	1977		6%	1948	
New Jersey	N.J. Stat 56-4-2	1938	1975		6%	1939	1953
North Dakota	N.D. St. 51-10-04	1941					
Oklahoma	15 Ok. St. §598.1	1941			6%		
Oregon	Oregon Stat. 50-656.010-646.180	1937	1975	Treble	6%		
Pennsylvania	73 Pa. St. §213	1937			4%	1940	1941
Rhode Island	R.I. St. §6-13-4	1939			6%	1965	
South Carolina	S.C. S. §39-3-150	1902					
Tennessee	Tn. St. §39-3-150	1937			6%		
Utah	Utah Code 13-5-1	1937		Treble	6%		
Virginia	Va. Chapter 259	1938	1976		6%		
Washington	Wash. St. §19.86	1939	1983				
West Virginia	W.V. St. §47-11A-2	1939		Treble	7%		
Wisconsin	Wis. Stat. Ann. 100.30	1939			6% until 1985		
Wyoming	Wyo. Stat. Ann. 40-4-101	1937					

\*\*\* Statehood in 1959,  
Act passed in 1939

Source:

State Legislation

Commercial Clearing House (CCH), Trade Regulation Reporter

*a. Damages Under the Acts*

Damages under the state laws also tend to vary drastically. All jurisdictions at least allow injunctive relief and compensatory damages. However, many of the states replicate the federal antitrust damages by requiring the defendant to pay treble damages for a violation of the act. This implies that firms are strictly better off suing under state laws than federal laws, because plaintiffs can prove violations under the law with greater ease. Currently, nine states with SBC laws also allow for treble damages.

*b. Litigation Under the Below Cost Sales Laws*

The states' highest courts declared general SBC laws unconstitutional, in whole or part, in eleven states. Many courts interpret these acts as violations of Constitutional Due Process protections.<sup>48</sup> The courts frequently focus on the intent element of the laws with respect to constitutional validity.<sup>49</sup> In many of the states with SBC laws, selling below cost infers intent to harm competitors or injure competition. The act of injuring competitors and imposing criminal sanctions usually requires a specific intent to cause that very harm. Given that the act alone is possibly beneficial and not per se harmful, or harmful in and of itself, the act coupled with intent is what gives rise to a harmful undertaking.<sup>50</sup> Courts have stated that inferring intent created an impermissible presumption of guilt and violates due process protections.<sup>51</sup> Many states have dodged this issue by stating that conduct is prima

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<sup>48</sup> See, Generally, Francis M. Dougherty, *Validity, Construction, and Application of State Statutory Provision Prohibiting Sales of Commodities Below Cost- Modern Cases*, 41 A.L.R. 4<sup>th</sup> 612 (2000); Note, *State Legislation Prohibiting Sales Below Cost*, 52 Harv. L. Rev. 1142(1939); Oler, *Statutory Inhibition against Sales Below Cost* 43 Dick. L. Rev. 112 (1939); Note, *Constitutionality of Statute Prohibiting Sales at Less than Cost*, 47 Yale L.J. 1201 (1939); Note, *Statutory Bans Against Selling Below Cost: The Latest Antidote for Big Business*, 25 Va. L. Rev., 699 (1939)

<sup>49</sup> Note, *Statutory Bans Against Selling Below Cost: The Latest Antidote for Big Business*, 25 Va. L. Rev., 699, 704 (1939)

<sup>50</sup> *Ibid.*

<sup>51</sup> See, Dougherty, *supra* note 48.

facie evidence of intent, which allows the defendant to show intentions other than harming competition or competitors.<sup>52</sup>

*c. Minimum Markup Provisions*

Twenty-two states with SBC laws require that firms' price at a stated minimum markup above its invoice or average variable costs. While state provisions preventing below cost sales all make some accounting for fixed costs, those with minimum markup provisions provide a fixed percentage that represents the cost of doing business. Firms are permitted to prove that their fixed costs are lower than the minimum markup, however, the markup does serve as a basis for initiating a lawsuit. The provision does not alter the interpretation of cost, but does allow small firms to form a more concrete basis for evaluating rivals costs in the context of a potential lawsuit.

*d. State Fair Trade Acts and Resale Price Maintenance*

Resale price maintenance is a practice that receives per se treatment under the Sherman Act, meaning that resale price maintenance is an antitrust violation without a showing of anticompetitive effects. The Supreme Court established this standard in 1911 with the case *Dr. Miles Medical Company v. Park & Sons*.<sup>53</sup> However, in 1937, the Miller-Tydings Amendment to the Sherman Act allowed states to adopt legislation permitting firms to use resale price maintenance practices.<sup>54</sup> This form of legislation became known as fair trade acts.

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<sup>52</sup> See e.g. *So-Lo Oil Company, Inc. v. Total Petroleum, Inc.*, 832 P.2d 14 (1992)

<sup>53</sup> *Dr. Miles Medical Company v. Park & Sons*, 220 U.S. 373 (1911). The Court has crafted exceptions to the resale price maintenance doctrine since deciding *Dr. Miles*. Most notably, the *Colgate* decision condoned unilateral resale price maintenance schemes.

<sup>54</sup> Sidney A. Diamond, *Antitrust Problems of Fair Trading*, 1 The Antitrust Bulletin 97, 98 (1955).

In 1955, Congress also implemented the McGuire Act<sup>55</sup>, which allowed states to expand on the breadth of the fair trade acts by permitting the use of non-signor clauses. These non-signor clauses allowed firms to enter enforceable contracts preventing the sale of goods below an agreed upon price. Congress repealed the Miller-Tydings Act and the McGuire Act in 1975.<sup>56</sup>

Forty-five states initially enacted fair trade legislation. Since that time, nine states either repealed the laws or deemed them unconstitutional, and courts invalidated the non-signor provisions in nineteen states. Fair trade laws were another form of protectionist legislation that states enacted after 1937. I account for the effects of fair trade legislation in this dissertation. Resale price maintenance forces firms to compete on non-price competition, which should increase the presence of small firms. Omitting the effects of these laws may overstate the impact of the SBC laws because the fair trade laws may be responsible for some of the small business trends.

*e. Summary of the laws*

The federal laws prohibiting predatory pricing are relatively limited in their protection of small businesses. The federal standard requires recoupment of the predator's losses, in addition to the dangerous probability of gaining monopoly power, to find a potential predator liable of an offense. This standard may be too burdensome for any plaintiff to prove, given that the firm is still viable.

By contrast, the state laws are sure to find violations where federal laws are sufficient and even when they are not. By their construction, these laws protect

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<sup>55</sup> *Ibid.*

<sup>56</sup> 89 Stat. 631 (1955).

competitors in addition to competition, and sometimes carry damages equal to the federal laws. With some notable exceptions, the state laws are likely to create more thriving small businesses in the retail market.

## Chapter 2

### LITERATURE REVIEW

Economists have looked at issues related to both predatory pricing and the state counterparts. Authors' employ various techniques to evaluate the below cost pricing laws, depending on the issue they examine. While the Sherman Act made both attempted monopolization and predation illegal, the economic literature regarding predatory pricing pre-dates the modern legal treatment of the laws.<sup>57</sup> This early literature regarding predatory pricing tended to focus on specific tests for detecting predatory pricing<sup>58</sup>, or the rationality and likelihood of such conduct.<sup>59</sup> By contrast, states created the legal rules for sales below cost laws before the topic received attention in the literature. The literature that followed the enactment and enforcement of the state laws primarily related to their constitutionality.<sup>60</sup>

The Court now has a well-established legal standard for predatory pricing cases, however the economic literature is still mixed on the proper treatment of predatory pricing claims. The literature of predatory pricing also vastly differs in regards to how authors choose to hypothesize on the rationality and existence of the conduct. The literature

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<sup>57</sup> See generally, Areeda, *supra* note 19; Frank Easterbrook, *Predatory Strategies and Counterstrategies*, 48 U. Chic. L.Rev. 263 (1981); William Baumol, *Quasi-Permanence of Price Reductions: A Policy for Prevention of Predatory Pricing*, 89 Yale L.J. 1 (1979).

<sup>58</sup> See generally, Phillip Areeda and Donald Turner, *Predatory Pricing and Related Practices Under Section 2 of the Sherman Act*, 88 Harv. L. Rev. 697 (1975).

<sup>59</sup> See generally, Frank Easterbrook, *Predatory Strategies and Counterstrategies*, 48 U. Chic. L.Rev. 263 (1981)

<sup>60</sup> See, Note, *State Legislation Prohibiting Sales Below Cost*, 52 Harv. L. Rev. 1142(1939); Oler, *Statutory Inhibition against Sales Below Cost* 43 Dick. L. Rev. 112 (1939); Note, *Constitutionality of Statute Prohibiting Sales at Less than Cost*, 47 Yale L.J. 1201 (1939); Note, *Statutory Bans Against Selling Below Cost: The Latest Antidote for Big Business*, 25 Va. L. Rev., 699 (1939)



pertaining to the state laws banning sales below cost is relatively limited. There are few publications discussing the legal or economic significance of these state statutes.<sup>61</sup>

Articles regarding the antitrust laws or state sales below cost laws focus either on the legal significance of the laws or the economic problems relating to laws. The literature regarding the state laws generally addresses three themes: 1) the construction of the differing state laws and their treatment by the courts; 2) The theoretical benefits or harms stemming from the below-cost sales laws. 3) Empirical tests performed to determine the effect of these laws. The works focusing on predatory pricing are more diverse than those analyzing the state laws. These papers tend to concentrate on either legal or economic issues stemming from the federal law. For purposes of this study, the predatory pricing literature may be grouped into three general themes: 1) legal analysis of the federal predatory pricing laws; 2) case studies regarding the existence of predatory pricing; 3) theoretical analyses examining the existence and rationality of predatory conduct. This chapter is broken into two sections. Section 1 summarizes the literature pertaining to state SBC laws. Section 2 summarizes the relevant literature on predatory pricing.

## **A. State Sales Below Cost Laws**

### **1. Empirical Tests of State Below-Cost Sales Laws**

There are four primary works on empirical tests of state sales below cost laws. Michael J. Houston was the first author to test the effectiveness of the minimum markup laws by examining the impact of these laws on the viability of small retail firms.<sup>62</sup> Houston

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<sup>61</sup> Rod W. Anderson and Ronald N Johnson, *Antitrust and Sales-Below-Cost Laws: The Case of Retail Gasoline*, *Review of Industrial Organization* 14 189-204, (1999) p. 200.

<sup>62</sup> Michael J. Houston, *Minimum Markup Laws: An Empirical Assessment*, *Journal of Retailing*, Vol. 57, No. 4, 98-113 (Winter 1981).

chose to select a variety of retail industries to empirically study the effect of the laws, which included all retail stores combined, grocery stores, apparel and accessory stores, variety stores, automobile dealers, furniture stores, and liquor stores. He performed a cross-sectional regression using observations from the 1977 Census of Retail Trade with three different dependent variables to measure small businesses; the number of single-proprietor and partnership forms of business in a state; single proprietorships and partnerships as a proportion of total establishments; and the number of merchant bankruptcies. The control variables were the minimum markup laws, total population, population density, urbanization, disposable income per household, and the ratio of total retail sales to total disposable personal income. He only used the total population variable with respect to the models utilizing total establishments. The population variable was positively and significantly related to the total number of small businesses in every test. Population density was negatively related to the number and proportion of small businesses and frequently significant, and disposable income was usually inversely related to the number and proportion of small businesses, but rarely significant. His measure of retail sales was most often positively correlated with the small business variable, but infrequently significant.

Houston concluded that minimum markup laws do not have an impact on the number or proportion of small firms, but his empirical tests do provide some contradicting evidence. It appears that the minimum markup law in his study was positively related with both his measures of small firms in each industry, as well aggregate retail sales. The only

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exception was his regression using the proportion of small firms in the liquor store market. Additionally, in his regression on aggregate retail sales, Houston rejected that the minimum markup provision was related to the number of small firms at a 1% significance level. His results illustrate that minimum markup laws increase the total number and proportion of small firms for aggregate retail trade by 5.7% and 9.1% respectively, but those figures were not statistically significant. Additionally, the markup laws increased the total number of small grocers and automotive dealers by 9.9% and 12.5%, and the proportion of small automotive dealers and furniture stores by 20% and 8.7%.<sup>63</sup>

My analysis differs from Houston's tests in several respects. First, he used dummy variables to account for the 26 states with minimum markup laws, so the minimum markup variable equals one for 26 states in his sample.<sup>64</sup> However, he used data for the year 1977 and at that time only 24 states had active sales below cost laws in effect. The empirical tests performed in his article made no distinction between any of the state laws discussed in Chapter 1 that could affect their impact on small businesses. Houston used observations from the 1970's in a cross-sectional format, but these results do not capture the impact of these laws on a state over time. More importantly, the 1970's reflect a period of time before the Court scrutinized the federal pertaining to predatory pricing laws. The case law condemning predatory pricing as a basis for protection did not become prevalent until the 1980's, which implies that small firms still had a viable remedy in the form of the federal laws at the time of his analysis. Additionally, delineating small firms on the basis of sole-

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<sup>63</sup> Ibid. at 107-109.

<sup>64</sup> Ibid. at. 104.

proprietorships and partnerships is problematic. While these indicators may in fact be predominantly comprised of small firms, many small firms are also likely to be incorporated. The most problematic aspect of that fact is that only the largest firms should use predation as a profit-maximizing alternative, so it would be more reasonable to label large firms as small firms than vice versa. While his article does lay a reasonable foundation for analyzing the effectiveness of these laws, it does leave an opening for a more comprehensive evaluation of these laws.

In 1999, Rod Anderson and Ronald Johnson attempted to empirically assess the significance of below-cost sales laws on retail gasoline outlets.<sup>65</sup> Similar to Houston's approach, Anderson and Johnson attempted to empirically test the impact of the laws on small businesses. However, they also tested the impact of the laws on retail margins as well. In their first regression, the authors used retail gasoline margins from March 1992 through December 1993, for three different categories as a dependent variable. The three categories included cities with a gasoline-specific sales below cost law, cities with only a general sales below cost law and cities with neither law.<sup>66</sup> The regressions were performed using OLS and a cross-sectionally correlated, time-wise autoregressive model correcting for heteroskedastic errors. The explanatory variables used in their regressions were dummy variables for gasoline specific sales below-cost laws and general sales below-cost laws, prohibitions on self-service, population density, property values, real wages, seasonal

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<sup>65</sup> Rod W. Anderson and Ronald N Johnson, *Antitrust and Sales-Below-Cost Laws: The Case of Retail Gasoline*, Review of Industrial Organization 14 189-204, 1999

<sup>66</sup> Ibid.

dummies, and a time trend.<sup>67</sup> Their results indicate that the gasoline specific sales below-cost law was significant and positive, while the general law was not statistically significant in accounting for an increase in retail margins of gasoline. The gasoline specific law had a coefficient of .64, and the general SBC law had a coefficient of .21, but was not statistically significant. The authors' second test involved testing whether the sales below cost laws had an effect on the total number of gasoline stations in a given state. They once again found that the gasoline specific laws had a significant effect on the number of retail outlets, but the general law again did not have a significant effect. The gasoline specific laws increased the total number of gasoline stations by 572.13 at a 10% significance level in a one tailed test, and the general SBC law decreased the number of establishments by 252.93 at a statistically insignificant level. Unlike Houston's model, the data does account for a time period after significant barriers to predation claims were established, however, their model does not account for differences in the laws. Their model also does not delineate a small firm or large firm, as it simply estimates the total number of establishments.

A recent article by James Skidmore, James Peltier, and James Alm does attempt to measure the impact of state SBC laws on both gasoline markups and the presence of gasoline stations.<sup>68</sup> The authors utilize the gasoline specific SBC laws to determine whether the laws affect retail markups, the retail price, or the percent markup. Similar to this study, the authors use a panel data set, but their data ranges from 1983-2002. The functional form of the regression was a fixed affects model corrected for heteroskedasticity and auto-

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<sup>67</sup> Ibid.

<sup>68</sup> James Skidmore, James Peltier, and James Alm, *Do State Motor Fuel Sales-Below-Cost Laws Lower Prices*, Journal of Urban Economics, 57 (2005) pp. 189-211.

correlation. They found that the presence of a specific SBC law decreased the dependent variables of retail price, markup, and percent markup by .665, .645, and .006 respectively, at the 5% level for every test. The implications of these tests were that the laws reduced market power and prices. However, the results did not withstand the test of time, as prices later returned to pre-legislation environment levels. The authors included a comprehensive set of control variables including: a variable for log length of the SBC enactment, wholesale price, population, population density, elderly population, vehicles and drivers per capita, per capita income, heating degree days, a dummy variable for reformulated gasoline where federal law requires its use, average annual retail wage, and general SBC law.

Similar to my analysis, the authors also examine the effect of a minimum markup provision. However, their results illustrate that the states without a minimum markup provision tended to result in lower prices and markups and were statistically significant. The law without markup provisions had coefficients of -1.432 and -1.203 on the retail price and markup, respectively. The laws with markups had coefficient values of -.377 and -.434 on the retail price and markup respectively. This result is not consistent with my expectations that markup provisions will increase the viability of the law.

The authors also tested the affect of market structure on the law. They used data from 1983-1997 on the total number of establishments, 1-4 employee establishments, and establishments with greater than 5 employees. Their results report the coefficients in logs on the SBC law. The coefficients were .02 with respect to total establishments, .011 for 1-4 employee establishments, which was deemed insignificant, and .039 for establishments with greater than five employees. The results show that SBC laws preserve the total

number of establishments over time, but they conclude that the SBC laws are most likely to protect medium and larger businesses rather than the smallest firms.

## **2. Legal Construction and Application of State Below-Cost Sales Laws**

A few authors address the issue of sales below cost laws in a legal context. The cumulative findings are summarized in Chapter 1 pertaining to sales below cost laws. The primary sources for construction and application of the state laws comes from the state statutes or case law interpreting the same. I briefly discuss the primary articles pertaining to SBC laws from a legal perspective.

The most in-depth article covering the sales below-cost laws is an article by Francis M. Dougherty.<sup>69</sup> Dougherty discusses the common problems that sales below-cost laws have faced in the courts. Many of the state laws were constructed with the purpose of preventing loss leader practices and saving small businesses that cannot afford to compete by pricing below cost. The article's key contribution to the literature is the detailed survey that it performs with respect to the case law. The article comments on key cases and themes that have caused state below cost sales statutes to become invalidated. Among the most successful challenges to the state laws include violations of due process of law, vagueness and conduct that created an impermissible presumption of guilt. The article evaluates which state laws may require a heavier burden on plaintiff's seeking to recover in a case against a firm pricing below its cost.

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<sup>69</sup> Francis M. Dougherty, *Validity, Construction, and Application of State Statutory Provision Prohibiting Sales of Commodities Below Cost- Modern Cases*, 41 A.L.R. 4<sup>th</sup> 612 (1985)

Samuel L. Perkins also performed a relatively in-depth analysis of state below-cost sales laws.<sup>70</sup> While Perkins' article was centered on state gasoline laws, the article did provide an appendix summarizing each state's below-cost sales law. The article provides the citation to the laws in addition to the key provisions of each state's law and the key cases that were decided with respect to each state.

### **3. Theoretical Implications of Below-Cost Sales Laws**

SBC laws have implications on both predatory pricing and loss leader selling conduct. The Federal Trade Commission issued a letter to Delegate McDonnell of the Virginia House of Delegates regarding the problems associated with below-cost sales laws.<sup>71</sup> The letter suggested that these laws have the potential to have anticompetitive effects and the pro-competitive benefits of the laws are merely duplicative of the federal predatory pricing laws.<sup>72</sup> The FTC specifically disagreed with the laws for a several reasons. 1) The federal laws already address anti-competitive pricing; 2) Scholars acknowledge that predatory pricing is a rare event; 3) Price cutting that is beneficial to consumers would be punished 4) The laws may have a tendency to increase price.

Areeda and Hovenkamp did discuss the practice of loss leader selling in their treatise on antitrust law.<sup>73</sup> In particular, they discuss why loss leader practices do not merit federal antitrust attention. "True loss leader pricing is not predatory, assuming that the

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<sup>70</sup> Samuel L. Perkins, *A Place for Fair Competition Acts in Motor Fuel Marketing*, 26 N. Ky. L. Rev. 211 (Summer 1999)

<sup>71</sup> <http://www.ftc.gov/be/V020011.htm>

<sup>72</sup> Ibid.

<sup>73</sup> Phillip E. Areeda and Herbert Hovenkamp, Antitrust Law : An Analysis of Antitrust Principles and Their Application (18 Volume Set), (1995) ¶742f.



reasonably anticipated incremental revenue impact of the aggressive pricing is positive.”<sup>74</sup>

They acknowledge that loss leaders are even common in the grocery industry.<sup>75</sup>

William H. Jordan strongly criticized state laws forbidding below cost sales.<sup>76</sup> He claims that the inconsistency between the federal and state statutes creates uncertainty in the business environment and can stifle pro-competitive activity.<sup>77</sup> Jordan uses the Wal-Mart case in Arkansas as a key example of how inconsistencies in the laws have the potential to create problematic results. Under the federal standards established by *Brooke Group Ltd. v. Brown & Williamson Tobacco Corp.*, 509 U.S. 209 (1993), the plaintiff must be able to show that the defendant could recoup its losses later with monopoly profits. Applying the current predatory pricing standard to the Wal-Mart case in Arkansas would not have yielded a ruling in favor of the plaintiffs because Wal-Mart could not have recouped its losses by later raising the price of that product, according to the author, and Wal-Mart did not have any losses to recoup because it sold the products as loss leaders and never incurred a loss in the store to recover.<sup>78</sup>

## **B. Federal Antitrust Laws**

### **1. Legal Standards for Federal Predatory Pricing Claims**

I address the legal standards for federal predatory pricing claims in chapter 1 of this dissertation, and provide a detailed discussion of the Sherman Act and Robinson-Patman

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<sup>74</sup> Ibid.

<sup>75</sup> Ibid., citing *Lormar v. Kroger Co.*, 1979-1 Trade Cas. ¶62,498 (S.D. Ohio). This fact, if indeed true should support the fact that loss leaders are not as common in states with sales below cost laws. Retail margins in grocery stores should be higher, and small firms should be more prevalent, unless of course, small stores frequently sell loss leaders as well.

<sup>76</sup> William H. Jordan, *Comment: Predatory Pricing After Brooke Group: The Problem of State “Sales Below Cost Statutes”*, 44 Emory L.J. 267 (1995)

<sup>77</sup> Ibid. at 268.

Act. The two significant legal standards stem from *Matsushita Electric Industrial Co. v. Zenith Radio Corp.*, 475 U.S. 574 (1986) and *Brooke Group Ltd. v. Brown & Williamson Tobacco Corp.*, 509 U.S. 209 (1993). In *Matsushita*, the Court relied heavily on empirical studies by John McGee and Ronald Koller, who performed studies showing that past firms in violation of predatory pricing likely did not resort to predatory tactics.<sup>79</sup> Since the decision in *Brooke*, no claim brought strictly on grounds of price predation has been successful at the federal level.

## **2. Case Studies on the Existence of Predatory Pricing**

Ronald Koller sought to conduct an empirical test for predation.<sup>80</sup> Koller's empirical test came in the form of a case study analysis. Koller states that a firm using predatory tactics is seeking to advance one of two goals. 1) Drive the rival from the business so that the predator can raise price in the absence of competition. 2) Lower the value of the rival such that the predator can acquire the assets of the rival and achieve monopoly power. Koller researched predation cases in which he could get data or the court provided data, such that he could determine the real predation issues from mere complaints by rivals. Koller estimates that out of the 26 cases he found suitable for examination, in only a handful of these did the prey of the attack falter. In addition, when the prey did go under, it was usually the result of an acquisition.

Koller also states that in only a few instances did the market actually suffer from these predatory attempts. In my opinion Koller's analysis is not extremely reliable. First,

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<sup>78</sup> Id.

<sup>79</sup> Patrick Bolton and Joseph F. Brodley, *Predatory Pricing: Strategic Theory and Legal Policy*, 88 Geo. L.J. 2239, 2243 (August 2000).

the analysis is subjective because it attempts to evaluate predatory pricing after the fact based on court documentation. Second, victims of predation bring claims before they are financially insolvent. His sample includes firms that used the courts as a pre-emptive strike against the anti-competitive practices. Third, he only had data to examine a very small portion of all the existing predation cases. Thus, I feel his analysis may not be a strong representation for predatory pricing.

John McGee performed an extensive case study of the *Standard Oil* case.<sup>81</sup> McGee noted that Standard Oil acquired 223 related companies and closed down at least 75 oil refineries. Based on the premise that Standard acquired its dominant position through mergers and acquisitions, he examined whether predatory pricing was the motivating factor initiating specific instances of merger or acquisition. He checked the record for testimony about every refinery Standard bought, and also checked for instances of local price-cutting involving firms Standard did not acquire. He concluded that predatory pricing did not force any refiner to sell out or depress the value of a refiner. He also stated that Standard's purchase terms were often very good for the acquired company. McGee's analysis is consistent with much of the predation literature doubting the feasibility of predatory pricing.

### **3. Economic Assessment of the Probability and Practicality of Predatory Pricing**

Areeda and Turner performed a comprehensive analysis examining the possible pricing strategies of a dominant firm and which strategies should be considered to imply

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<sup>80</sup> Ronald H. Koller II, *The Myth of Predatory Pricing: An Empirical Study*, Antitrust Law & Economics Review, 4 (Summer 1971), pp. 110- 121.

<sup>81</sup> John McGee, *Predatory Price Cutting: The Standard Oil (N.J.) Case*, The Journal of Law and Economics, 137 (1958), 137-159.

predatory behavior.<sup>82</sup> These tests also prove useful in ascertaining whether a legitimate claim of predatory pricing exists and should be enforced and will serve as a useful benchmark when analyzing predatory pricing and below cost sales in the context of the model.

When a firm sets price equal to its average cost, the firm is just “breaking-even”. Simply because a firm is able to meet their average costs, however, does not imply that the firm is employing profit-maximizing behavior. The condition for profit-maximizing behavior means that the firm’s revenue from selling the last unit produced is just equal to the cost to produce the good. In other words, the firm’s marginal revenue is equal to its marginal cost. A policy whereby a firm prices below its marginal cost would lead to a strong presumption of predatory pricing. This does not demonstrate rational profit-maximizing behavior because the firm could increase its profits by simply reducing the amount of output it produced.

A legal claim of predatory pricing would be inappropriate when the firm is able to maintain a “break-even” profit, whether or not the firm intentionally priced below marginal cost in response to a rival’s presence. This pricing policy would tend to have an effect of eliminating less efficient rivals more than injuring competition. Another characteristic of this behavior is that it ultimately benefits the consumer. A firm that is able to maintain zero or positive profits can survive indefinitely. The firm would not have to recoup its losses through future monopoly prices. The fact that the firm can sustain the price level creates a positive environment for consumers, because future monopoly prices are the harm of

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<sup>82</sup> Areeda, Phillip and Turner, Donald, *Predatory Pricing and Related Practices Under Section 2 of the Sherman Act*, 88 Harv. L. Rev. 697 (1975).

predatory pricing. Therefore, prices below marginal cost should not be the appropriate standard for granting antitrust relief when the firm is covering its average cost.

A situation where the predator is producing beyond where his plant functions most efficiently can immediately be dismissed as anti-competitive conduct. This result is clear since at such high levels of production the marginal cost will exceed the firm's average cost. This production policy is not an effective measure to eliminate equally efficient rivals or entrants, who may easily restrict their output to make greater profits at the higher price. This scenario is a clear and distinct form of favorable price competition.

Only the scenario when the dominant firm is producing at a level where marginal cost is less than average cost will tend to eliminate rivals. Such a scenario exists when the firm is operating with excess capacity. In this instance, an equally efficient rival might be displaced from the market because it has fewer resources than the dominant firm does. However, a policy forcing the dominant firm to increase production would entail negative social effects. First, using additional capacity when the market currently exhibits excess capacity would waste social resources. Second, and more importantly, competitive markets would be undermined if courts adopted rules that punished firms for acting within rational profit-maximizing behavior.

This is the situation where predatory pricing is evident. While Easterbrook<sup>83</sup> contends that predatory pricing is not realistic, a firm pricing below marginal cost is acting counter to short-run profit-maximizing principles and creates a serious likelihood that rivals will be ousted from the market. The rival's exit from the market will not be a socially

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optimal result because their firm's failure is not the result of efficiency of the predator. In addition, valuable social resources are wasted in the process when the firm's marginal cost exceeds the value of what is produced.

The exception to this rule should be the situation where the predator manages to cover average costs. Areeda and Turner argue that even though average cost pricing does not demonstrate social optimal output levels, the firm is acting in a manner to remain profitable. Pricing below marginal cost is wasteful, regardless of the average cost of production, but the practice does not seem to foster anti-competitive behavior.

Despite considering marginal cost as the appropriate yardstick for measuring predatory pricing, Areeda and Turner recognized the difficulty in applying a marginal cost rule. The incremental cost of making and selling the last unit sold by a firm cannot be readily identified by typical business accounts. They adopted an average variable cost standard as a surrogate for the marginal cost test. This test infers predatory conduct when a firm prices below its average variable cost. The reason average variable cost may be a good approximation of marginal cost is that it tends to measure cost incrementally, similar to marginal cost. However, it will not yield the precise profit-maximizing behavior of a firm.

Joskow and Klevorick do not agree with the premise that only sales below average variable cost should be a proxy for predatory pricing.<sup>84</sup> They argue that while a price cut below average variable cost in response to entry represents a present sacrifice for a longer-run monopoly gain and is obviously predatory, any price cut between a firm's average total cost and average variable cost may also represent predatory action. Average variable cost

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<sup>83</sup> Frank Easterbrook, "Predatory Strategies and Counterstrategies", 48 U. Chic. L.Rev. 263 at 336.

should be the first standard evaluated because any price below average variable cost will always be below average total cost as well. However, if the dominant firm meets the average variable cost standard, the courts should inquire into the nature of average total cost. Barring the dominant firm setting price equal to marginal cost, a price below average total cost may indicate a firm's willingness to eliminate rivals from the market.

William Baumol provides a framework that sounds theoretically pleasing, but would be an impossibility to implement effectively.<sup>85</sup> Baumol would allow firms to set prices freely. However, if a firm were ousted from the market subsequent to a dominant firm's price cutting behavior, the predator would be forced to maintain the price indefinitely. The only justification for a firm to raise prices would be to match increased costs of the goods sold by the predator. While this idea is novel and an interesting concept, it cannot be applied soundly in practice. Regulatory agencies would have to be created solely for the purpose of monitoring firms pricing practices. In addition, sensitive determinations would have to be made frequently to determine the specific reason for any and every firm failure. Additionally, sales promotions by firms would be a discouraged practice for fear of the potential price freeze that could result if a rival happens to falter. The soundest policy would be to strike a balance between the federal and state laws. A policy that unequivocally abolished incentives to use predatory tactics, while not interfering with legitimate competition seems to be the key to establishing an efficient market.

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<sup>84</sup> Joskow, P. and A. Klevorick, *A Framework for Analyzing Predatory Pricing Policy*, 89 Yale L.J. 213 (1979).

<sup>85</sup> William Baumol, *Quasi-Permanence of Price Reductions: A Policy for Prevention of Predatory Pricing*, 89 Yale L.J. 1 (1979).

The remainder of the literature pertaining to the rationality of predatory is voluminous. Theories proposing predatory pricing as a strategy implement various arguments from establishing a reputation for toughness, predation for merger, and the long-purse story.<sup>86</sup> Opponents frequently present alternative methods of acquiring monopoly power that are superior to predatory pricing. The most common of these strategies is that mergers yield preferable results to predation.<sup>87</sup>

My conclusion from the literature is that predatory pricing is a practice that yields an ambiguous result with respect to its rationality. What is clear is that federal courts have made the claim increasingly difficult to prosecute since the *Matsushita* case in 1986. Additionally, the state laws do overlap in their application to predatory pricing and also deter loss leader practices that are not condemned by federal legislation. The effects of the state SBC laws has mixed empirical results to date.

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<sup>86</sup> See generally, Paul Milgrom and John Roberts, *Predation, Reputation, and Entry Deterrence*, Journal of Economic Theory, 27, (1982) 280-312; Kreps, D. and R. Wilson, *Reputation and Imperfect Information*, Journal of Economic Theory, 27, (1982), 253-279; Yamey, B., *Predatory Price Cutting: Notes and Comments*, Journal of Law and Economics, 15, (1972), 129-142; Tesler, L., *Cutthroat Competition and the Long Purse*, Journal of Law and Economics, 9, (1966), 259-277.

<sup>87</sup> Bork, R., *The Antitrust Paradox*, (1988), New York; Basic Books.



## Chapter 3

### THEORETICAL IMPLICATIONS OF SALES BELOW COST LAWS

#### A. Introduction

The purpose of this chapter is to develop theoretical models that illustrate the impact of sales below cost laws on small businesses. I will also use these models to depict the requisite market structure necessary for sales below cost laws to be effective.

Additionally, this chapter provides analysis on how behavior among firms will change based on the types of goods that are sold. This analysis will provide a basis for crafting testable hypotheses that will be examined in chapter 4.

Much of the economic literature on predatory pricing is game theoretic analyses pertaining to the rationality of predatory pricing.<sup>88</sup> My interest is not whether firms will desire to engage in predatory pricing, but the impact of state SBC laws on potential predatory behavior. Obviously, if predatory or loss leader pricing is not a rational strategy, the laws enacted to deter such conduct are effectively moot and should have no impact on the viability of small firms.

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<sup>88</sup> The most prominent of these theories are the articles pertaining to predation by reputation. My analysis assumes that the predator may find predatory pricing rational or not, and firms' predicate their strategic decisions based on that assumption. Since this analysis simply assumes that predatory pricing may be rational, the reasons explaining such behavior are not relevant except to explain why such conduct may occur. Paul Milgrom and John Roberts, *Predation, Reputation and Entry Deterrence*, Journal of Economic Theory, Vol. 27, 280-312 (1982); David M. Kreps and Robert Wilson, *Reputation and Imperfect Information*, Journal of Economic Theory, Vol. 27, 253-279 (1982).

Another body of literature relevant to this chapter is game theoretic models of litigation.<sup>89</sup> The models examine the choices of suing or refraining from suing, and to litigate or settle a claim. The articles effectively serve to establish parameters that must be considered when crafting the structure of the games that I present in this chapter, but none of this literature is directly applicable to evaluating the effects of these laws.

The most common scenario examined in the predation literature is whether a dominant incumbent firm would choose to eliminate rivals or chill entry into the market by employing a below cost pricing strategy. While this scenario is relevant to my inquiry, evaluating only this solitary circumstance would fail capture the breadth of activity that predation or below cost sales laws condemn, because that scenario ignores the rudimentary rationale for states implementing below cost sales laws. In addition to acts of predatory pricing, sales below cost laws also serve to prohibit loss leader pricing. Firms often initiate this pricing pattern to gain market share for reasons unrelated to driving competitors out of business. Loss leaders can serve as a means to attract new customers, and increase sales of other products the store offers. Loss leader pricing often increases consumer surplus, such that it draws no attention from federal antitrust legislation; however, it may have the same effect on small businesses as predatory pricing.

Large multi-product firms competing with small retailers that possess a much less diversified inventory could have an opportunity to eliminate smaller rivals by

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<sup>89</sup> I.P.L P'ng, *Strategic Behavior in Suit, Settlement, and Trial*, The Bell Journal of Economics, vol.14 no. 2, (Autumn, 1983), 539-550. P'ng uses a game theoretic setting to explain whether plaintiffs will bring suit, settle, or proceed to trial under assumptions of incomplete information and no litigation costs if the plaintiff does not proceed to trial. Under these assumptions, the plaintiff will always file a lawsuit. This analysis should not impact the outcome in these models as the plaintiff could initiate a suit under either the state or federal law if a potential plaintiff would always sue without regard to defendant's liability, litigation costs, or bad faith damages for the defendant.

implementing a loss leader strategy. This strategy could actually present a more harmful scenario for small firms than predatory pricing. Large diversified firms implementing loss leader strategies can minimize or avoid the initial sacrifice inherent in a predatory pricing scheme. This allows the dominant firm to rationally price below cost perpetually, and it also reduces the risk to large firms of new entrants intervening with its recoupment process.

Dominant firms implementing loss-leader strategies typically fall within the purview of state below cost sales laws. One of the stated intents of the state laws is to prohibit loss leader pricing. This infers that state laws do afford small firms an additional layer of protection that federal antitrust laws do not.

My intent in creating the game theoretic models in this chapter was to create a set of player strategies that could potentially generate predatory pricing or below cost sales lawsuits. One model is not sufficient to accurately capture the implications of interactions between firms when one firm elects a strategy of selling below cost, because a firm can intend for such conduct to be predatory or a loss leader. Therefore, I examined two types of models pertaining to below cost sales. First, I solve for a sub-game perfect equilibrium when the dominant firm may employ a predatory pricing strategy. The purpose of this game is to ascertain whether states that implement SBC laws more effectively deter predatory pricing than states without the same legislation. Second, I solve for a sub-game perfect equilibrium when a dominant firm may choose a loss leader strategy. This game examines whether states that enact SBC legislation protect small firms by deterring loss leaders.

## **B. The Models**

### **1. The Players and a Summary of the Games**

I use a duopoly market structure with a dominant firm and a weaker small firm. Unlike existing game theory that assumes the dominant firm is the incumbent, this analysis assumes that the dominant firm could either be the incumbent or the entrant, as the value of the model is in the comparison between outcomes when states have SBC laws or do not have such legislation.

I impose certain characteristics on the dominant firm. The model assumes that only the dominant firm can be a predator, but both firms can use loss leaders. Predatory pricing strategies are not rational when the prey possesses greater financial resources than the predator, so I exclude this possibility.<sup>90</sup> This study also assumes that the predator's type (whether strong or weak) is known.<sup>91</sup> I make this assumption based on the fact that any firm engaging in predatory conduct must have sufficient resources to credibly pursue such a strategy. Firms possessing such financial strength are likely to be large corporations, whose financial data is revealed in reports to shareholders as well as the Securities and Exchange Commission.

The models in this paper are one-stage extensive form games with two firms. The purpose of each model is to depict how below cost sales laws impact a large firm's ability to price below cost and a small firm's ability to compete in the market under those circumstances. This chapter presents two different models to illustrate the effect of these

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<sup>90</sup> This assumption is predicated on the deep pocket theory, which explains that greater financial resources may provide one explanation for predatory pricing. See generally, Tesler, L., *Cutthroat Competition and the Long Purse*, Journal of Law and Economics, 9: 259-277, (1966).

laws on both dominant and weaker firms. One of the games examines a situation where the dominant firm has the option to accommodate the smaller firm's presence in the market or engage in predatory pricing practices. For simplicity, I refer to this game as the predation game. The other game is similar in examining the effect of the below cost sales; however, this game evaluates firm behavior when the dominant firm can choose to sell products as loss leaders. I will refer to this game as the loss leader game. I also present diagrams for each game to illustrate potential outcomes when the state SBC suit is an alternative and when it is not.

The premise is the same in both games. Each game examines two basic questions with respect to state sales below cost laws. First, do the state laws extend additional protection to small businesses beyond the federal antitrust laws? Second, even if the state laws provide a penumbra from below cost sales that their federal counterparts do not, are they likely to increase the viability of small firms?

In addition to simply solving the games, I will then use the model to analyze outcomes when certain assumptions underlying the models are changed. In particular, I will examine how differing market characteristics affect the outcome of the games; whether the type of good being sold below cost alters participants' strategies, and whether symmetric information regarding costs alters the outcome of the game. I will use some of the results from this chapter as hypotheses to be tested in Chapter 4 of this paper.

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<sup>91</sup> Paul Milgrom and John Roberts, *Predation, Reputation and Entry Deterrence*, Journal of Economic Theory, Vol. 27, 280-312 (1982); David M. Kreps and Robert Wilson, *Reputation and Imperfect Information*, Journal of Economic Theory, Vol. 27, 253-279 (1982).

## **2. Player Strategies in the Predation Game**

Each player has a distinct set of strategies that are dependent on whether firms are playing the predation game or loss leader game. The strategies are almost identical, with the exception that the dominant firm will make a decision between predation and accommodation in the predation game, or a decision between loss leading and accommodation in the loss leader game. The dominant firm's conduct remains the same of pricing below cost in either game. The distinction between predation and loss leader selling is a difference in the dominant firm's intent and its desired outcome.

The predation game is most reflective of the economic literature on the subject of predatory pricing. Figure 3-1 illustrates the game where a small firm can sue under either the federal law or the state SBC law. In this game, the dominant firm makes the first decision to either accommodate the small firm, or begin selling below cost in order to drive the small firm out of business. The game ends if the dominant firm accommodates the small firm's entry. If the dominant firm elects to predate on the small firm, the small firm will be faced with a decision to sue under federal predatory pricing laws, the state sales below cost laws, or refrain from suing. The game ends if the entrant does not initiate a lawsuit. If the entrant sues under either the federal or state regime, a move by nature determines the outcome of the lawsuit and ends the game.

Figure 3-2 illustrates a version of the predation game when the small firm does not have the alternative to sue under the state SBC law. If the dominant firm chooses a predatory pricing strategy, the small firm must sue under the antitrust laws or forbear from suing. The other aspects of the game are identical to the version I present in Figure 3-1.

Figure 3-1  
 Predation Game with an Option of a SBC Lawsuit

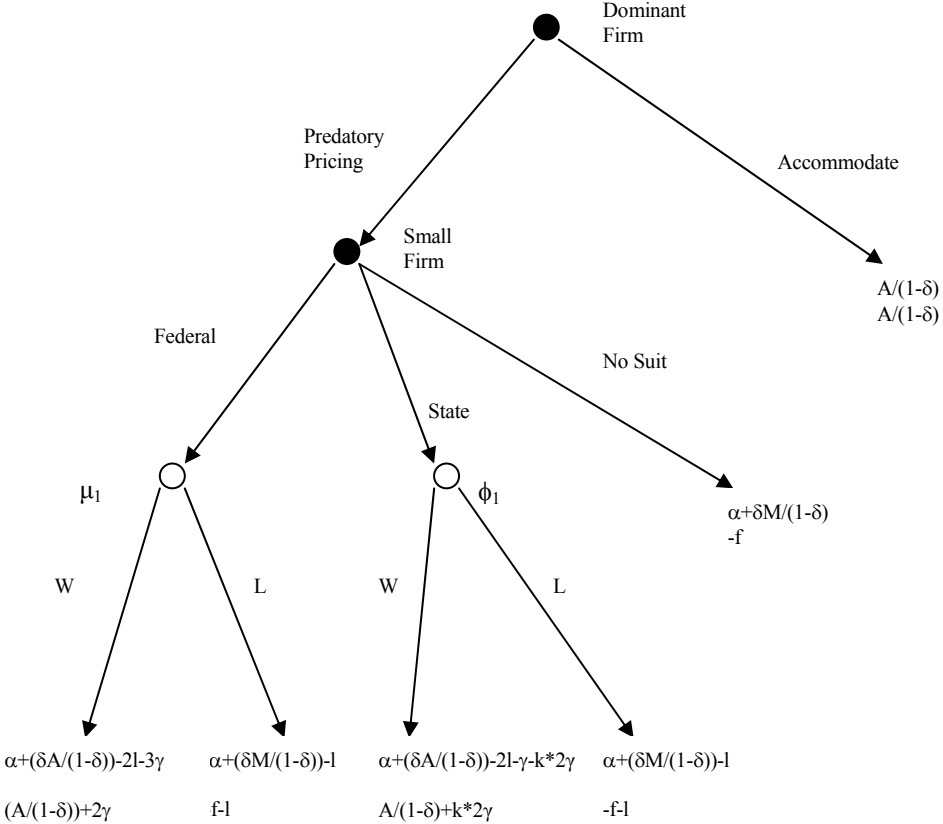
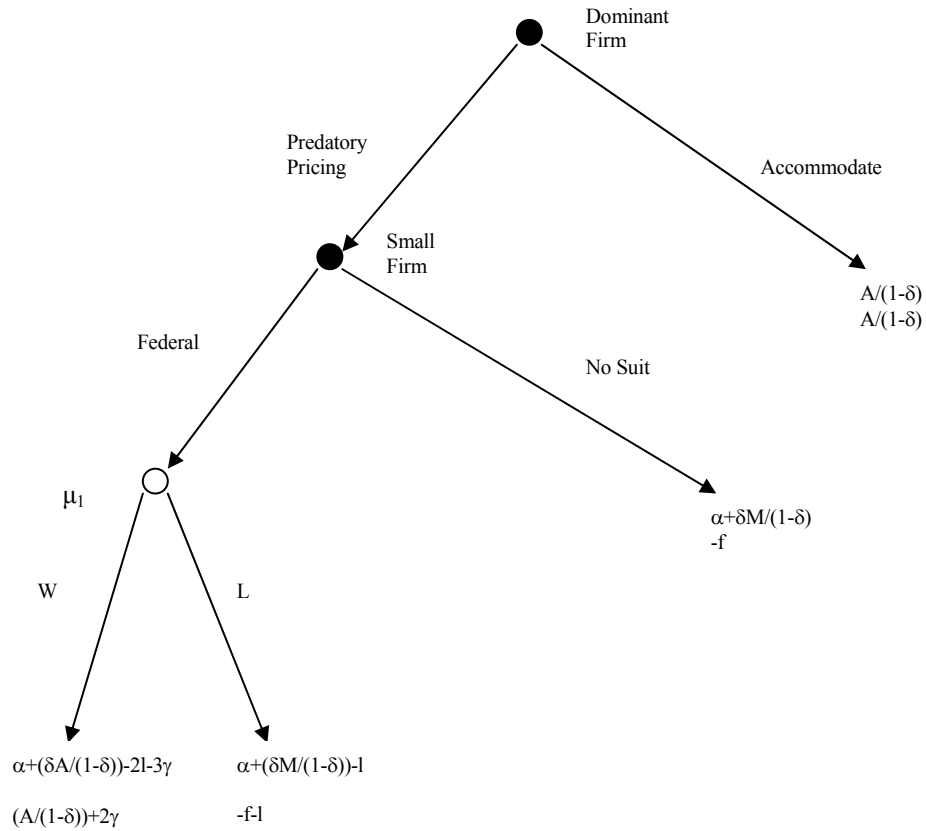


Figure 3-2  
 Predation Game without an Option of a SBC Lawsuit



### 3. Payoffs in the Predation Game

The primary goal in crafting outcomes for the various games was to design payoffs that accurately reflect results both dominant firms and incumbents can expect when pricing below cost and litigation are viable alternatives. The principal concern in designing the payoffs is that firms only receive benefits from predatory pricing in subsequent periods; however, the payoffs result from one period of strategic interaction between firms and litigation outcomes yield a current period payoff.

The best alternative is utilize a static one period model and allow the payoffs in this game to incorporate all future consequences of the players' actions. I primarily draw on the



literature addressing collusive behavior in support of this payoff structure. Collusion does differ from predatory pricing in that benefits from collusion begin to accrue in the first period the firms begin to collude. However, a firm's decision to collude or cheat on an agreement is congruent with a predator's decision because the firm must account for the future consequences of its present strategy. If firms are given the opportunity to collude in a duopoly model, the firms will adhere to their agreement only if the discounted future profits from collusion exceed the present near-monopoly profits a firm would garner from cheating. This result assumes that firms will revert to marginal cost pricing if either firm deviates from the collusive strategy. Representing this result mathematically, the firms will maintain their collusive conduct if:

$$\frac{M}{2} \left( \frac{1}{(1-\delta)} \right) \geq M$$

This result illustrates that firms must have payoffs extending into the future for collusion to be a rational strategy. The concept of predatory pricing is akin to collusive behavior in this respect. Firms realize the benefits from predatory pricing in the future, and that future value is influenced by such factors such as possible future entry, the interest rate, and industry growth. I decided to treat the payoffs similar to cooperative games in this respect as a result.<sup>92</sup>

The notations I use in the predatory pricing game are as follows:

M- Current period monopoly profits.

A- Current period profits from accommodation.

f- Fixed costs required to compete in the market.

l- Litigation costs of bringing or defending a federal or state lawsuit. For simplicity, I assume that both the predator and prey's litigation costs are equal.

$\delta$ - The discount factor. In the majority of situations I examine in the following games, the discount factor is equal to  $\frac{1}{1+r}$ , where  $r$  is the interest rate. The only exception is when the discount factor is applicable to a dominant firm engaging in predatory pricing. In this instance, the discount factor is equal to  $\frac{1}{1+r} * e$ , where  $e$  is the probability of entry in future periods. This assumption is necessary to account for future entry into the market by other firms, as future entry is the primary limitation to recouping predatory investments.

$\gamma$ - Damages attributable to predatory pricing. It is equal to the damage to smaller firms, which is the current period accommodation profits plus the entrant's fixed costs, or  $A+f$ .

$k$ - A variable that equals 1 if a state SBC law has treble damages and 0 if it does not.

$\alpha$ - The dominant firm's cost of eliminating the smaller firm in the first period.  $\alpha$  is always negative as a result.

$\beta$ - The dominant firm's current period profits from loss leader selling.

$\epsilon$ - The smaller firm's current profits when the dominant firm utilizes loss leaders.

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<sup>92</sup> Luis Cabral, Introduction to Industrial Organization, MIT Press, 2000, 128-131. Ordoover and Saloner used a similar payoff structure to analyze predatory behavior. Ordoover and Saloner, Handbook of Industrial Organization, Elsevier Science Publishing, 1992, 551-556.

$\mu$ - The probability that a small firm is successful in a federal predatory pricing lawsuit. This is essentially the value assigned to nature's move if the small firm sues under the federal antitrust laws.

$\phi$ - The probability that a small firm is successful in a state SBC lawsuit. This is essentially the value assigned to nature's move if the small firm sues under the SBC laws.

In this game, I accounted for both dominant firm and small firm profits under a variety of outcomes. If the dominant firm accommodates the small firm at the initial decision node, both firms get accommodation profits of  $A/(1-\delta)$ . If the dominant firm utilizes a predatory pricing strategy, each firm has five potential outcomes: 1) Sue under the federal law win; 2) sue under the federal law and lose; 3) sue under the state SBC law and win; 4) sue under the SBC law and lose; 5) forbear from suing.

The small firm can sue under the federal antitrust laws and lose with a probability of  $1-\mu$ , which yields profits of  $(-f-l)$ . This payoff represents the loss of both the small firm's fixed investment and litigation costs. The payoff to the dominant firm if the small firm files and loses a federal antitrust suit is as follows. The dominant firm will incur litigation expenses because both the federal and state laws require defendants to pay their own litigation costs if the plaintiff is unsuccessful.<sup>93</sup> The dominant firm will also incur the expense of the initial predatory period ( $\alpha$ ).<sup>94</sup> Following the initial predatory period, the dominant firm will garner monopoly profits in future periods. This means that the dominant

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<sup>93</sup> Litigation expenses may be awarded to defendants if the plaintiff brought the lawsuit in bad faith. I assume that all lawsuits brought by plaintiffs are in good faith.

<sup>94</sup>  $\alpha$  is equal to the price times quantity at the below cost price. Thus,  $\alpha$  is always negative.

firm's total payoff from preying on a small firm and successfully defending a lawsuit is

$$\alpha + \frac{\delta M}{(1-\delta)} - l.$$

A successful suit by a small firm under the federal antitrust laws yields a payoff of

$$\frac{A}{(1-\delta)} + 2\gamma.$$

This payoff is the result of several factors. Under the federal antitrust laws,

litigation costs are recoverable by a successful plaintiff. The small firm will not incur

litigation costs as a result. I assume the small firm will recover its actual damages, which include the current period's fixed costs and the current period's accommodation profits.

This puts the small firm back in the same position as the solution where the dominant firm

accommodates the entry. In addition, the federal antitrust laws compensate successful

plaintiffs with treble damages. This means that the total award by the court will be  $3\gamma$ .

Since the small firm suffered losses equal to its fixed costs as a result of the predatory

pricing, its total payoff equals  $3\gamma - f$ , or  $2\gamma + A$ . Assuming that the small firm will be able to

compete into the future<sup>95</sup>, its future profits will equal  $\delta A / (1-\delta)$ . The sum of the current

profits and future profits yields a total payoff of  $A / (1-\delta) + 2\gamma$  to the entrant.

The dominant firm bears significant expenses if the entrant is successful in its

federal claim. The court will assess damages against the dominant firm in the amount of  $3\gamma$

plus the litigation costs of the small firm. The dominant firm still bears the cost of its first

period losses equal to  $\alpha$ , and it must also cover its own litigation expenses. The dominant

firm will fail to eliminate the smaller rival if the lawsuit is successful for the small firm.

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<sup>95</sup> This assumption is predicated on the fact that injunctive relief is also available to successful plaintiffs.

The dominant firm will receive future accommodation profits of  $\frac{\delta A}{(1-\delta)}$ . The total payoff

to a dominant firm for predation if the dominant firm loses the federal antitrust case will be

$$\alpha + \frac{\delta A}{(1-\delta)} - 3\gamma - 2l.$$

A small firm's payoff varies in two important respects if the entrant elects to sue under the state SBC laws. First, the probability of bringing a successful lawsuit under the state laws is higher and will be denoted by a probability of  $\phi$ , where  $\phi \geq \mu$ . Second, the state SBC laws generally allow plaintiffs to recover actual damages.<sup>96</sup> As a result, a successful plaintiff will recover its lost fixed costs and its expected profit. These lost profits combined with future accommodation profits yields a total payoff of  $A/(1-\delta) + k*2\gamma$  to the successful small firm. If the state has a treble damage provision, the federal payoff and state payoffs are identical if the small firm succeeds. If the small firm is unsuccessful, it receives the same payoff that it does under the federal laws,  $-f-l$ .

The dominant firm's payoff will closely resemble its payoff under the federal laws if it loses the state suit, with the exception that the dominant firm will only incur actual

damages.<sup>97</sup> The result is that the dominant firm's payoff equals  $\alpha + \frac{\delta A}{(1-\delta)} - 2l - \gamma - k*2\gamma$ .

The dominant firm's payoff is identical to its payoff under the federal suit if the dominant firm successfully defends the suit.

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<sup>96</sup> Several states do have treble damage provisions. In this case, the payoff is exactly the same as the federal payoff. Assuming that plaintiffs have a higher probability of succeeding in a state suit, the state SBC law yields strictly higher payoffs than the federal laws.

<sup>97</sup> Unless the SBC law contains a treble damage provision.

If the dominant firm utilizes a strategy of predatory pricing and the small firm does not sue, the small firm's profits will simply be the loss of its fixed costs associated with competing in the market. This yields a total payoff of  $-f$  to the small firm. The dominant firm will receive a payoff of  $\alpha + \frac{\delta M}{(1-\delta)}$  if the firms choose this combination of strategies.

#### 4. Equilibrium of the Predation Game

I discuss the outcome of the predation in this section. The outcome of the game is dependent on several variables. One of the key determinants affecting the outcome of each game is the small firm's probability of succeeding in its lawsuit. I will discuss the outcome of the game based on assumptions pertaining to whether the small firm's expected payoff is greater by suing based on federal antitrust laws, state laws, or refraining from suing the dominant firm altogether. I use backwards induction to solve for the sub-game perfect equilibrium under the various assumptions. Figures 3-3 through 3-5 illustrate the sub-game perfect equilibria of the game under various assumptions.

In this game, the small firm has three alternatives if the dominant firm engages in predatory pricing. It can sue under the federal antitrust laws, state sales below cost law, or not sue. I denote the expected payoff of suing under the federal law as  $E_F$ , where  $E_F$  is equal to  $\mu_1 \left[ \left( \frac{A}{1-\delta} \right) + 2\gamma \right] + (1-\mu_1)(-f-l)$ . The expected payoff from suing under the state SBC law is  $E_S$ , where  $E_S$  is equal to  $\mu_1 \left( \left( \frac{A}{1-\delta} \right) + k * 2\gamma \right) + (1-\mu_1)(-f-l)$ . The payoff from entering the market and refraining from suing is  $E_{NS}$ , where  $E_{NS}$  is equal to  $-f$ .

Figure 3-3  
 Conditions for Equilibrium Paths  
 When the Small Firm Has a High Probability of Success  
 Under the Federal or State Law

	PREDATION AND FEDERAL SUIT (IN A STATE WITH A SBC LAW)								PREDATION AND FEDERAL SUIT (IN A STATE WITHOUT A SBC LAW)					
	Predatory Pricing and Federal Suit		Predatory Pricing and State Suit		Predatory Pricing and No Suit		Accommodation		Predatory Pricing and Federal Suit		Predatory Pricing and No Suit		Accommodation	
Dominant Firm's Potential Payoff from having a Monopoly	High M	Low M	High M	Low M	High M	Low M	High M	Low M	High M	Low M	High M	Low M	High M	Low M
High Litigation Costs High Accommodation Profits High Fixed Costs							X	X					X	X
High Litigation Costs High Accommodation Profits Low Fixed Costs	X		X				X	X	X				X	X
High Litigation Costs Low Accommodation Profits Low Fixed Costs			X		X	X		X	X		X	X		X
High Litigation Costs Low Accommodation Profits High Fixed Costs	X							X	X					X
Low Litigation Costs High Accommodation Profits High Fixed Costs	X						X	X	X				X	X
Low Litigation Costs High Accommodation Profits Low Fixed Costs	X		X					X	X					X
Low Litigation Costs Low Accommodation Profits High Fixed Costs	X	X						X	X	X				X
Low Litigation Costs Low Accommodation Profits Low Fixed Costs	X	X							X	X				

Figure 3-4  
 Conditions for Equilibrium Paths  
 When the Small Firm Has a Low Probability of Success  
 Under the Federal and High Probability Under the State Law

	PREDATION AND FEDERAL SUIT (IN A STATE WITH A SBC LAW)								PREDATION AND FEDERAL SUIT (IN A STATE WITHOUT A SBC LAW)					
	Predatory Pricing and Federal Suit		Predatory Pricing and State Suit		Predatory Pricing and No Suit		Accommodation		Predatory Pricing and Federal Suit		Predatory Pricing and No Suit		Accommodation	
Dominant Firm's Potential Payoff from having a Monopoly	High M	Low M	High M	Low M	High M	Low M	High M	Low M	High M	Low M	High M	Low M	High M	Low M
High Litigation Costs High Accommodation Profits High Fixed Costs			X				X	X	X					X
High Litigation Costs High Accommodation Profits Low Fixed Costs			X				X	X	X			X		X
High Litigation Costs Low Accommodation Profits Low Fixed Costs			X		X	X		X			X	X		
High Litigation Costs Low Accommodation Profits High Fixed Costs			X	X				X			X	X		
Low Litigation Costs High Accommodation Profits High Fixed Costs			X					X	X	X				
Low Litigation Costs High Accommodation Profits Low Fixed Costs			X					X	X	X				
Low Litigation Costs Low Accommodation Profits High Fixed Costs			X	X				X	X	X				
Low Litigation Costs Low Accommodation Profits Low Fixed Costs			X	X					X	X				



Figure 3-5  
 Conditions for Equilibrium Paths  
 When the Small Firm Has a Low Probability of Success  
 Under the Federal and State Law

	PREDATION AND FEDERAL SUIT (IN A STATE WITH A SBC LAW)								PREDATION AND FEDERAL SUIT (IN A STATE WITHOUT A SBC LAW)					
	Predatory Pricing and Federal Suit		Predatory Pricing and State Suit		Predatory Pricing and No Suit		Accommodation		Predatory Pricing and Federal Suit		Predatory Pricing and No Suit		Accommodation	
Dominant Firm's Potential Payoff from having a Monopoly	High M	Low M	High M	Low M	High M	Low M	High M	Low M	High M	Low M	High M	Low M	High M	Low M
High Litigation Costs High Accommodation Profits High Fixed Costs	X	X	X	X				X	X	X				X
High Litigation Costs High Accommodation Profits Low Fixed Costs		X	X	X		X		X	X	X		X		X
High Litigation Costs Low Accommodation Profits Low Fixed Costs					X	X					X	X		
High Litigation Costs Low Accommodation Profits High Fixed Costs					X	X					X	X		
Low Litigation Costs High Accommodation Profits High Fixed Costs	X	X	X	X					X	X				
Low Litigation Costs High Accommodation Profits Low Fixed Costs	X	X	X	X					X	X				
Low Litigation Costs Low Accommodation Profits High Fixed Costs	X	X	X	X					X	X				
Low Litigation Costs Low Accommodation Profits Low Fixed Costs			X	X					X	X				

*i.  $E_{NS} > E_F, E_S$*

This case represents the scenario where the small firm's optimal strategy is not suing if the dominant firm chooses a strategy of predatory pricing. This yields the small firm a payoff of  $-f$  and the dominant firm a payoff of  $\alpha + (\delta M / (1 - \delta))$ . The figures above illustrate that this scenario is most likely when the probability of succeeding in a lawsuit is low, litigation costs are high, fixed costs are low, and accommodation profits are low. Also, this solution is more likely when there is not an active state SBC law (as illustrated by Figure 3-2).

Using backward induction, the dominant firm will assess whether to use predatory pricing given that the small firm will not sue. The dominant firm will elect to accommodate the small firm's entry only if the difference between predatory pricing profits and accommodation profits does not cover the losses that the dominant firm will incur in the initial below cost sales period. This can be shown by the following inequality:

$$\alpha + (\delta M / (1 - \delta)) > A / (1 - \delta), \quad (1)$$

which equals,

$$(\delta M / (1 - \delta)) - A / (1 - \delta) > -\alpha. \quad (2)$$

Given that  $\alpha$  is always negative, this inequality depicts the obvious result that predatory pricing must yield future profits that outweigh its predatory investment and the opportunity costs associated with accepting accommodation profits in the current and future periods. Some commentators suggest that predation is rarely a viable strategy. If they are correct in stating that predation is not a viable strategy, then accommodation is always

chosen regardless of the federal or state remedies. The dominant firm will not elect predate and the game ends with accommodation. If predatory pricing is the dominant firm's optimal strategy, the entrant will not sue and incur losses of  $-f$ . Thus, if no lawsuit yields the small firm's largest expected payoff, the small firm will receive profits of  $A/(1-\delta)$  or  $-f$ , depending on whether predatory pricing is profitable for the dominant firm. Sales below cost laws do not prevent or deter such conduct in this case.

Empirically, the models in this dissertation do not distinguish between the case where predation is not profitable or the small firm does not sue. In the first case, the small firms will not deteriorate over time as a result of the predatory pricing. In the second case, small firms will diminish over time, but will do so evenly across states. Testing the effects of state laws does not capture this distinction because the laws would be irrelevant in determining the number of small firms.

*ii.  $E_F > E_S, E_{NS}$*

If suing under federal antitrust laws yields the highest expected return for small firms that encounter predatory pricing, the sales below cost laws are not a factor that protects small firms. The small firm will sue the dominant firm under the federal antitrust laws if the dominant firm chooses a strategy of predatory pricing. The small firm's expected payout will be

$\mu_1 \left[ \left( \frac{A}{1-\delta} \right) + 2\gamma \right] + (1-\mu_1)(-f)$ . This payoff must yield a higher expected payoff than no

suit and a state SBC suit. The conditions for a small firm to elect this strategy are:

$$\mu_1 \left[ \left( \frac{A}{1-\delta} \right) + 2\gamma \right] + (1-\mu_1)(-f) > -f; \text{ and} \quad (3)$$

$$\mu_1 \left[ \left( \frac{A}{1-\delta} \right) + 2\gamma \right] + (1-\mu_1)(-f-l) > \phi_1 \left[ \left( \frac{A}{1-\delta} \right) + k * 2\gamma \right] + (1-\phi_1)(-f-l). \quad (4)$$

In order for a federal lawsuit to be superior to no suit, the following condition must be met:

$$\mu_1 > \frac{l}{\frac{\delta A}{1-\delta} + 3\gamma + l} \quad (5)$$

In order for the federal lawsuit to yield a higher expected payoff than the state suit, the following condition must be met:

$$\frac{\mu_1}{\phi_1} > \frac{\frac{\delta A}{1-\delta} + \gamma + k * 2\gamma + l}{\frac{\delta A}{1-\delta} + 3\gamma + l} \quad (6)$$

Several factors determine whether this is the equilibrium in the predation game. First, a high probability of succeeding in the federal suit is the most important factor eliciting this outcome. Second, low litigation costs coupled with high fixed costs increase the likelihood of this outcome. Third, this outcome requires that the state law does not contain a treble damage provision. The magnitude of the accommodation profits do make the federal suit more desirable than no suit, but only make the federal suit preferable to the state suit if litigation costs are large and fixed costs are small.

These results are intuitive as well. A small firm will be more likely to sue if the probability of winning a lawsuit is greater. Litigation costs serve as a deterrent to lawsuits. If the firm must pay larger litigation costs in the event that it unsuccessfully sues the dominant firm, its expected payoff will decline. Fixed costs are a sunk investment by the small firm. The small firm will absorb these losses if it does not sue. However, the court

will triple these costs in the form of recoverable damages if the small firm succeeds in a federal lawsuit, which significantly increases damages and the small firm's expected payoff from suing under the federal laws. The state law has a higher probability of success, which implies that it will have a higher expected payoff if it also includes identical damages to the federal law. This illustrates that the federal lawsuit should never be equilibrium if the state law provides treble damages.

Given that the small firm will sue under the antitrust laws, the dominant firm must choose to accommodate entry with a payoff of  $A/(1-\delta)$  or pursue a predatory strategy regardless of the lawsuit. This yields a strictly inferior payoff to the dominant firm for predatory pricing than the scenario where the small firm did not sue. The dominant firm will elect to choose a predatory pricing strategy only if the expected benefit from predation exceeds the payoff from accommodation. Thus, the dominant firm will predate only if:

$$(1-\mu_1)\left(\alpha + \frac{\delta M}{(1-\delta)} - 1\right) + (\mu_1)\left(\alpha + \frac{\delta A}{(1-\delta)} - 2l - 3\gamma\right) > A/(1-\delta). \quad (7)$$

which reduces to:

$$1-\mu_1 > \frac{A + 2l + 3\gamma - \alpha}{\frac{\delta M}{(1-\delta)} - \frac{\delta A}{(1-\delta)} + l + 3\gamma} \quad (8)$$

This result suggest that two primary variables, the dominant firm's probability of succeeding in the lawsuit and the magnitude of future monopoly profits, increase the chances a dominant firm chooses a predatory pricing strategy. All of the other variables, including current and future accommodation profits, fixed costs, litigation costs, and the cost of eliminating the rival in the first period lower the dominant firms likelihood of

predatory pricing. The effect of litigation costs depends on its relationship to the other variables.

If the payoff structure and probability of success are such that the dominant firm will accommodate, the small firm will receive accommodation profits and the game ends. If either the probability of a predator successfully defending its lawsuit or its potential monopoly profits are exceptionally high compared to the other relevant variables, then the predator can elect to use predatory pricing despite the potential for a lawsuit. In this case, the small firm will choose to sue the dominant firm.

The preceding results also possibly explain the reason that “predatory pricing is rarely tried.” Federal predatory pricing lawsuits are most likely to arise when accommodation profits or fixed costs are considerable when compared to litigation costs. The paradox facing small firms is that dominant firms are more likely to engage in predatory pricing when accommodation profits are relatively low compared to monopoly profits. This result is fairly intuitive in that dominant firms have little incentive to utilize a predatory strategy when accommodation profits are significant. Dominant firms will be unwilling to incur losses to eliminate rivals when the margin between monopoly and accommodation profits converges to zero. This creates a sorting issue suggesting that antitrust litigation is not likely an optimal outcome when predatory pricing is an optimal strategy.

*iii.  $E_S > E_F > E_{NS}$*

This equilibrium path depicts the scenario where the small firm is better off suing under the federal laws than refraining from suing, but would prefer to sue under the state

law to the federal law. If a state does not have a SBC law, the equilibrium is identical to the previous section where the small firm will sue under the federal law.

If the payoff structure is such that the dominant firm will accommodate, the small firm will enter the market and both firms each receive accommodation profits. However, the small firm must choose between a state suit, a federal suit, or no suit at all if the predatory pricing strategy maximizes the dominant firm's profits. If  $E_S > E_F > E_{NS}$ , then condition (5) above will be met, but condition (6) will not hold and the small firm will sue under the state law. If no state law is available, the firm will choose to sue under the federal laws. For this condition to exist, several factors must be present. The probability of winning the state suit must be significantly greater than the federal counterpart. Litigation costs must be low enough to encourage a suit, but not so low as to encourage a federal suit, and fixed costs must be high enough to encourage a suit, but not so high as to encourage a federal suit. Accommodation profits must also be significant. This condition will also be met if a state has treble damages and the federal suit is preferable to no suit.

The dominant firm will choose a predatory strategy only if its expected payoff from predation is higher than its accommodation profits, given that it will be sued under the SBC laws. I represent this condition with the following equation:

$$(1-\phi_2)\left(\alpha + \frac{\delta M}{(1-\delta)} - 1\right) + (\phi_2)\left(\alpha + \frac{\delta A}{(1-\delta)} - 2(1-\gamma) - 2k\gamma\right) > A/(1-\delta). \quad (9)$$

The only distinctions between the incentives that the state and federal law create are the differences in damages and the probability of success.

This equation can be simplified to:

$$1-\varphi_2 > \frac{A + 2l + \gamma + 2 * k\gamma - \alpha}{\frac{\delta M}{(1-\delta)} - \frac{\delta A}{(1-\delta)} + l + \gamma + 2 * k\gamma} . \quad (10)$$

This condition is similar to equation (8) for predation under the federal regime. An increase in future monopoly profits and a decrease in the small firm's probability of success are again the primary factors that increase the likelihood that the dominant firm chooses a predatory pricing strategy. However, increases in future accommodation profits, litigation costs, the small firm's fixed costs, and the cost of predation in the initial period remain the variables that also deter predatory pricing. The primary distinction between the state and federal incentive mechanisms is the effect of the damages. Treble damages increase the small firm's probability of success required for the dominant firm to choose predation. Thus, absent treble damages under the SBC law, the state laws must yield a higher probability of success to have any effect in deterring predatory pricing beyond the protection that the federal laws afford.

The combination of predatory pricing and state suits may also be a rare combination. Low accommodation profits increase the likelihood that a dominant firm will choose predatory pricing; however, low accommodation profits also lower the small firm's potential damages and reduce the incentive to sue under the state law. By contrast, when accommodation profits are large, the dominant firm will be less inclined to choose a predatory strategy and the small firm will be more inclined to sue. The requisite foundation for predatory pricing accompanied by a state legal response occurs when accommodation profits are sufficiently large and monopoly profits are substantially larger.



If the state remedy is superior the federal remedy and the federal remedy is preferred to no suit, the state laws may have an effect on small businesses. The federal law already provides protection for small firms, but the state law is preferred. Not all states have a SBC law. In the game where the small firm can choose the state remedy it will, but small firms will elect to sue under the federal laws in other states. Whether the state law protects small firms depends on the marginal effectiveness of the law. If the federal law does not deter predatory pricing, the state law may have the effect of deterring it. The state law may also effectively counter predatory pricing if it occurs by providing more court intervention.

*iv.  $E_S > E_{NS} > E_F$*

This condition occurs when the state law yields the highest potential payoff for the small firm and the federal law yields no protection. If a state does not have a SBC law, the equilibrium will be for the small firm to refrain from suing and lose its fixed costs. If  $E_S > E_F > E_{NS}$ , then neither condition (5) nor (6) will be met and the small firm will sue under the state law. In addition, the state law must also be more desirable no suit. This requires that

$$\varphi_1 > \frac{l}{\frac{\delta A}{1-\delta} + \gamma + 2 * k\gamma + l}. \quad (11)$$

The small firm will not sue if the state remedy is unavailable. The probability of winning the federal suit must be significantly low and the probability of winning the state suit must be high for this condition to exist. Litigation costs must be high with low accommodation profits. This condition arises out of the fact that damages are not substantial, but the probability of winning the state suit makes the decision to sue a viable alternative.

State laws are most likely to have an effect if this condition is met. However, in order for state laws to protect small firms under this condition, predatory pricing must be a viable strategy by the dominant firm. For example, predatory pricing is not likely to be a dominant firm's strategy when it sells durable goods because the dominant firm cannot promptly sell the product in the future at higher prices. In this case, the state law is irrelevant even though it would be used.

*v. Summary of the Predation Game*

There are four equilibrium paths of play. First, the dominant firm may find predatory pricing infeasible and accommodate. This can occur because the margin between monopoly profits and accommodation profits is sufficiently small that the benefits from predatory pricing and a future monopoly do not justify the expense that the dominant firm will incur in the initial period. The threat of a lawsuit may also deter the dominant firm from engaging in predatory pricing. The margin between monopoly and accommodation profits must be significant for this condition to exist.

The second alternative is that the dominant firm chooses a predatory pricing strategy and the small firm does not sue. This result occurs when the small firm has no incentive to sue and the dominant firm's receives a larger payoff from predatory pricing than accommodation. This equilibrium is most likely to occur when litigation costs are high, accommodation profits are low, and fixed costs are low. If a state does not have a SBC law this equilibrium path is also more likely.

Third, the dominant firm may choose a predatory pricing strategy when the small firm will sue under the federal antitrust laws. This result requires that potential monopoly profits from predatory pricing are large enough to induce the dominant firm to engage in

predation despite its litigation costs and the potential consequences of losing a lawsuit. The small firm will choose to sue when its lost accommodation profits are sufficiently large, and its litigation costs are minimized relative to accommodation profits. Fixed costs also increase the small firm's likelihood of initiating a federal lawsuit.

The fourth equilibrium involves suing under the state SBC laws once the dominant firm elects a predatory pricing strategy. This is not a remedy available in all states. In the game without a SBC alternative, the small firm must again choose only between no suit and accommodation. The key variables that encourage predation by a dominant firm or lawsuit by a small firm under the state laws are the same variables that affect the decision making process under the federal laws. The motivating factor for predation by a dominant firm is the margin between monopoly and accommodation profits. The dominant firm must also factor in the effect of the potential damages and litigation costs associated with a state SBC lawsuit, combined with its probability of successfully defending such a suit.

Conversely, the small firm will require significant accommodation profits sue the dominant firm. Litigation and fixed costs are the small firm's primary deterrent to entering and suing the dominant firm.

For purposes of this dissertation, if either no suit or the federal suit is equilibrium, the state laws are insignificant with respect to deterring predatory pricing. These equilibria have one of three meanings. First, the state law may not provide enough protection to induce the small firm to sue. Second, the state law may not provide additional incentive to sue beyond the protection the federal laws provide. Third, predatory pricing may not be a

viable dominant firm strategy. In any case, the effect of the SBC law is negligible and the state law should not test as significant to protecting small firms.

The most important equilibrium in this analysis is when the dominant firm will choose predatory pricing and the small firm will sue under the state laws. In this equilibrium, two important results can occur. First, the federal laws could still afford more protection to small firms than no suit. Small firms will sue under the SBC laws if the state permits, and sue under the federal law otherwise. The empirical tests may show that the state laws protect small businesses in this instance. The federal laws already provide some protection against predation, so the marginal effectiveness will determine whether the state laws are of any real importance. This result should be more profound when a state provides treble damages or a change in the expected returns to federal litigation occurs. For instance, treble damages increase the marginal effectiveness of the law by increasing the expected payout. This condition is likely when the SBC laws without treble damages have a minimal impact, but the laws with treble damages have a greater impact on small firm viability. Also, when the state law does not provide much more protection than the federal suit initially, the impact of the state law should increase as federal protection became less effective. This condition can be evaluated empirically. If the SBC laws provide minimal protection and the impact of the SBC law increases following the Matsushita decision, it is likely that the state laws were preferable to the federal law when the federal law was superior to no suit.

Secondly, the federal laws could provide no protection when the state law is the likely outcome. In this case, the state laws are most likely to have an effect on the viability

of small firms. A small firm would elect to refrain from suing if the state law is not available. This suggests that all of the small firm protection is attributable to the SBC law. In this instance, the impact of the SBC law on small firms should be significant while treble damages or a change in the federal regime should not increase the small firms beyond the simple SBC law. This result is likely because the SBC law is able to deter predatory pricing without treble damages or a shift in the application of the federal law.

It is still possible that the SBC law is not relevant even if the small firm would use it. The dominant firm may not have the incentive to choose predatory pricing. For instance, if the dominant firm sells durable goods, it will not have the incentive to utilize predatory pricing. Predatory pricing by a seller of durable goods presents an issue pertaining to the ability of a dominant firm to predate. A durable goods seller is unlikely to find predatory pricing profitable. A firm selling a durable good below cost will increase sales of the product and those sales may in fact eliminate a smaller firm. Following the initial period, the dominant firm will be unable to recoup its lost profits because there will be little demand left for the product once it increases its price. There are two primary reasons why the dominant may never recover its losses from pricing the durable good below cost. First, the dominant firm creates more current sales when it lowers the price of the durable good below cost and lowers its demand tomorrow since consumers do not typically purchase these goods in consecutive periods.<sup>98</sup> Second, consumers form expectations that the durable good monopolist will lower price in the future, because it can make additional profits by

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<sup>98</sup> Jean Tirole, The Theory of Industrial Organization, MIT Press, 1998, p. 73.

pricing off of the residual demand curve to maximize profits.<sup>99</sup> Consumers may wait to purchase the good until the price has declined. This would be the initial period in the case of predatory pricing. This result demonstrates that SBC laws should have an empirical impact in durable goods markets. The furniture stores, building materials, and automotive markets are all examples of market where the SBC law should have no impact.

The problem facing small firms is that accommodation profits are positively related to lawsuits under either the federal or state law. Equations (10) and (11) illustrate that accommodation profits lower the dominant firms desire to predate and increase the small firm's incentive to sue under the state law. Thus, small firms have the greatest incentive to sue when dominant firms have the greatest incentive to accommodate, regardless of legal remedies. This paradox explains why predatory pricing cases are “rarely tried”. The state law becomes more desirable relative to federal antitrust protection as accommodation profits increase.<sup>100</sup> This result again demonstrates the pitfall of the state SBC laws. The laws become more desirable as the likeliness that a dominant firm preys declines.

### **5. Player Strategies in the Loss Leader Game**

These games are nearly identical to their predation game counterparts. The only distinction between strategies in this game and the predation game is that the dominant firm elects to sell goods as loss leaders or accommodate. The loss leader strategy effectively replaces the predatory pricing strategy discussed in the preceding sections. I present two

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<sup>99</sup> Ibid.

<sup>100</sup> Willard F. Mueller and Thomas W. Patterson, *Effectiveness of State Below-Cost-Sales Laws: Evidence From the Grocery Trade*, Journal of Retailing, Volume 62 No. 2 (Summer, 1986), 166-184. The authors note that SBC laws tend to protect medium and larger stores more than smaller stores. These firms likely have larger accommodation profits than small firms, making the state law a more viable legal alternative.

variations of the game. Figure 3-6 illustrates the loss leader game when the small firm has the alternative to sue under the state SBC laws, and Figure 3-7 is a version of the game when the federal laws are the small firms' only available remedy. I solve for sub-game perfect equilibrium utilizing backwards induction in the same manner as the predation game.

Figure 3-6  
Loss Leader Game with an Option of a SBC Lawsuit

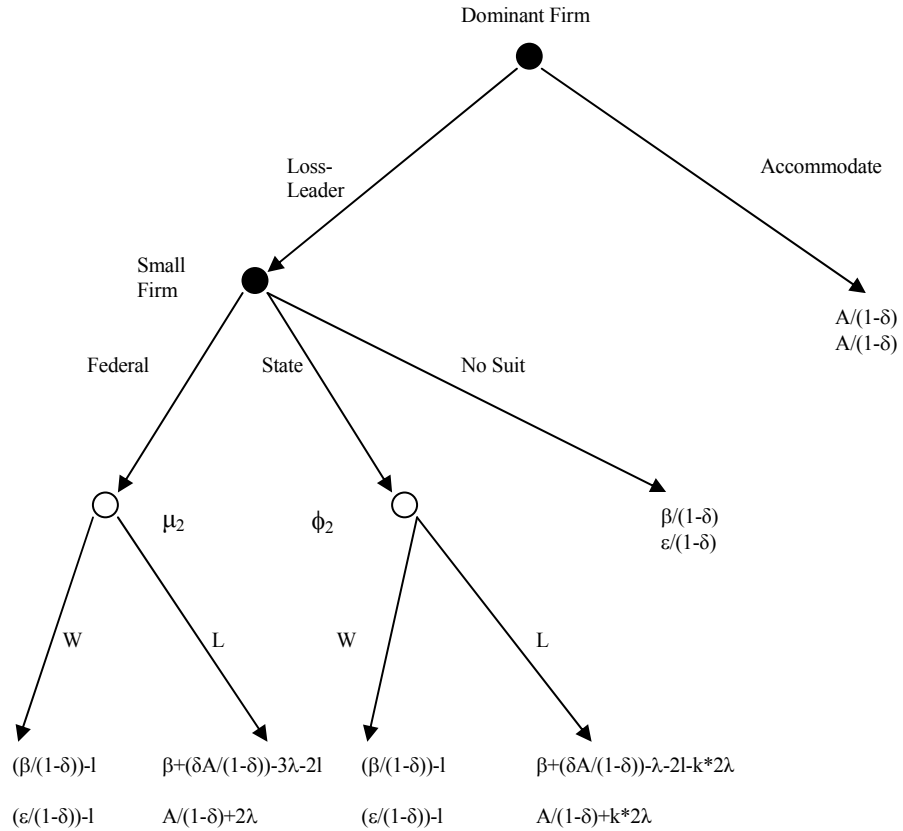
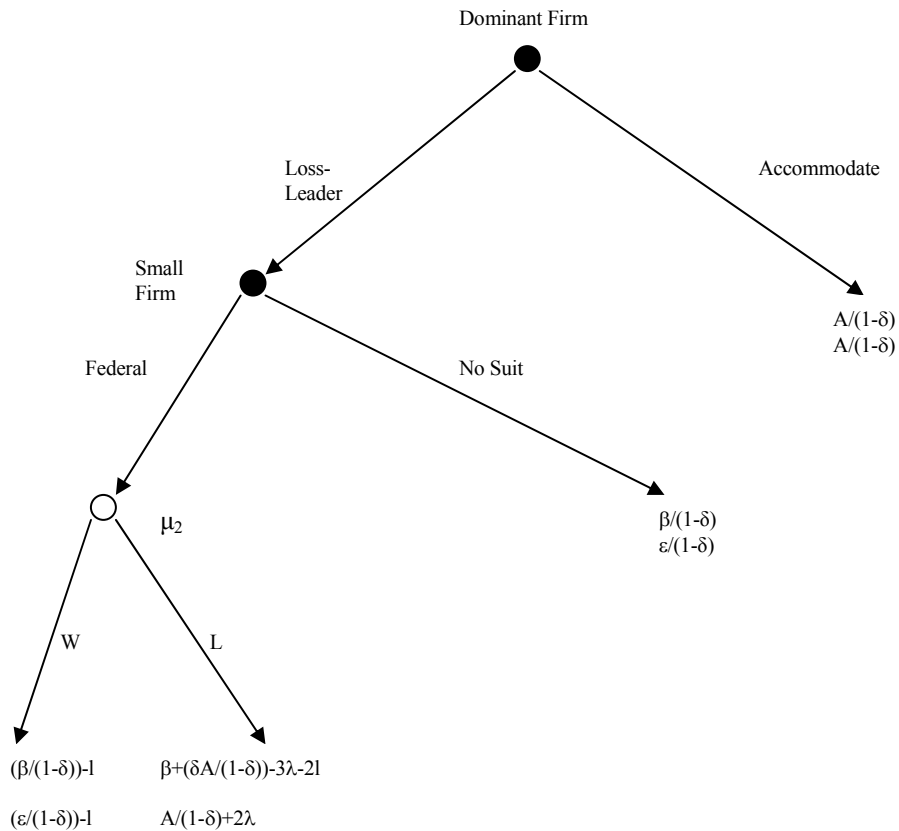


Figure 3-7  
Loss Leader Game with an Option of a SBC Lawsuit



### 6. Payoffs in the Loss Leader Game

The payoffs in the loss leader game vary significantly than the predation game for both the dominant and small firms. The only payoff that remains constant between the two games is the payoff for a strategy of accommodation by the dominant firm. In this instance, the payoffs are identical to the predation game counterpart. If the dominant firm accommodates the entry each firm's profits will equal  $A/(1-\delta)$ .

The solutions begin to take a different form if the dominant firm utilizes a loss leader strategy. If the small firm forbears from suing it does not necessarily lose all of its business. I distinguish this payoff from the predatory strategy based on the intent of loss



leader selling versus predatory pricing. Predatory pricing is specifically intended to eliminate rivals. A predatory strategy is not feasible if the dominant firm cannot eliminate or discipline its rivals.<sup>101</sup> Thus, predators are unlikely to attempt predation against rivals of significant size and financial clout. Loss leader strategies by contrast do not require that a firm harm its rival in order to be successful. Loss leaders are a current period profit maximizing strategy. As a result, loss leaders can be sustained indefinitely if there are no laws preventing such a practice.<sup>102</sup> Although loss leaders do not have to harm rivals to succeed, loss leaders do have the potential to harm rivals and alter future payoffs. In certain instances, the loss leader will have the effect of eliminating rivals, which creates a future payoff for the dominant firm that mimics the predatory pricing result.<sup>103</sup>

A small firm's payoff depends on the effect of the loss leader on its business. If the small firm forbears from suing the dominant firm the small firm will earn a payoff of  $\epsilon/(1-\delta)$ . The value of  $\epsilon$  can range between  $-f$  and  $A/(1-\delta)$ . A value of  $-f$  is applicable if the loss leader effectively forecloses the small firm's business in the same manner as predatory pricing.  $\epsilon$  will equal  $A/(1-\delta)$  if the loss leader does not negatively affect the small firm's business.

The dominant firm's payoff is  $\beta/(1-\delta)$  if the small firm does not sue under state or federal law. This payoff takes the range of  $A/(1-\delta)$  to  $\beta+\delta M/(1-\delta)$ . The dominant firm's payoff will resemble accommodation profits more closely only if the loss leader is

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<sup>101</sup> Authors and courts have also noted the possibility that a predator may use such a strategy to discipline rivals.

<sup>102</sup> Rajiv Lal, *Price Promotions: Limiting Competitive Encroachment*, *Marketing Science*, Vol. 9, No. 3, (Summer, 1990), 247-262. Lal observes that price promotions may be long-run profit maximizing strategies in addition to short-run considerations of increasing sales or market share.

ineffective in increasing its profits. The higher end of the range entails a first period profit from loss leader selling plus future monopoly profits if the small firm is eliminated from the market.

The small firm may elect to sue under the federal antitrust laws for attempted monopolization, albeit with a minimal probability of success as denoted by  $1-\mu_2$ . The reason that the federal laws have almost no chance for success is that the federal laws do not prohibit loss leaders. In order for the small firm to prevail, the court must err in applying the facts to the law and condemn the loss leader as a predatory pricing attempt. If the small firm does prevail its payoff will be  $A/(1-\delta)+2\lambda$ .

This payoff is the result of granting the small firm treble damages. The damage,  $\lambda$ , is equal to the difference between accommodation profits and its profits that result from the competitor's loss leader selling practice. Thus,  $\lambda=A-\varepsilon$ . If the small firm succeeds in its lawsuit, it receives its  $3\lambda$  in addition to the payoff of  $\varepsilon$  that it received from participating in the market. This equals  $3(A-\varepsilon) + \varepsilon$ , or  $A + 2\lambda$ . The court can also award injunctive relief that will forbid the dominant firm from pricing below cost. This will yield future accommodation profits in remaining periods of  $\delta A/(1-\delta)$ . The sum of the court award, the profits earned in the current period, and future profits equals a total payoff of  $A/(1-\delta)+ 2\lambda$ .

The dominant firm's payoff is a function of several factors if the small firm successfully sues the dominant firm in a predatory pricing suit. The dominant firm will receive  $\beta$  in the current period by selling goods as loss leaders. Additionally, the dominant firm's future profits will equal  $\delta A/(1-\delta)$  under the assumption that the court will prohibit

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<sup>103</sup> Willard F. Mueller and Thomas W. Patterson, *Effectiveness of State Below-Cost-Sales Laws: Evidence From the Grocery Trade*, *Journal of Retailing*, Volume 62 No. 2 (Summer, 1986), 166-184. The authors note that the most cost

future below cost sales. The dominant firm will be liable for treble damages and the small firms litigation costs in addition. This yields a total payoff of  $\beta+(A/(1-\delta))-3\lambda-2l$  if the dominant firm loses a federal antitrust case as a result of its loss leader strategy.

If the lawsuit fails, the small firms payoff will be its profits from competition given that the dominant firm sells goods as loss leaders minus litigation costs. This results in a total payoff to the small firm of  $\epsilon-l$ . The dominant will earn profits associated with loss leader selling in the current period and will maintain that profitability in future periods. The dominant firm will be responsible for the litigation costs it incurs as a result of the lawsuit. This yields a total payoff of  $(\beta/(1-\delta))-l$  to for the dominant firm.

The state law is the more viable alternative that small firms may utilize to prosecute for loss leader selling. Small firms have the potential to sue the dominant firm with a probability of success equal to  $\phi_2$ . Assuming that the state law does not permit treble damages, a small firm that successfully sues under the state SBC law is entitled to actual damages plus its litigation expenses. This remedy effectively places the small firm in the position that it would be in if the loss leader selling practice did not occur, which results in a payoff of  $A/(1-\delta)$ . If the statute does permit treble damages, the small firm receives a payoff of  $A/(1-\delta)+2\lambda$  if it succeeds.

The entrant's success will cause the dominant firm to incur costs associated with defending the lawsuit, compensating the defendant for its lost sales, and the actual damages of  $\lambda$ . The dominant firm will also be required to sell above cost in remaining future periods. Deducting the costs associated with losing the SBC lawsuit from the dominant firm's

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effective method of predation is to reduce the price of a relatively few price sensitive items.

current period loss leader profits plus future accommodation profits gives the dominant firm's total payoff of

$$\beta + (A/(1-\delta)) - \lambda - k * 2\lambda - 2l.$$

The small firm will receive the same payoffs under the state and federal legal regimes if small firm unsuccessfully sues the dominant firm. The payoff is simply its profits from competition minus litigation costs, or  $\varepsilon - l$ . The dominant firm's payoff is also identical to the outcome under the federal laws when it is successful. Its payoff is simply  $\beta/(1-\delta) - l$ . Figure 3-6 illustrates the strategies and payoffs of the loss leader game when a state remedy is available.

## 7. Payoffs in the Loss Leader Game

*i.  $E_{NS} > E_F, E_S$*

The small firm may find it optimal not to sue if the dominant firm utilizes a loss leader strategy. This implies that the small firm likely perceives the value of the damages it suffers arising from lost sales do not merit the expenditure of litigation costs. The dominant firm must choose its strategy to sell goods as loss leaders or accommodate the small firm. The dominant firm knows that it will not be sued if it chooses a loss leader strategy. This implies that the dominant firm will sell goods as loss leaders when:

$$\beta/(1-\delta) > A/(1-\delta), \tag{12}$$

where  $\beta/(1-\delta)$  is the dominant firm's payoff for selling certain goods at a loss.

The value that  $\beta/(1-\delta)$  assumes varies depending on the circumstances. The maximum value that it can assume is  $\beta + \delta M/(1-\delta)$ . This value represents a scenario where the dominant firm sells at a loss leader in the initial period and makes a profit of  $\beta$ , which

exceeds the value from accommodation. The value  $\delta M/(1-\delta)$  implies that the dominant firm's loss leader will eliminate the small firm in the future periods, allowing the dominant firm to reap future monopoly profits.

The dominant firm's minimum profit from selling loss leaders is  $\alpha + \delta A/(1-\delta)$ . This suggests that the dominant firm only incurs losses as a result of selling loss leaders in the first period, which is similar to predation. The dominant firm will accommodate in future periods because selling unprofitable loss leaders only results in lost profits when the small firm remains in the market.

A dominant firm has the incentive to sell loss leaders, irrespective of future profits,

$$\text{when } V_{A1}Q_{A1} + V_{B1}Q_{B1} > V_{A2}Q_{A2} + V_{B2}Q_{B2}, \quad (13)$$

where:

$V$ = The markup of price over cost.

$Q$ = The quantity sold by the dominant firm.

A and B represents goods A and B. The numbers 1 and 2 represents whether good A is being sold below cost or above cost respectively. This equation can be re-arranged to show that the selling good A as a loss leader will be profitable if:

$$V_{B1}Q_{B1} - V_{B2}Q_{B2} > V_{A2}Q_{A2} - V_{A1}Q_{A1}. \quad (14)$$

I assume that the loss leader will generate higher sales rather than a higher markup for good B. This allows me to set  $V_{B1}=V_{B2}$ . Now, the equation can be re-written as:

$$V_B(Q_{B1}-Q_{B2}) > V_{A2}Q_{A2} - V_{A1}Q_{A1} \quad (15)$$

Since the quantity of the firm will equal its market share times the market quantity demanded,  $Q_B$  can be set equal to  $\Delta_S B Q_{TB}$ , where  $Q_{TB}$  is the market quantity demanded and

$s_B$  is the dominant firm's market share of good B. Thus, the dominant firm will sell good A as a loss leader if:

$$\Delta s_B \geq \frac{V_{A2}Q_{A2} - V_{A1}Q_{A1}}{V_B Q_{TB}}. \quad (16)$$

This result depicts several implications regarding the profitability of loss leaders. The expense of selling a good below cost is the discount below cost times the quantity of the good the firm sells. There is also an opportunity cost associated with selling the good below cost. The magnitude of this opportunity cost plus the actual loss deters a firm from selling below cost.

Three factors will encourage the dominant firm to choose a loss leader strategy. The size of markup for the good sold above cost will increase the likelihood that the dominant firm sells good A as a loss leader. If the dominant firm can command large profits for good B, it will likely take initiatives to increase the sales of good B. The likeliness of loss leader selling also increases when the size of the market for good B is large. The size of market B will induce a dominant firm to attempt to gain more of that market. The dominant firm's change in market share of good B is a significant factor that will encourage a dominant firm to sell good A as a loss leader. This market share can be gained as a result of generating higher store traffic, a high negative cross-elasticity of demand between goods A and B, or a number of other factors.<sup>104</sup> Thus, the significance of a loss leader is not in its ability to

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<sup>104</sup> This result is consistent with the literature on loss leader pricing that shows loss leaders are used to increase demand for other products, increase store traffic, promote products, gain a reputation for being the low cost seller, and attract high value customers. See, Timothy J. Richards, Paul M. Patterson, and Luis Padilla, *Price Promotion by Multi-Product Retailers*, Paper presented at the First Biennial Conference of the Food Systems Research Group Madison, Wisconsin, June 26 - 27, 200; Patrick DeGraba, *Volume Discounts, Loss Leaders, and Competition for More Profitable Customers*, Working Paper, April 2003, pp. 2.

eliminate rivals, but its ability to increase the sale of other goods. An attempt to sell goods below cost when the effect of those sales is not congruent with condition (16) is dependent on recouping current losses and a predatory strategy rather than a loss leader.

Whether the retailers sell a single or multiple products is another factor that influences a firm's decision to implement a loss leader strategy.<sup>105</sup> When both firms are sellers of a single product, there can be no claim that the pricing conduct is a loss leader strategy because a firm selling a single product below cost will lose profits on the endeavor. This is only rational if the entrant is eliminated from the market and the incumbent's discounted future monopoly profits are greater than the losses it incurred from the below cost sales combined with the profits it lost by failing to accommodate the entry.

The case of both the entrant and incumbent selling multiple products is similar to the single good case. If two firms sell identical products, there can be no rational loss leader strategy unless the resulting loss on one product creates sufficient demand on the other goods that outweighs the loss on the good sold below cost. However, such a strategy should not result in the elimination of small firms from the market. Assuming the customer bases and cross-elasticities are the same, it would be rational for the small firm to mimic the loss leading behavior of the dominant firm if the loss leader strategy is rational. Both firms would likely find it undesirable to sell loss leaders when other firms mimic the strategy. This behavior simply creates losses for the sale of one good with no resulting increase in market share for the other good.

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<sup>105</sup> For this reason, most articles pertaining to loss leader pricing address multi-product retailers, with a special emphasis on grocery stores.

There is one caveat to the analysis above. The analysis assumes that the firms and consumers have perfect information regarding price. Lack of price information is one rationale for loss leader selling.<sup>106</sup> A firm can exploit search costs and induce consumers to purchase all of its needs at one store if prices are not common knowledge. This allows stores to initiate loss leader policies with asymmetric price information to attract high value customers, even when its competitors sell identical products.<sup>107</sup> All firms may find loss leader pricing a necessity when consumers have limited information. If only one firm initiates the loss leader price, it will gain an advantage over other firms by reducing consumer search costs and increasing customer traffic.<sup>108</sup> The store will attract the high value customers as a result.<sup>109</sup> Other firms must also follow the behavior or risk losing the high value customers to competitors. Thus, all firms in an industry may utilize loss leaders when consumers lack of information pertaining to price.

It is plausible that a dominant firm will sell multiple products in a market where small firms are single product sellers. Although not a precise example, some firms utilize a combination store format wherein the store sells groceries and general merchandise. These firms often sell gasoline that competes with gasoline convenient stores. This scenario poses a different problem than either of the preceding market structures. A weak or strong incumbent may choose a rational loss leader strategy that also has the effect of eliminating

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<sup>106</sup> Timothy J. Richards, Paul M. Patterson, and Luis Padilla, *Price Promotion by Multi-Product Retailers*, Paper presented at the First Biennial Conference of the Food Systems Research Group, Madison, Wisconsin, June 26 - 27, 2003; Patrick DeGraba, *Volume Discounts, Loss Leaders, and Competition for More Profitable Customers*, Working Paper, April 2003, pp. 4.

<sup>107</sup> Patrick DeGraba, *Volume Discounts, Loss Leaders, and Competition for More Profitable Customers*, Working Paper, Draft Date April, 2003.

<sup>108</sup> Rajiv Lal and Carmen Matutes, *Retail Pricing and Advertising Strategies*, *The Journal of Business*, Vol. 67, No.3, July 1994, p.346.



a rival. If the incumbent prices the entrant's good below cost, it can theoretically acquire the market for that good while maximizing current period profits. This strategy requires that the cross-elasticity of demand is sufficiently negative and large for the two products. Complementary goods may rationally be sold as loss leaders even if the firm is a multi-product monopolist.<sup>110</sup> This market structure allows the dominant firm to eliminate rivals without incurring initial losses. The dominant firm can essentially use a rational loss leader strategy that will have the same effect as predatory pricing in the long run.

The dominant firm will accommodate the small firm's entry when accommodation profits are greater than its profits from loss leader selling. This implies that property (12) is not satisfied. The small firm then faces a decision to enter with profits of  $A/(1-\delta)$  or to refrain from entering with profits of zero. The small firm will rationally enter the market.

The dominant firm will elect a loss leader strategy when property (12) is satisfied. The small firm must not choose between staying out of the market with zero profit and entering the market with a payoff equal to  $\varepsilon/(1-\delta)$ . This value can range between  $A/(1-\delta)$  and  $-f$ . If the loss leader is relatively ineffective, the dominant firm's below cost sales should have little effect on the small firm. This implies that the small firm's payoff should not deviate much from  $A/(1-\delta)$ . This scenario is most likely when both firms carry similar product lines as described above. If the dominant firm's loss leader has the effect of eliminating the small firm, as in the case where the dominant firm carries a more extensive product line, the small firm will be eliminated from the market and receive a payoff of  $-f$ . The small firm will enter the market only if  $\varepsilon/(1-\delta) > 0$ , otherwise it will stay out. Neither the

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<sup>109</sup> Ibid.

state nor federal law will encourage entry by small firms when a dominant firm's loss leader causes the small firm to suffer negative profits and the small firm's optimal strategy is to refrain from suing.

ii.  $E_F > E_S, E_{NS}$

This strategy reflects the scenario where the small firm's response to a loss leader strategy is to sue under the federal antitrust laws. This result is generally not feasible, as the federal antitrust laws are not intended to prevent loss leader selling.<sup>111</sup> This condition is only plausible if the damages from loss leader selling are so large that the small firm is willing to risk the probability that the court errs in its favor.

The dominant firm will choose between selling a loss leader and accommodating the small firm's entry. The dominant firm will choose a loss leader strategy if:

$$(1-\mu_2)(\beta/(1-\delta)-1) + \mu_2(\beta + (\delta A/(1-\delta))-3\lambda-2l) > A/(1-\delta) \quad (17)$$

The dominant firm can reasonably assume it will succeed in the lawsuit because it has no expectation that the loss leader is illegal under the federal law, and the court should not grant relief to the small firm. This result is similar to the scenario where no suit is the small firm's optimal strategy. The only distinction is that the dominant firm must account for the possibility of litigation costs when balancing the benefits of loss leader pricing with accommodation. Whether dominant firm implements a loss leader strategy is again dependent on the factors making loss leading profitable. The dominant firm will accommodate if loss leader pricing minus litigation costs yield a return less than

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<sup>110</sup> Jean Tirole, The Theory of Industrial Organization, MIT Press, 1998, p. 70.

<sup>111</sup> Phillip E. Areeda and Herbert Hovenkamp, Antitrust Law : An Analysis of Antitrust Principles and Their Application (18 Volume Set), (1995) ¶742f.

accommodation. The dominant firm will continue with the loss leader strategy if it yields superior profits to accommodation.

The small firm will be face a decision to refrain from entering the market or sue under the antitrust laws if the dominant firm does not accommodate. It will sue under the antitrust laws if:

$$(1-\varphi_2)((\varepsilon/(1-\delta)) - 1) + \varphi_2((A/(1-\delta)) + 2\lambda) > \varepsilon/(1-\delta) \quad (18)$$

The problem for the small firm is that its probability of success,  $\mu_1$ , is approximately zero. Thus, the small firm's payoff from loss leader selling is generally lower by the amount of the litigation costs. Its only chance for a positive payoff is if the probability that the court errs is significant. This results in the same conclusion reached when the small firm's greatest payoff was abstaining from suing. The small firm will enter the market if  $\varepsilon/(1-\delta) > 0$ . Stated differently, the small firm must be able to remain viable in lieu of the dominant firm's predatory pricing. This result illustrates that the federal law essentially provides protection to small firms against loss leader pricing only to the extent that the court errs.

*iii.  $E_S > E_F, E_{NS}$*

Unlike their federal counterparts, state SBC laws punish dominant firms for loss leader pricing. The state SBC law is the small firms best alternative when:

$$(1-\varphi_2)((\varepsilon/(1-\delta))-1) + \varphi_2((A/(1-\delta)+k*2\lambda) > \varepsilon/(1-\delta) \quad (19)$$

This suggests that a small firm will sue when the discrepancy between accommodation profits and it profits when the dominant firm sells loss leaders merits the potential of incurring litigation at a given probability.

The dominant firm is forced to consider the affect of its lawsuit on its profits before electing a loss leader strategy. The dominant firm will elect a loss leader strategy when:

$$(1-\phi_2)((\beta/(1-\delta)-1) + \phi_2((\beta + (A/(1-\delta))) - \lambda - 2l) > A/1-\delta. \quad (20)$$

which can be re-written as:

$$\frac{\lambda + 2l - \beta}{\frac{\delta B}{1-\delta} - \frac{A}{1-\delta} + \lambda + l} > 1 - \phi_2. \quad (21)$$

This result illustrates that the size of accommodation profits, litigation costs, and the small firm's profits when it utilizes loss leaders negatively influences its decision to sell loss leaders. The small firm's current profits have an inverse relationship with the dominant firm's expected payoff. As the small firm's expected payoff increases,  $\varepsilon/(1-\delta)$ , the small firm's damages increase,  $\lambda$ , creating a disincentive to loss leader selling. The dominant firms current and future profits that accrue from loss leader selling positively influence the firm's decision to sell goods as loss leaders.

The dominant firm's profits from loss leader selling in the current and future periods provide greater incentive to utilize loss leaders. Critics of predatory pricing often argue that it is not feasible because the potential for future monopoly profits do not justify the first period predatory investment, especially if there are limited barriers to entry in the market. Loss leader sales do not entail the same problem. Loss leaders are profitable and profit maximizing in the first period. A dominant firm can technically utilize this strategy indefinitely. Of course, the value of this strategy increases to the dominant firm as it has the ancillary effect of eliminating small firms from the market. However, as the strategy eliminates firms from the market, it increases the small firm's incentive to sue. This

suggests that loss leaders will occur and be accompanied by a lawsuit in situations where the dominant firm is a multi-product seller and the small firm carries a less diverse line of products.

If the dominant firm pursues a loss leader strategy, the small firm will elect between entering and suing under the state SBC laws or staying out of the market. The small firm will enter if:

$$\phi_2((\varepsilon/(1-\delta))-1) + (1-\phi_2)((A/(1-\delta)) > 0 \quad (22)$$

or

$$A/(1-\delta) > \phi_2((A/(1-\delta)) + 1 - \varepsilon/(1-\delta)). \quad (23)$$

Multiplying both sides by  $1-\delta$  yields:

$$A > \phi_2 (A - \varepsilon + 1(1-\delta)) \quad (24)$$

Which illustrates that the entrant will sue when:

$$\frac{A}{\lambda + 1(1-\delta)} > \phi_2. \quad (25)$$

Equation (25) demonstrates that accommodation profits increase the likelihood of a lawsuit. If the loss leader does not significantly harm the small firm, or if litigation costs are large the small firm will likely refrain from entering the market.

The loss leader problem still presents the same paradox that predatory pricing did in regards to incentives. Large lost accommodation profits still serve as one of the primary factors that induce small firms to sue. However, as these accommodation profits grow, they serve as a deterrent to loss leader selling. Equation (16) also illustrates this result. It should be noted that state laws do provide additional protection for small firms in the case of loss

leaders. Since the federal law does not deter the practice, states with SBC laws should have a higher presence of small firms.

*iv. Summary of the Loss Leader Game*

This game depicts the scenarios when the dominant firm will pursue a loss leader strategy and when the small firm will respond with a lawsuit. State SBC laws are the only viable alternative to protecting small firms if loss leaders threaten the viability of the small firm. The probability of success under the antitrust laws is near zero because the law is not a restraint on loss leaders. It is clear that the state law is the only remedy available if a firm chooses a loss leader strategy. Since the state law does not serve as a surrogate to the federal law in this instance, the relevant inquiry is whether loss leader strategies tend to eliminate rivals, and whether the small firms will respond with lawsuits as a result.

The dominant firm will sell goods as loss leaders in situations where the dominant firm sells a more diverse line of products than its smaller rival. Additionally, the losses that the dominant firm incurs on the good sold below cost must generate cross sales in its other products. Its goal with the loss leader is to attract consumers to the more valuable product line and gain a larger market share of that line.

Loss leaders can be profit maximizing in the initial period and be an optimal strategy regardless of the effect it has on small firms. However, the dominant firm's profits increase if the loss leader has the ancillary effect of eliminating its rival. This is the scenario that will most likely lead to litigation. The dominant firm has the greatest incentive to sell loss leaders and the small firms losses are at a maximum because it is eliminated from the market. This effect is balanced by the possible accommodation profits. Accommodation profits are an opportunity cost to dominant firms and dissuade loss leader

strategies. Firms will require smaller opportunity costs to choose a loss leader strategy. Small firms find this property unappealing if they desire to initiate a lawsuit. This again poses the same paradox as predatory pricing. Small firms become more willing to sue, as dominant firms are less willing to sell goods as loss leaders.

### **C. Testable Hypotheses for Empirical Study**

In the next chapter this paper provides an empirical study on whether sales below cost laws protect small businesses. I developed a set of testable hypotheses from the work in this section to focus the scope of the empirical study. The purpose of these hypotheses is to analyze if and how state sales below cost laws will extend beyond the federal predatory pricing laws to protect small businesses. The testable hypotheses are as follows:

1. The analysis pertaining to predatory pricing revealed that the most common factors eliciting predatory pricing by dominant firms can also deter lawsuits and vice versa. If this scenario occurs, neither the available federal or state remedies should deter predatory pricing or provide incentive for lawsuits that would protect small firms. SBC laws should not deter predatory pricing or protect small firms from predation in this instance, and the SBC laws should test insignificant.

2. If the state law is superior to the federal law and the federal law deters predation, the SBC variable will test significant depending on the marginal effectiveness of the law above and beyond the federal protection. More importantly, the impact of the state law should increase as the federal protection diminishes. I test this hypothesis by examining the effect of the state laws when the potential for recovery under the federal laws diminished. If the state laws prevent predatory pricing, the effect of the SBC laws should increase after

the *Matsushita* decision. Additionally, factors that increase the probability of success under the state law, such as minimum markup requirements, should increase the viability of the law.

3. If the state law is superior to an irrelevant federal law, the state law will most likely show an increased presence of small firms. Since the state law alone discourages predatory pricing, the effect of treble damages and deterioration of the federal law should be minimal. I test this hypothesis by examining the effect of state laws, treble damage provisions, and by evaluating the effect of the laws on the percentage of small business as federal protection against predatory pricing withered throughout the 1970s, 1980s, and 1990s. If this case holds, the SBC law should be significant, with less significant treble damage provisions and changes in the environment of predatory pricing.

4. Firms should not select a predatory pricing strategy for durable goods. The ability to recoup losses is limited with these goods. State laws should not protect sellers of durable goods against predatory pricing, because predatory pricing should not occur. This hypothesis is tested in the hardware/building materials market, the tire/automotive market, and the furniture market.<sup>112</sup>

5. This chapter suggests that state SBC laws are strictly superior to federal antitrust laws with respect to protecting small firms against loss leaders. The SBC laws should show a positive and significant correlation between state SBC laws and the percentage of small firms in a state. Minimum markup provisions should increase the likelihood that the SBC law protects small firms from loss leader pricing. These provisions provide a statutory

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<sup>112</sup> These markets are all defined as durable goods retailers by the Census Bureau. *Monthly Retail Trade Survey*, 1991 Retail Sales, U.S. Census Bureau.



measure of cost and allow a small firm to sue with a reasonable degree of certainty. States without such a provision still enforce fixed cost provisions, but the certainty associated with a lawsuit is absent.

6. This chapter suggests that firms most likely to utilize loss leader selling practices are firms that sell multiple product lines. It also suggests that the loss leader products should bear a high negative cross-elasticity with other products in the store. Loss leader pricing should be most common in the following markets: Grocery stores, variety/general merchandise stores, and hardware stores.<sup>113</sup> The effect of SBC laws should be most prevalent in these markets.

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<sup>113</sup> Rajiv Lal and Carmen Matutes, Retail Pricing and Advertising Strategies, *The Journal of Business*, Vol. 67, No.3, July 1994, p.345, describes how there has been an increase on the emphasis on loss leader selling in grocery stores. The website Motley Fool in an article on November 23, 2003, describes Lowe's and Home Depot as using loss leader strategies *Target, Wal-Mart, and a Runaway Disco*, <http://www.fool.com/news/take/2003/take031125.htm>; and the USA Today depicts loss leader selling strategies by Wal-Mart and Target in the general merchandise market. *Target takes the toy fight to Wal-Mart*, USA Today, November 24, 2003.

## Chapter 4

### EMPIRICAL TESTS OF SALES BELOW COST LAWS

#### A. Introduction

This chapter tests whether state sales below cost laws protect small businesses. Small businesses should be more prevalent in states with sales below cost laws if these laws are effective. Houston and Anderson and Johnson find that general SBC laws have done little to prevent the decline of small businesses, but they use different techniques for estimating the number of small businesses. They utilize a different functional form for estimating the impact of SBC laws and they do not account for the intricacies distinguishing SBC laws. In addition, both analyses examined a cross-sectional data set rather than a panel model. The Anderson and Johnson article is a specific inquiry into the effect of sales below cost laws on retail gasoline, whereas Houston examines total retail sales as well as a number of specific industries.<sup>114</sup>

A study by Skidmore, Peltier, and Alm utilizes a functional form similar to the one I present in this chapter. They examine the effect of SBC laws on price and the number of small firms in the retail gasoline market using a panel data set adjusted for homoskedasticity and serial correlation. Their article does not examine the general SBC laws across several industries, nor does it account for the intricacies in the laws such as

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<sup>114</sup> Anderson, Rod W. and Johnson, Ronald N., *Antitrust and Sales-Below-Cost Laws: The Case of Retail Gasoline*, Review of Industrial Organization 14, 189-204, 1999; Houston, Michael J., *Minimum Markup Laws: An Empirical Assessment*, Journal of Retailing Vol. 57, No. 4, 98-113 (Winter 1981).

treble damages.<sup>115</sup> Nevertheless, their article provides a similar structural framework for testing the effects of the state law.

The following features illustrate the novelty of this study:

- 1) It examines multiple facets of state SBC laws
- 2) It examines the effect of the SBC laws using data that is the most reliable in sorting out small firms.
- 3) It attempts to examine the effect of SBC in a unique fashion by utilizing a panel data set over various industries.
- 4) It attempts to exploit the differences among state laws and examine the combined impact of fair trade laws and SBC laws on small businesses.

Part B of this chapter explains the dependent variables chosen to represent the presence of small businesses. Part C of this chapter explains the explanatory variables used in the study. Part D contains a description of the SBC dummy variables chosen and Part E explains the functional form of the tests. Part F presents the results of the study, and Part G concludes this chapter.

## **B. The Dependent Variables**

I use three different data sets to measure small businesses. I use three data sets because no one data set was thorough enough to perform all the analyses in this chapter. I wanted a definitive data set that measured the number of small firms by state from a period

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<sup>115</sup> Mark Skidmore, James Peltier, and James Alm, *Do State Motor Fuel Sales-Below-Cost Laws Lower Prices?* Journal of Urban Economics, Vol. 57, 2005, pp. 189-211. It should be noted that the authors state that Minnesota repealed its law in 1995, and that they did not detect Virginia as ever having a SBC law. The Minnesota law remains intact up to the present, and Virginia did have a law that was later repealed.

of time when states enacted the laws to the present. Unfortunately, each data set only had some of the characteristics I desired, which led me to utilize a combination of data sets.

The first set of dependent variables based on firm size was created from data contained in the *Census of Business* for 1929-1967. Eight Censuses were produced during this period of time.<sup>116</sup> I ended this data set in the year 1967 because the Census ceased providing state specific data on single establishment retailers in the following years.

Data for grocery stores and variety stores were available in every time period. Data for the remaining industries examined were available for seven of the eight years. Over this time period, I examined several industries, including: grocery stores (SIC 541), variety stores (SIC 533), tire stores (SIC 553), furniture stores (SIC 5712) and hardware stores (SIC 5251). Unlike previous studies of state SBC laws, I do not include the retail gasoline sector. Many states enact specific gasoline SBC statutes. The effect of these product line specific laws may alter the effect on small businesses apart from the general SBC law.

I omit Alaska and Hawaii from the data set because they were not states in some of the years contained in the sample. I define small businesses to be firms that owned exactly one establishment in the 1929-1967 sample. All establishments owned by a firm that operated any other establishments are large establishments for purpose of this study.

The second measure I use to identify small and large businesses is data that depicts establishment size based on the total number of employees per establishment. This data was available on an annual basis from the County Business Patterns database at the

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<sup>116</sup> The sample represents the years 1930, 1935, 1939, 1947, 1954, 1958, 1963 and 1967.

University of Virginia for the years 1977-1997.<sup>117</sup> I examined the national distribution of firms across the various employment sizes, and parsed the data into small or large establishments in order to calculate the percentage of small businesses using these data. The high threshold for defining a large business was chosen because only the larger firms with adequate resources to absorb losses in the short-run will likely pursue predation.<sup>118</sup> The five industries examined in this context were: Building materials & garden supplies (SIC 52); Food stores (SIC 54); Automotive dealers & service stations (SIC 55); General merchandise stores (SIC 53); and Furniture and home furnishings stores (SIC 57).

It is important to examine the SBC laws and this time period because the major transformation of federal predatory pricing laws changed after 1975 with the acceptance of the Areeda-Turner article. During these years, courts made proving predatory pricing conduct illegal very difficult. The state law should be an alternative remedy for small firms; so small firms should utilize the state laws more during these years if they perceive potential illegal pricing by dominant firms. Thus, the tests for this time period should capture whether firms used the state law as an alternative to the federal law in predatory pricing cases.

The last set of dependent variables is data on the total number of establishments for the same industries I examined in the years 1929-1967. I used the data available in every Census of Retail Trade.<sup>119</sup> I do not consider this data as satisfactory as the other data sets,

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<sup>117</sup> This database is located at <http://fisher.lib.virginia.edu/cbp/state.html>.

<sup>118</sup> The threshold number of employees used to classify large establishments are as follows: Food Stores- greater than 50 employees (largest 8%); General Merchandise- greater than 99 employees (largest 20%); Building Materials- greater than 19 employees (largest 10%); Furniture- greater than 19 employees (largest 5%); Automotive Dealers- greater than 19 employees (largest 10%).

<sup>119</sup> This includes the years: 1929, 1935, 1939, 1947, 1953, 1957, 1963, 1967, 1977, 1982, 1987, 1992, and 1997

because large firms often operate multiple retail establishments, and this data set does not distinguish between establishments operated by large or small firms. However, a market dominated by large firms should not operate as many stores as many small competitors theoretically.

### **C. Legislative Variables**

The details of the laws differ across states, and the effectiveness of a law in protecting small businesses may well depend on these details. Important differences among the laws include treble damages, the constitutionality of the laws and whether the laws contain a minimum markup provision. I tested the effectiveness of the laws without any attributes, as well as the effectiveness of the law when coupled with state specific attributes. In addition, the effectiveness of these laws was also tested in conjunction with other small business legislation (the fair trade laws) and with alterations in interpretation of federal predatory pricing legislation to examine whether other laws were responsible for the presence of small firms, or whether the state law became more viable as federal protection diminished.

#### *a. Minimum Markup Provisions*

Small firms get the primary benefit of minimum markup provisions because it removes the vagueness or ambiguity associated with determining whether a plaintiff has priced below cost. This attribute of an SBC law may encourage small firms to pursue action under the statute since replacement cost of an item may be easily discovered and invoice cost may be inferred from a firm's own price, whereas the cost of doing business

may be difficult to discern if the state did not enact a provision requiring a specified markup.

In the sample period from 1929-1967, twenty-one states had SBC laws with markup provisions and nine had no markup provisions. California and Idaho enacted these provisions in the 1950s, after the initial law was adopted. In the sample 1977-1997, fifteen states had minimum markup provisions and eight did not. Arizona had a markup provision and Washington did not, but both repealed the SBC law during the sample. Wisconsin repealed its markup provision during the sample. Thus, the markup provision is not simply a measure of state fixed effects.

*b. Treble Damages*

Treble damages are another attribute of many of the state enactments that vary according to jurisdiction. Many states allow treble damages to plaintiffs harmed by the below cost sales tactics of the defendant. States enacting such provisions created a SBC law that carries the same damages as the federal antitrust statutes. Given that the evidentiary requirements under the state law are less than the federal law, the state law with treble damages provides a better alternative for small firms to defend against predatory pricing. In the previous chapter, I illustrated that the federal laws are not effective with respect to deterring loss leader sales. This means that the state law will likely be the chosen remedy against loss leader sales, regardless of treble damages. However, treble damages will ensure that the state law provides a superior remedy to the federal law. Thus, a significant treble damage provision likely indicates that the state laws are effectively deterring predatory pricing.

In the sample period from 1929-1967, twenty-one states had SBC laws with treble damages and nine had no provision for treble damages. California enacted this provision in the 1950s, after the initial law was adopted. In the sample 1977-1997, fourteen states had minimum markup provisions and nine did not. Neither Arizona nor Washington allowed for treble damages, but both repealed the law during the sample. Thus, treble damages are not simply a measure of state fixed effects.

*c. Constitutionality of the SBC Laws*

Courts frequently attack the SBC laws on the basis of unconstitutionality. The constitutional challenges have varied from violations of due process to vagueness into a state's definition of cost. Courts may declare the laws unconstitutional in whole or part. Legislative responses to the court action vary. Some states chose to let the law remain with the defect; some states chose to later repeal the legislation, and some states enacted provisions (or new laws) correcting the constitutional defect.

*d. Fair Trade Enactments*

In the sample period from 1929-1967, twenty states had SBC laws not deemed unconstitutional, and ten state laws were deemed unconstitutional. However, five of these states later remedied the defect in the law. In the sample 1977-1997, nineteen states had constitutionally valid provisions and four did not. Arizona and Washington both repealed the law during the sample, and Arizona was one of four states with a law deemed unconstitutional.

Fair trade acts were another important type of law passed by states to protect small businesses in the chain store era of the 1930s. Fair trade acts allowed retailers and upstream firms to make agreements to maintain a particular price level. These agreements typically



constitute Sherman §1 violations as resale price maintenance schemes, however in 1937 Congress enacted the Miller-Tydings Amendment allowing states to enact legislation permitting contracts between vertically related firms setting minimum resale prices. This legislation was hindered in several states by courts invalidating the non-signor provisions of the fair trade acts. The non-signor provisions allow upstream firms to contractually require that downstream firms not sell below a certain price. These provisions were a significant piece of the fair trade legislation because the provisions were the primary means by which a firm could enforce the minimum resale price. The fair trade legislation was incorporated into the regressions by evaluating whether a state enacted a fair trade law, whether the non-signor provision of the fair trade law was valid and whether the state also had a SBC law.

Twenty-nine states contained provisions for sales below cost and fair trade agreements with non-signor provisions at some point during the sample. Eleven states had sales below cost laws with fair trade agreements not containing non-signor provisions at some point during the sample. Twenty-eight states contained provisions for fair trade agreements with non-signor provisions at some point during the sample. Seven states contained provisions for fair trade agreements without non-signor provisions at some point during the sample, and six states only had SBC laws during the sample period. Thus, these terms do not simply represent state fixed effects.

*e. Predatory Pricing Case Law*

The *Matsushita* decision in 1986 and the *Brooke* decision in 1993 were major precedents that altered the application of the federal predatory pricing laws. The current application of the law after the *Matsushita* case is that firms must have a dangerous

probability of recoupment under the Sherman Act. The *Brooke* case aligned the conduct of predatory pricing under the Robinson-Patman Act more closely with the Sherman Act.<sup>120</sup> A plaintiff must now show that the defendant has a reasonable prospect of recoupment under the Robinson Patman Act. Evidence to prove this assertion is likely difficult to acquire, even if such a probability exists in reality. Given that this requirement limits a firm's protection under the federal laws, the SBC laws can plausibly be use to fill the gap, eliminating conduct that the federal laws now condone. The tests on these variables should be significant and greater than the results on general SBC laws if they deter predatory pricing. However, if the theory that firms do not have incentive to sue when other firms have incentive to prey, the effects of the SBC laws after *Matsushita* and *Brooke* should be no greater than the standard test of the SBC laws.

*f. Legislative Variables Defined*

Below is a list and definition of the variants of SBC laws used in this study:

*SBC*- This is a dummy variable which equals one if state that had a general SBC law during a given year. This variable should increase small businesses if SBC laws provide effective protection for small businesses. This variable provides a test of general effectiveness of the laws.

*YRSSBC*- An integer variable equal to the number of periods since the state's SBC law was enacted. This variable allows the impact of a SBC variable to change over time rather than remaining a binary dummy variable in every period. I intend for this variable to capture whether the SBC law has a larger effect the longer the law remains intact. I suspected that

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<sup>120</sup> The Robinson-Patman Act was passed in a time when the protection of small business was considered a valid antitrust concern. See, E. Thomas Sullivan and Jeffrey L. Harrison, Understanding Antitrust and its Economic Implications, Third Edition, Lexis Publishing, 1998, pp. 418-419.

laws gain public awareness the longer they remain active. Perhaps even more important is the fact that legislative intent is not always congruent with judicial interpretation. Laws that remain active are more likely to establish precedent that further clarifies the boundaries of the law.

*Markup*- This dummy variable equals one if the state has a general SBC law with a provision in the law that sales must include a minimum markup.

*No Markup*- This dummy variable equals one if the state has a general SBC law but does not contain a provision in the law that firms must include a minimum markup in the price.

*Constitutional*- A dummy variable that equals one if the courts have not ruled the SBC law unconstitutional. Laws that the legislature amends to correct unconstitutional defects with prior enactments are also counted as constitutional.

*Unconstitutional*- A dummy variable that equals one if the state's highest court has ruled the law unconstitutional in whole or part. The variable reverts back to 0 when and if the state legislature corrects the defect in the law.

*Treble*- A dummy variable that equals one if the state has a SBC law that contains a provision for treble damages if the statute is violated.

*No Treble*- A dummy variable that equals one if the state has a SBC law that does not contain a provision for treble damages if the statute is violated.

The following legislative variables examine the effect of fair trade legislation:

*ALL*- A dummy variable equaling one if a state has both an SBC law and a fair trade law that allows for non-signor agreements.

*SBCFT*- A dummy variable equaling one if a state has both an SBC law and a fair trade law. However, the state's fair trade law did not allow for the use of non-signor agreements, or the non-signor agreement had been deemed unconstitutional.

*FTNS*- A dummy variable equaling one if a state has both a fair trade law that allows for use of non-signor agreements. These states do not have SBC laws enacted.

*FT*- A dummy variable equaling one if a state has a fair trade law, but does not prevent below-cost sales. The state's fair trade law does not contain a provision allowing the use of non-signor agreements, or the non-signor agreement has been deemed unconstitutional.

*SBCO*- A dummy variable equaling one if a state has a fair trade law, but it either does not have a fair trade law or the fair trade law has been deemed unconstitutional.

The following legislative variables measure how the change in the interpretation of the federal law impacts the state law:

*Matsushita and Brooke*- these variables are time dummy variables applied to states with SBC laws after each respective case. The variables relate to the effectiveness of the state statutes after two significant federal predatory pricing cases.

#### **D. The Explanatory Variables**

I included other variables to accurately represent the effect of state SBC laws on small businesses. I chose the variables primarily based on the existing literature. They represent factors relevant to the prevalence of large or small businesses.

The control variables employed are as follows:

*Population*, The population of each state. This variable is only applicable to the regressions run from 1929-1997 on the total number of establishments. These data were

obtained from the Census Bureau for each year relevant to the models. The total number of establishments in a state should obviously increase with population. Therefore, population should be positively correlated with the total number of establishments.

*PCPI*, The per capita income of every state, obtained from the Bureau of Labor Statistics. I adjusted the data for inflation using the GDP implicit price deflator. Larger incomes per capita are likely to attract large retail firms into the market and increase the total number of establishments, because consumers have more disposable income to spend at retail establishments. As with population, the effect of income on small businesses is somewhat ambiguous because while larger incomes represent greater spending potential, consumers may also demand more specialized goods and better service as opposed to cheap mass-produced goods as income increases.

*Retail*, Nominal per capita retail sales for every state, which is taken from the Census of Retail Trade. I also adjusted the retail data for inflation using the GDP implicit price deflator. The data for retail sales were divided by the population for the corresponding year to construct this variable. The Census does not provide data for retail sales on yearly basis. It was only available in the same years as the Census of Retail Trade, so I linearly interpolated this data for years that retail sales did not correspond to the dependent variable. Larger retail sales are likely to induce large firms into the market and should be negatively correlated with the percentage of small businesses in a state.

*Urban*, The percentage of residents living in urban areas. Annual values for this variable were linearly interpolated for each state. A highly urbanized population should also attract

large retail firms to a particular market. This variable should also be negatively correlated with the dependent variables.

*Time*, Year dummy variables for the different years included in each data set. The variable controls for business cycle effects and other year specific shocks. A time dummy variable was added for every time observation, not for every year that passed in the sample.

### **E. Functional Form**

I estimate a basic linear model with panel data and the principal issue is whether state fixed effects should be included in the model. This application of fixed effects is also consistent with the literature testing the effects of SBC laws in a panel data set. Skidmore (2005) discussed three reasons why the fixed effects model is appropriate for testing a panel data set pertaining to state SBC laws. First, they found that much of the difference between mark-ups is between states, and the permanent differences between states can be captured with fixed effects. Although my model does not measure prices or markups, many of the same differences between the percentages of small businesses occur between states. Second, omitting state effects would yield estimates that do not reflect the true effect of the law. Third, a fixed effects model is a within group estimator that uses within state variation to form parameter estimates. This estimate can examine the effect within the state as the legal climate changes.<sup>121</sup> Their application of the fixed effects model is consistent with the objectives of this analysis and is the appropriate specification to test whether state SBC laws protect small businesses.

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<sup>121</sup> Mark Skidmore, James Peltier, and James Alm, *Do State Motor Fuel Sales-Below-Cost Laws Lower Prices?* Journal of Urban Economics, Vol. 57, 2005, p. 194.

The functional form of the regression model was tested and specified before including SBC variables in the regressions. The purpose of testing for the functional form was to determine whether the model should be examined using a state fixed effects model or a single constant. Fixed effects could be appropriate because there are non-time varying features of each state, which may not be accounted for in the control variables (e.g. states enact other laws that may have an effect on the number of small businesses.) The first step in the process was to perform a regression of the explanatory variables on the dependent variable. I then performed a redundant fixed effects test to examine whether the fixed effects were overlapping or tended to explain the same phenomenon. I tested the null hypothesis that the state effects were redundant. The for the dependent variables in every industry revealed the same finding that the null hypothesis could be rejected at any critical value, suggesting that the proper functional form should include state fixed effects.<sup>122</sup>

I can then assume that the functional form of the model is:

$$\%Small_{it} = \gamma SBC_{it} + x_{it}\beta + \alpha_i + \eta_t + \varepsilon_{it}.$$

where  $\alpha_i$  represents the state fixed effects and  $\eta_t$  represents the time effects. Of course, one time dummy is not included to avoid multicollinearity.  $X_{it}$  represents the explanatory

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<sup>122</sup> The Chi-Squared statistics for the redundant variables tests are as follows:

In the sample 1927-1967 the statistics were 227.26, 356.88, 236, 102.18, 278.38 with 47 degrees of freedom for the grocery, variety, hardware, furniture, and tire markets respectively, yielding a p-value of 0.0000 for all tests.

In the sample 1977-1997 the statistics were 1500.74, 1317.30, 1167.33, 1381.54, 1052.88 with 49 degrees of freedom for the general merchandise, food, automotive, building materials, and furniture markets respectively, yielding a p-value of 0.0000 for all tests.

In the sample 1927-1997 the statistics were 170.16, 515.10, 121.13, 328.81 with 47 degrees of freedom for the variety, hardware, furniture, and tire markets respectively, yielding a p-value of 0.0000 for all tests.

variables for state  $i$  in time  $t$ .  $SBC_{it}$  represents the status of the law in state  $i$  at time  $t$ . The model is slightly different when I account for variations of the law rather than using a simple SBC dummy variable. For instance, two dummy variables are used to test whether treble damages affect the percentage of businesses.<sup>123</sup>  $\beta$  and  $\gamma$  are coefficient vectors and  $\varepsilon_{it}$  is the error term for model.

I assumed that the data were robust in heteroskedasticity, given the nature of the cross-sectional component of the data. Nevertheless, I tested variances for equality. I utilized the Bartlett test for homoskedasticity. The variances were heteroskedastic as the null hypothesis that the variances were homoskedastic was rejected at the five percent level for all tests performed.<sup>124</sup> As a result of the robust standard errors, I utilized White Standard errors to correct for heteroskedasticity. The White standard errors utilize the equation

$$\left( \sum_{i=1}^N x_i x_i' \right)^{-1} \sum_{i=1}^N e_i^2 x_i x_i' \left( \sum_{i=1}^N x_i x_i' \right)^{-1} \text{ to estimate the true variance of the OLS estimator.}^{125}$$

Another pertinent issue with respect to testing these laws is in regards to endogeneity. In particular, did the presence of a SBC law protect small firms, or did the presence of small firms result in the legislative enactments? Skidmore (2005) illustrates

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<sup>123</sup> The following are the interaction terms used together in the same regressions: 1) Treble and No Treble; 2) Constitutional and Unconstitutional; 3) Markup and No Markup; 4) All, SBCFT, FTNS, FT, and SBCO. These variables are not cross-tested. For instance, the variable treble is never interacted with the markup dummy variable.

<sup>124</sup> The Chi-Squared statistics for the Bartlett tests are as follows:

In the sample 1927-1967 the statistics were 151.75, 157.11, 239.93, 344.23, 89.97 with 47 degrees of freedom for the grocery, variety, hardware, furniture, and tire markets respectively, yielding a p-value of 0.0000 for all tests except the test for the tire industry which yielded a value of .0002.

In the sample 1977-1997 the statistics were 333.59, 277.10, 426.47, 313.19, 288.5 with 49 degrees of freedom for the general merchandise, food, automotive, building materials, and furniture markets respectively, yielding a p-value of 0.0000 for all tests.

In the sample 1927-1997 the statistics were 1187.49, 331.56, 748.62, 893.21 with 47 degrees of freedom for the variety, hardware, furniture, and tire markets respectively, yielding a p-value of 0.0000 for all tests.



that high prices did not cause SBC laws, but that creation of SBC laws was correlated with democratic officials in office. They utilized a Hausman test that resulted in a failure to reject the null hypothesis that the SBC variable was exogenous to price markups. The authors also test the effects of SBC laws on market structure and treat the SBC law as exogenous to the total number of establishments. This supports my treatment of the SBC laws as exogenous variables. Additionally, all of the current literature on empirical testing of SBC laws treats the laws as exogenous.<sup>126</sup>

In addition to the literature, I controlled for minimum markup provisions enacted with some state SBC laws. This particular variable is useful for examining whether the law effective on its own merits because the provision does not make the SBC law more stringent. All states make provisions requiring firms to price above average total cost. The markup provision does make identifying below cost sales easier because it assigns a value to fixed costs.<sup>127</sup> Thus, the provision may encourage more litigation, but does not appear to be a provision that was adopted to favor small firms above and beyond the basic SBC law.

Grocery Stores are likely the most important industry tested in this paper. Grocery stores typically sell many different products with a fairly high volume. They also have the potential to attract many repeat customers because they sell non-durable goods. Retailers in this industry have a strong incentive to initially attract many consumers into the store as a result. Thus, grocery stores are one form of business likely to use loss leaders. If SBC laws

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<sup>125</sup> Marno Verbeek, A Guide to Modern Econometrics, John Wiley & Sons, Ltd., 2000, p. 81.

<sup>126</sup> Skidmore, *supra* note 119, at 195.

<sup>127</sup> This assigned value can be rebutted by demonstrating that the actual fixed costs are lower.

have been effective at protecting small businesses, the grocery store industry should be as strong an indicator as any in the retail market.

Durable goods are also an industry of importance in this model. Sellers of durable goods are not likely to engage in predatory pricing because the long-run payoff does not merit selling the good below cost. This will render the state law irrelevant even if the state law effectively protects small firms.

## **F. Results**

The results are broken into three categories: First, whether the SBC laws are successful in protecting small businesses. Second, whether defining characteristics of each state's legislative enactment alters the effectiveness of the SBC legislation. Third, whether external factors to the SBC enactments such as fair-trade laws or changes in the federal laws affect the results. Summaries of the results are presented in Figure 4-1, 4-2, and 4-3.

### **1. General SBC Laws**

#### *a. SBC Dummy Only*

Figure 4-4 (A) illustrates the effect that general SBC laws have on small businesses, as measured by data on single and multi-unit firms. The data I used for this regression is from the Census of Business from 1929-1967. The coefficient ( $\beta$ ) of each explanatory variable is given for every industry tested, as well as the SBC law coefficient ( $\gamma$ ) and the corresponding p-values for the null hypothesis that SBC laws bear no correlation to the percentage of small businesses in a state. I reject this hypothesis if the p-values are not significant at the ten percent level with a two-tailed test.

The explanatory variables tested in conjunction with grocery stores all have negative coefficients, but only urbanization tested significant. All other explanatory variables were found to have little impact on the prevalence of small grocery stores. The SBC variable is positive and significant in the grocery store market. This suggests that the state laws do have a tendency to protect small businesses in the grocery industry. However, the results suggest that the presence of a SBC law creates a one percent increase in the number of small grocery stores. Thus, in a state such as California that had approximately 10,000 small grocery stores during the sample period, only about one hundred and twenty of those, or six stores for every one million people, are due to the SBC law.

Hardware stores and variety stores are also primary candidates for examining the effect of SBC laws because both of these sellers supply multiple products that are not durable, which may lead to loss leader selling. The effects of SBC laws were positive and significant in promoting small businesses in both the variety store and hardware industries, although the magnitude of the coefficients were relatively small at two percent. These results again suggest that SBC laws protect small businesses in these markets, but they certainly did not prevent entry by larger firms. For example, in 1967 each state had an average of 235 variety stores, so the point estimate suggests that a SBC law led to an extra 5 small firms in the average state. Per capita income and urbanization appear to be the primary factors and inducing large firms into the variety store market, whereas per capita income and per capita retail sales were the main factors contributing to entry by large firms in the hardware store industry.

SBC laws do not appear to protect small businesses in both the tire and furniture store markets, as the SBC dummy variable was not significant at the ten percent level for either industry. Retail sales was the only significant explanatory variable in either market. It was negatively related to small tire stores. Loss leaders should not be as frequent in these markets because these retailers characteristically sell fewer goods than the other firms in the study, and those goods are often durable. Therefore, the results in these industries should not be as robust to legislation prohibiting sales below cost as the other three markets. In my opinion, the varieties of items carried by tire and furniture of stores are more likely to be substitutes rather than complements or unrelated goods, which are not an optimal product mix for loss leader selling. However, the SBC variables should show some trace of significance if predatory pricing is a common practice in these markets and the laws are effective at preventing the behavior.

Figure 4-4 (B) demonstrates the effect of the sales below cost laws and the explanatory variables on the percentage of small firms, using a different data set that depicts establishment size as a function of employment from 1977-1997.

Figure 4-4 (B) shows that the SBC laws did protect small businesses in the food, general merchandise and automotive markets, as the SBC dummy variable tested positive and significant in all of these industries. The extent to which the SBC laws shielded small businesses in these industries is questionable. The results illustrate that the laws increased the percentage of small businesses between .9 and 2.7%. In the furniture and building materials markets, the SBC legislation did nothing to enhance the viability of small businesses.

With respect to the explanatory variables, per capita retail sales was a negative and significant determinant in every industry examined. Urbanization had a negative and significant effect on the percentage of small businesses in the industries where SBC laws were most effective, but urbanization was not a factor that increased the presence of large firms in either the furniture or the building materials industries. Unlike the other explanatory variables, per capita income was a positive determinant of small business success in the food and general merchandise industries. However, per capita income significantly decreased the presence of small businesses in the market for building materials. The variable is insignificant in both the automotive and furniture industries.

Figure 4-4 (C) illustrates the effect of SBC laws on the total number of establishments in a state from 1929-1997. The SBC law significantly affected states' total number of establishments in the tire and furniture industries. There were forty-four more establishments in the tire industry and one hundred and forty-seven fewer establishments in the furniture industry in states that enacted sales below cost laws. The laws had no effect on the total number of establishments in any other industry. Typically, the explanatory variables per-capita retail sales and the percentage of individuals living in urbanized areas increased the total number of establishment when the variables were significant. Per-capita income tended to decrease the total number of establishments when significant.

The test of the effectiveness of the SBC laws yields some interesting results. This test evaluates the hypotheses proposed in the previous chapter. One hypothesis was that state laws are strictly superior in deterring loss leader sales, and that those sales were most likely to exist in the grocery and variety store markets. The tests that delineated small firms

from large firms clearly show that SBC laws increase the percentage of small firms in both the grocery/food and variety/general merchandise markets. The law also increased the percentage of small businesses in the hardware store industry in the sample from 1929-1967. The auto industry also showed a positive and significant relationship between the law and small firms when the market was expanded beyond just the tire market in 1977-1997. The law did not make sizeable changes in the composition of small firms in those markets though. The SBC law had a maximum effect of increasing small businesses by 2.7%. In the other industries the effect of the SBC law was negligible. Thus, while the effect of the SBC law on small businesses was minimal, the law was most effective in industries that commonly sell multiple products and appear prone to loss leader sales.

While the results show that the SBC law deters loss leader sales, its ability to deter predatory pricing is questionable. Of the four industries that show some correlation between SBC laws and small firms, only the variety/general merchandise stores should exhibit predatory pricing behavior if the theory I present in the last chapter is accurate.

I would expect to see predatory pricing occur more frequently in industries that are more concentrated, as the payoff to predation is higher when the market contains elements of market power. In fact, firms must be able to deter entry into the market for predatory pricing to be effective. Additionally, durable goods industries should not be as prone to predatory pricing.

The results show that sales below cost laws do increase the percentage of small firms in industries that are the most concentrated in the sample. Variety stores are the most concentrated market in the sample with an average of 356 establishments over the sample

from 1929-1997, and hardware stores are the second most concentrated market with 580 stores. The SBC law positively influenced the number of small firms in these markets. In fact, the SBC laws had the largest effect in the variety/general merchandise markets. However, hardware stores frequently sell durable goods, which are not ideal for implementing predatory pricing.

Whether the law deters predatory pricing is still questionable. The law affects the grocery, variety, and hardware store markets, but all these industries are prone to loss leader sales. The law also affected the automotive industry when the market was expanded to include larger product lines. Of these industries, grocery stores are not concentrated, and predatory pricing should not occur frequently. The hardware and automotive markets are somewhat concentrated compared to grocery or furniture stores, but both are durable goods retailers. The variety store market should exhibit predatory pricing, if it is indeed rational, and SBC laws did have the most significant impact in this market.

*b. Length of Active SBC Legislation*

I next test whether the length of time a state has had a SBC law affects the impact of the law using the YRSSBC variable. I weighted the dummy variables to determine whether the effect of sales below cost laws are more pronounced as the law remains viable. Figures 4-5 (A) and (B) depict the results obtained from the tests for 1929-1967 and 1977 and 1997 respectively.

The sales below cost laws produce slightly different results than the regressions with binary sales below cost variables when I accounted for the length of time the law was active. The effect that the YRSSBC variable has on the percentage of small businesses is not completely consistent with expectations. Sales below cost laws remained determinants

of small businesses in the food, grocery, and hardware industries; however, the duration of the SBC law did not significantly affect small firms in the variety store market and negatively impacted small firms in the general merchandise market. This result is questionable because the general SBC laws had the largest effect on the variety/general merchandise markets.

In the grocery store market, the SBC law resulted in .4% additional small firms per observation period. Thus, a state that has maintained a SBC law for the entire thirty-seven year sample period has approximately two percent more small grocery stores than states that never enacted a SBC law. In the food, variety, and hardware industries, the states with SBC laws have approximately a .1, .3, and .5 percent increase in the percentage of small businesses respectively, for every period that the law was effective. The YRSSBC variable was also positively and significantly correlated with the percentage of small establishments in the furniture industry (for the sample period 1929-1967), producing an additional .6 percent of small firms for every period that the law was effective. This result is surprising because the durable nature of furniture is unlikely to induce predatory behavior, and the nature of the furniture business does not appear conducive to loss leader pricing.

The effects of the explanatory variables were similar to the SBC dummy variable regressions with only two exceptions. Per capita income became insignificant in the grocery store market and population became insignificant in the tire market.

## **2. Variations of the State SBC laws**

### *a. Minimum Markup Provisions*

The first feature of state SBC laws I examine is a minimum markup provision. The majority of states with legislation mandating sales are above cost typically define cost as



the invoice or replacement cost of the good, plus an additional markup, or the cost of doing business. States can opt to require that firms price above cost by a specified percentage to account for the cost of doing business. The required markup varies by state. This provision is only valuable in that it gives small firms a measuring stick to evaluate whether a competitor prices below statutory cost, because all states include fixed cost within their definition of cost and firms can get around the markup provision by proving a lower actual fixed cost.

Figures 4-6 (A)-(C) illustrate the results of SBC laws controlling for minimum markup provisions. With the exception of the sample from 1929-1997 that used total establishments as a dependent variable, the minimum markup provisions protected small businesses. The minimum markup provision was never significant and negative, and it was always larger in magnitude than no markup provision when it was significant. It was also positive and significant in every industry where a general SBC law was significant. The size of the impact of the minimum markup provisions was noticeable as well. The effect of the SBC law was larger for states enacting a minimum markup provision in every industry, than the effect of a general SBC law alone. For the sample 1929-1967, the minimum markup provision increased the presence of small firms by .5, .4, and .5 percent in the grocery, variety, and hardware markets respectively, above states with only a SBC enactment. In the sample 1977-1997, the minimum markup provision increased the presence of small firms beyond the basic SBC law protection by 1.7, 1.6, and .4 percent in the food, general merchandise, and automotive markets respectively. Additionally, SBC laws were insignificant in the grocery market for states without minimum markup

provisions, while the SBC laws without markup provisions protected small firms to a lesser extent in the general merchandise and automotive markets, as the presence of small firms was 2.9 and .9 percent lower respectively, in states that did not contain the markup provision. The regressions measuring the total number of establishments from 1929-1997 again yielded unsatisfactory results.

The only industries not impacted by SBC laws with minimum markup enactments are the tire, building materials, and furniture markets. Additionally, states that enacted an SBC law without a minimum markup provision created virtually empty legislation. The SBC laws without minimum markups were only positive and significant in two industries examined in the regressions from 1929-1969 and 1977-1997. These results indicate that having a well-defined meaning for the appropriate level of cost drastically increased the effectiveness of the statutes in promoting the percentage of small businesses in a state.

*b. Treble Damages*

Figure 4-7(A) reports that SBC laws containing provisions for treble damages do not protect small firms in the grocery, variety, and tire industries. The Treble variable did not test positive and significant in each of these industries in the data set on total establishments from 1929-1997. In fact, small firms were more prevalent in states that had SBC laws without treble damages in the grocery market. This result in the grocery industry would tend to suggest that other attributes of the laws (such as constitutionality and minimum markup provisions) possibly contribute more to the effectiveness of the law than the magnitude of the damage award.

Treble damages were a significant factor in the perseverance of small firms in both the hardware and furniture markets. The Treble variable had a greater effect on the

prevalence of small businesses than the general SBC variable in the hardware industry. The presence of treble damages increases the percentage of small firms by approximately 5.3%. This result is rather a persuasive argument for whether the state laws deter predatory pricing, since the general law only increased the percentage of small firms by 1.6%. Additionally, states with SBC enactments that failed to impose treble damages did not increase the percentage of small businesses in the hardware industry. The Treble variable also tested both positive and significant in the furniture industry. SBC laws with treble damages had approximately 4.9% more small firms, whereas general SBC laws did not significantly increase the percentage of small firms in the market. This result is quite interesting because it suggests that the damages actually incurred are not sufficient to increase the percentage of small businesses, however treble damages were enough to either deter below cost pricing practices, deter large firm entry, or induce entry by small firms.

The SBC law did increase the percentage of small firms in both the hardware and furniture markets. The furniture market should not be prone to either loss leaders or predatory pricing; yet larger damages did protect smaller firms. This suggests that loss leader selling or predatory pricing schemes may be more prevalent in this industry than suspected.

The data set measuring the total number of establishments from 1929-1997 produced interesting results with respect to treble damages. The SBC law alone was not effective in deterring below cost sales. However, treble damage provisions were responsible for making an ineffective SBC law viable in the grocery and hardware industries. This is consistent with the theoretical situation in which a federal law provides

greater protection for small firms than the state law, except when the state law has a treble damage provision.

These results present mixed results in determining whether the state laws actually deter predatory pricing. Based on the theory in chapter four and the tests on the effect of the general SBC law, I expected loss leaders to exist in the grocery, variety store, and hardware store markets. Additionally, the variety store market should be the most likely to exhibit acts of predatory pricing, given the structure and product offerings of these markets. However, treble damages actually decreased the effectiveness of the SBC law in the variety store market. This tends to support the hypothesis that the federal or state law is not preventing predatory pricing in the variety store market. However, in the hardware, furniture, and grocery industries, the data show evidence that the laws do deter predatory pricing. The hardware industry provides the best evidence that the law deters predatory pricing because the treble damage is significant in both data sets. In the test regarding the antitrust cases *Matsushita* and *Brooke* below, I further illustrate this finding.

*c. Constitutionality of SBC laws*

The results of the regressions on SBC laws with consideration given to court decisions are illustrated in Figure 4-8 (A)-(B). The constitutionality of a SBC law has only marginally affected the effectiveness of the laws. Over the period 1929-1967, the constitutionality of the laws did improve the states' effectiveness at promoting small businesses in both the grocery industry, as the variable constitutional was greater than the general SBC variable, and the unconstitutional variable was insignificant. In the hardware industry, the effect of the constitutional variable was the same as the standard SBC

variable, but the unconstitutional variable was not significant, suggesting that a law must be constitutional to be effective. In the variety store market, the constitutional variable was insignificant while the unconstitutional variable was large and significant. This result is not consistent with the expected effect of constitutionality of the SBC law. As general SBC laws had no effect on the percentage of small businesses in the tire and furniture markets, neither did the constitutionality of the laws.

In the sample 1977-1997, the variable Constitutional had a positive and significant relationship with the percentage of small businesses in the automotive industry; however, favorable interpretation of the laws did not improve the effectiveness of the statute in either the food or general merchandise markets. In fact, the unconstitutional variable was more significant in these industries. The constitutional variable was more consistent with expectations in the other industries. The law was significant and positive in the building materials industry. This industry did not test significant under the test of the general SBC law. The constitutional variable was the same as effectiveness of the general SBC variable in the automotive industry, but unconstitutional laws were less effective. Also, the constitutional variable was insignificant in the furniture industry, but unconstitutional laws resulted in fewer small businesses than states without a SBC law.

### **3. Factors External to SBC Legislation**

#### *a. Fair Trade Enactments*

The results in figure 4-9 illustrate that fair trade laws used in conjunction with SBC laws produced significant results in only two industries. In the grocery industry, the results show that the enactment of sales below cost laws coupled with fair trade acts containing non-signor provisions did positively and significantly affect the percentage of small businesses

in a state. The effects, however, were small, increasing the percentage of small firms by about one percent, which is only slightly greater than the effect of a general SBC law. Small businesses in the hardware industry were positively affected by both the enactment of a SBC law alone, or a SBC law coupled with a fair trade enactment without a valid non-signor clause. This result is somewhat suspect given that non-signor clauses should not diminish the value of the fair trade act. Additionally, the presence of both a fair trade act and a SBC law should not produce results of a smaller magnitude than stand-alone SBC enactments. However, the results demonstrate that SBC laws without fair trade legislation had the largest impact on the percentage of small businesses in the hardware market.

These results were similar in the furniture industry, as the significant variables increasing the percentage of small businesses were combinations of SBC or fair trade legislation without non-signor clauses. This suggests that non-signor clauses actually harmed small businesses in the furniture market.

*b. Predatory Pricing Case Law*

Figure 4-10 (a) shows the results of the tests using the data set from 1977-1997. The impact of SBC laws during the two periods appears to be negligible across the five industries. The *Matsushita* case only appears to have distinguished states with SBC laws in two industries. In the food and furniture industry, the variable appears positive and significant. The holding in *Brooke* was also positive and significant in the food industry, but negative and significant in the general merchandise market. While the two cases were significant in the food industry, neither variable was of the magnitude of the simple SBC

variable. Taken as a whole, it appears as though the cases did not drastically affect the application or effectiveness of the state laws.

In the data set containing total establishments from 1929-1997, the *Matsushita* variable was positive and significant in the grocery and hardware industries. This result is interesting because the SBC variable alone did not increase the number of establishments in either industry. Given that the treble damage provision was significant in both these industries in the 1929-1997 data set, it does appear that the SBC laws do deter acts of predatory pricing.

## Chapter 5

### CONCLUSIONS

The purpose and intent of state SBC laws does not mirror that of federal predatory pricing. State laws have always purported to protect small businesses. Sales below cost laws should theoretically protect small businesses when loss leader selling is prominent and when the law is known to produce a significantly better defense against predatory pricing.

The results do indicate that the state laws likely deter predatory pricing in the hardware industry, and possibly protects against the behavior in the grocery and furniture industries. Treble damage provisions should make the state laws preferable to the federal laws, and the small business should find the state laws a favorable alternative after the Court's decision in *Matsushita*. Both treble damages and the *Matsushita* effect account for a larger percentage of small businesses in the hardware industry. Treble damages and the *Matsushita* effect are also significant for the grocery industry in the data set from 1929-1997, and in the furniture industry in the two data sets measuring the percentage of small businesses. These results suggest that SBC laws do in fact serve to protect small firms from predatory pricing in some industries.

It does appear that the laws do deter loss leader pricing to an extent as well. States with SBC laws did have a greater percentage of small businesses in the grocery, variety store, and hardware store markets. Additionally, the law was even more effective when coupled with a minimum markup provision. These were all markets where firms could be



expected to engage in loss leader selling, due to their diverse product offerings. Additionally, the laws remained effective as I expanded the market definitions. The percentage of small firms was greater in states with SBC laws in the food, general merchandise, and automotive markets. The minimum markup provision also increased the effectiveness of the law in these industries.

These results suggest that SBC laws do protect small firms to a small extent from loss leader pricing and predatory pricing. This result is apparent from the fact that SBC laws deter predation in certain industries when the law provides damages equivalent to the federal laws, or after the Court began applying more stringent standards to the federal laws. Additionally, the Sherman Act was not designed to prevent loss leader selling. In this respect, the state laws do appear to protect firms in industries where such conduct may be prevalent, and are even more effective when the state guidelines are more clearly articulated.

**Appendix A:  
Empirical Results**

Figure 4-1  
Effects of SBC Laws from 1929-1967

	Grocery	Variety	Hardware	Tire	Furniture
SBC Law	1.2%	2.5%	1.6%	NS	NS
YRSSBC	.4%	.3%	.5%	NS	NS
Const./ Unconst.	1.4%	NS/10.9%*	1.6%	NS	NS
Treble/ No Treble	NS/1.4%*	NS/2.3%*	5.3%*	-3%*	4.9%*
Markup/ No Markup	1.7%*	2.9%	2.1%/.7%*	NS	NS
Fair Trade	1.7% All 2.1% SBCFT .6% FTNS	NS	4.3% SBCO	2% FTNS 1.7% FT	3.0% SBCFT 2.9% FT 4.8% SBCO

NS- Denotes that the variable is not significant.

\* Denotes a statistically significant distinction between states with a specific provision and states without the specific provision.

Figure 4-2  
Effects of SBC Laws from 1977-1997

	Food	General Merchandise	Building Materials	Automotive	Furniture
SBC Law	1.8%	2.7%	NS	.9%	NS
YRSSBC	.01%	-.07%	NS	.01%	.01%
Const./ Unconst.	1.2%/2.3%*	1.9%/3.6%*	-.1.9%*	.9%/.9%	NS
Markup/ No Markup	3.5%*	4.3%/1.6%*	NS/-1.5%	1.3%/.05%*	NS
Matsushita/ Brooke	.2%	NS/-1.5%	NS	.2%/.2%	.2%

NS- Denotes that the variable is not significant.

\* Denotes a statistically significant distinction between states with a specific provision and states without the specific provision.

Figure 4-3  
Effects of SBC Laws from 1929-1997

	Grocery	Variety	Hardware	Tire	Furniture
SBC Law	-513.23	NS	NS	47	-135
Treble/ No Treble	1984/-752	NS	143	NS	NS
Markup/ No Markup	-517*	NS	NS	NS/117*	NS/-380*
Constitutional/ Unconst.	-644	NS	NS/103*	33/115*	-124/-189
Matsushita	338	NS	100	-83	NS

NS- Denotes that the variable is not significant.

\* Denotes a statistically significant distinction between states with a specific provision and states without the specific provision.

Figure 4-4 (A)

Impact of State Sales Below Cost Laws on Small Firms										
Dependent Variable: Single Establishment Firms as a Percentage of the Total Number of Firms										
	Grocery		Variety		Furniture		Hardware		Tire	
Variable	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.
Retail	0.0000117	0.2521	0.0000424	0.0447	0.00000901	0.4478	-0.0000153	0.2053	-0.0000433	0.0000
Urban	-0.468567	0.0000	-0.423597	0.0094	0.036509	0.4737	0.239202	0.0000	0.133723	0.3836
PCPI	-0.0000111	0.0010	-0.0000141	0.0162	-0.0000132	0.1492	-0.00000617	0.0048	0.0000132	0.1599
SBC	0.011789	0.0013	0.025093	0.0017	0.014877	0.3273	0.016013	0.0044	-0.005164	0.7109
R-Sq	0.824449		0.688475		0.387459		0.568672		0.624859	
Adj. R-Sq	0.79312		0.63288		0.261866		0.480234		0.547941	

Figure 4-4 (B)

Impact of State Sales Below Cost Laws on Small Firms										
Dependent Variable: Percentage Small Establishments to the Total Number of Establishments based on Employment Size										
	Food		General Merchandise		Automotive		Building Materials		Furniture	
Variable	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.
Retail	-0.00000758	0.0000	-0.0000229	0.0000	-7.85E-06	0.0000	-0.00000912	0.0000	-0.00000266	0.0154
Urban	-0.166996	0.0000	-0.14028	0.0041	-0.075977	0.0000	0.001965	0.9242	-0.009356	0.4115
PCPI	0.00000442	0.0000	0.0000152	0.0000	-3.88E-07	0.4143	-0.00000105	0.2955	-6.56E-07	0.1232
SBC	0.017651	0.0000	0.027803	0.0009	0.008913	0.0007	-0.009874	0.1315	0.000363	0.8524
R-Sq	0.86841		0.91036		0.893719		0.866551		0.8179	
Adj. R-Sq	0.858568		0.903655		0.88577		0.856569		0.80428	

Figure 4-4 (C)

Impact of State Sales Below Cost Laws on Small Firms										
Dependent Variable: Total Establishments										
	Grocery		Variety		Furniture		Hardware		Tire	
Variable	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.
Retail	0.688351	0.0000	0.054581	0.0027	0.160606	0.0002	0.124867	0.0002	0.010983	0.6680
Urban	16689.91	0.0000	186.9436	0.2618	308.851	0.5373	1437.765	0.0000	387.5102	0.1018
Pop	-0.00022	0.0003	-0.0000203	0.8786	0.0000818	0.1856	0.0000351	0.0612	0.000188	0.0000
PCPI	-0.407824	0.0000	-0.016315	0.0968	-0.068656	0.1856	-0.03741	0.0165	0.0021	0.8790
SBC	-513.2305	0.0856	-28.39181	0.2329	-135.4471	0.0602	36.02186	0.3270	47.00309	0.0011
R-Sq	0.864094		0.603516		0.773781		0.879205		0.863777	
Adj. R-Sq	0.849517		0.560989		0.747881		0.865375		0.848181	

Figure 4-5 (A)

Impact of Time Weighted State Sales Below Cost Laws on Small Firms										
Dependent Variable: Single Establishment Firms as a Percentage of the Total Number of Firms										
	Grocery		Variety		Furniture		Hardware		Tire	
Variable	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.
Retail	0.000013	0.2384	0.000042	0.0582	0.0000103	0.3731	-0.000015	0.2263	-0.000045	0.0000
Urban	-0.47227	0.0000	-0.429989	0.0082	0.031904	0.5143	0.234694	0.0000	0.135538	0.3850
PCPI	-0.000011	0.0009	-0.0000133	0.0286	-0.0000131	0.1484	-0.0000059	0.0032	0.0000133	0.1515
YRSSBC	0.003556	0.0030	0.002849	0.0238	0.00645	0.1322	0.005076	0.0000	-0.002854	0.2512
R-Sq	0.825921		0.686296		0.392121		0.571674		0.626284	
Adj. R-Sq	0.794855		0.630311		0.267484		0.483852		0.549658	

Figure 4-5 (B)

Impact of Time Weighted State Sales Below Cost Laws on Small Firms										
Dependent Variable: Percentage Small Establishments to the Total Number of Establishments based on Employment Size										
	Food		General Merchandise		Automotive		Building Materials		Furniture	
Variable	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.
Retail	-0.0000758	0.0000	-0.0000234	0.0000	-0.0000782	0.0000	-0.0000904	0.0000	-0.0000026	0.0207
Urban	-0.172749	0.0001	-0.199963	0.0001	-0.074677	0.0000	0.013733	0.5007	-0.002164	0.8481
PCPI	0.00000453	0.0000	0.0000152	0.0000	-0.00000308	0.5241	-0.00000107	0.2903	-0.000000617	0.1506
YRSSBC	0.000146	0.0384	-0.000781	0.0000	0.000157	0.0046	0.0000891	0.3205	0.000149	0.0052
R-Sq	0.865829		0.910314		0.893139		0.866052		0.818617	
Adj. R-Sq.	0.855793		0.903606		0.885146		0.856033		0.80505	

Figure 4-6 (A)

Impact of State Sales Below Cost Laws with Minimum Markup Provisions on Small Firms										
Dependent Variable: Single Establishment Firms as a Percentage of the Total Number of Firms										
	Grocery		Variety		Furniture		Hardware		Tire	
Variable	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.
Retail	0.0000131	0.1796	0.0000436	0.0424	0.00000754	0.4442	-0.0000139	0.2492	-0.000042	0.0000
Urban	-0.466497	0.0000	-0.421927	0.0098	0.032588	0.5021	0.242864	0.0000	0.135098	0.3866
PCPI	-0.000011	0.0012	-0.000014	0.0187	-0.0000136	0.1420	-0.00000587	0.0060	0.0000131	0.1707
Markup	0.016743	0.0001	0.02909	0.0074	0.009265	0.4361	0.021255	0.0023	-0.00093	0.9433
No Markup	0.002417	0.6729	0.017553	0.3209	0.024731	0.3048	0.00681	0.0278	-0.014626	0.3660
R-Sq	0.826346		0.688794		0.389134		0.571743		0.625951	
Adj. R-Sq.	0.794723		0.632124		0.261227		0.482072		0.54763	

Figure 4-6 (B)

Impact of State Sales Below Cost Laws with Minimum Markup Provisions on Small Firms										
Dependent Variable: Percentage Small Establishments to the Total Number of Establishments based on Employment Size										
	Food		General Merchandise		Automotive		Building Materials		Furniture	
Variable	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.
Retail	-0.0000692	0.0000	-0.0000223	0.0000	-0.0000077	0.0000	-0.00000913	0.0000	-0.00000275	0.0127
Urban	-0.166464	0.0000	-0.139819	0.0039	-0.075852	0.0000	0.001954	0.9246	-0.009425	0.4102
PCPI	0.0000041	0.0000	0.000015	0.0000	-0.000000463	0.3263	-0.00000104	0.2959	-0.000000615	0.1544
Markup	0.03466	0.0000	0.042524	0.0003	0.012916	0.0001	-0.010219	0.2068	-0.001841	0.4209
No Markup	0.003756	0.2144	0.015778	0.0117	0.005644	0.0178	-0.009593	0.0965	0.002164	0.2451
R-Sq	0.876023		0.911065		0.894265		0.866553		0.818284	
Adj. R-Sq.	0.866613		0.904315		0.88624		0.856424		0.804492	

Figure 4-6 (C)

Impact of State Sales Below Cost Laws with Minimum Markup Provisions on Small Firms										
Dependent Variable: Total Establishments										
	Grocery		Variety		Furniture		Hardware		Tire	
Variable	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.
Retail	0.688237	0.0000	0.054927	0.0031	0.162999	0.0002	0.125286	0.0002	0.010556	0.6792
Urban	16686.55	0.0000	197.1446	0.2638	422.0011	0.3948	1457.619	0.0000	377.9259	0.0934
POP	-0.00022	0.0015	-0.0000029	0.8342	0.0000729	0.2421	0.0000335	0.0845	0.00019	0.0000
PCPI	-0.408133	0.0000	-0.015377	0.0874	-0.060316	0.0104	-0.035946	0.0145	0.000318	0.9819
Markup	-516.994	0.0208	-16.96876	0.1923	-32.10558	0.4163	54.15482	0.2217	24.80731	0.1931
No Markup	-504.4633	0.4277	-55.00219	0.3436	-380.1135	0.0360	-6.90883	0.8876	117.2031	0.0054
R-Sq	0.864094		0.603719		0.776376		0.879472		0.864094	
Adj. R-Sq.	0.849268		0.560488		0.750326		0.865432		0.848262	



Figure 4-7 (A)

Impact of State Sales Below Cost Laws with Treble Damages on Small Firms										
Dependent Variable: Single Establishment Firms as a Percentage of the Total Number of Firms										
Grocery			Variety		Furniture		Hardware		Tire	
Variable	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.
Retail	0.0000116	0.2555	0.0000425	0.0447	0.00000775	0.5142	-0.0000167	0.1983	-0.0000447	0.0000
Urban	-0.467778	0.0000	-0.424217	0.0090	0.033859	0.5126	0.236327	0.0000	0.136577	0.3698
PCPI	-0.0000115	0.0005	-0.0000138	0.0256	-0.0000109	0.1263	-3.68E-06	0.3061	0.0000128	0.1790
Treble	0.003531	0.5253	0.031574	0.2060	0.049547	0.0725	0.053629	0.0000	-0.035369	0.0006
No Treble	0.014403	0.0000	0.023041	0.0001	0.002094	0.8587	0.002144	0.7200	0.000609	0.9656
R-Sq	0.825377		0.688623		0.401302		0.602923		0.630307	
Adj. R-Sq.	0.793579		0.631921		0.275943		0.51978		0.552898	

Figure 4-7 (B)

Impact of State Sales Below Cost Laws with Treble Damages on Small Firms										
Dependent Variable: Total Establishments										
Grocery			Variety		Furniture		Hardware		Tire	
Variable	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.
Retail	1.60077	0.0009	0.082913	0.0006	0.249364	0.0002	0.130219	0.0526	-0.024254	0.4774
Urban	17173.86	0.0000	162.4742	0.3062	205.4899	0.6872	1470.429	0.0000	405.8953	0.1031
Pop	-0.000297	0.0000	0.000000279	0.9811	0.0000918	0.1207	0.0000308	0.1052	0.000185	0.0000
PCPI	-0.378853	0.0045	-0.032492	0.0010	-0.10743	0.0034	-0.043782	0.0157	0.006824	0.5482
Treble	1984.328	0.0000	-79.73504	0.4030	-447.4765	0.1789	143.226	0.0268	82.29214	0.1980
No Treble	-751.7503	0.0001	-24.80917	0.2748	85.40161	0.1795	13.82855	0.5968	37.49021	0.1105
R-Sq	0.875203		0.60707		0.781436		0.877882		0.863907	
Adj. R-Sq.	0.861589		0.564205		0.755976		0.863657		0.848054	

Figure 4-8 (A)

Impact of Constitutionality of State Sales Below Cost Laws on Small Firms										
Dependent Variable: Single Establishment Firms as a Percentage of the Total Number of Firms										
	Grocery		Variety		Furniture		Hardware		Tire	
Variable	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.
Retail	0.0000119	0.2435	0.000043	0.0413	0.00000906	0.4467	-0.0000153	0.2069	-0.0000433	0.0000
Urban	-0.469332	0.0000	-0.402248	0.0078	0.035451	0.4825	0.238509	0.0000	0.133722	0.3845
PCPI	-0.0000118	0.0026	-0.00000876	0.0647	-0.0000138	0.1610	-0.00000651	0.0017	0.0000132	0.1555
Constitutional	0.014368	0.0042	0.020318	0.1214	0.016207	0.3195	0.016885	0.0008	-0.005133	0.7196
Unconstitutional	0.00478	0.4893	0.108668	0.0000	0.003388	0.8291	0.008479	0.5102	0.005417	0.6760
R-Sq	0.825836		0.703164		0.388162		0.569307		0.624859	
Adj. R-Sq.	0.794121		0.649111		0.260051		0.479126		0.54631	

Figure 4-8 (B)

Impact of Constitutionality of State Sales Below Cost Laws on Small Firms										
Dependent Variable: Percentage Small Establishments to the Total Number of Establishments based on Employment Size										
	Food		General Merchandise		Automotive		Building Materials		Furniture	
Variable	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.
Retail	-0.00000759	0.0000	-0.0000229	0.0000	-0.00000785	0.0000	-0.0000091	0.0000	-0.00000266	0.0156
Urban	-0.165806	0.0000	-0.138418	0.0040	-0.075977	0.0000	0.000115	0.9956	-0.009794	0.3928
PCPI	0.00000445	0.0000	0.0000153	0.0000	-0.00000388	0.4143	-0.00000109	0.2803	-0.00000666	0.1178
Constitutional	0.012324	0.0002	0.019467	0.0243	0.008917	0.0006	-0.001589	0.7615	0.002324	0.2319
Unconstitutional	0.023206	0.0000	0.036498	0.0000	0.00891	0.0016	-0.018516	0.0234	-0.001682	0.4704
R-Sq	0.869272		0.910621		0.893719		0.867863		0.818251	
Adj. R-Sq.	0.85935		0.903837		0.885653		0.857834		0.804456	

Figure 4-8 (C)

Impact of Constitutionality of State Sales Below Cost Laws on Small Firms										
Dependent Variable: Total Establishments										
	Grocery		Variety		Furniture		Hardware		Tire	
Variable	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.
Retail	0.707344	0.0062	0.055112	0.0026	0.158895	0.0002	0.126975	0.0001	0.013521	0.5832
Urban	16890.47	0.0000	192.5461	0.2530	291.0703	0.5652	1459.688	0.0000	410.9647	0.0776
POP	-0.000214	0.0004	-0.00000185	0.8888	0.0000813	0.1882	0.0000357	0.0585	0.000189	0.0000
PCPI	-0.397202	0.0000	-0.016018	0.1095	-0.069231	0.0055	-0.036701	0.0165	0.002908	0.8326
Constitutional	-643.7554	0.0191	-32.03791	0.1707	-124.185	0.0857	22.13607	0.5220	33.92206	0.0221
Unconstitutional	167.4773	0.8038	-9.37686	0.7713	-189.6935	0.0219	102.9058	0.0989	115.5183	0.0003
R-Sq	0.86469		0.603593		0.773877		0.879693		0.864079	
Adj. R-Sq.	0.849929		0.560349		0.747537		0.865679		0.848246	

Figure 4-9

Impact of State Sales Below Cost and Fair Trade Laws on Small Firms										
Dependent Variable: Single Establishment Firms as a Percentage of the Total Number of Firms										
	Grocery		Variety		Furniture		Hardware		Tire	
Variable	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.
Retail	0.0000118	0.2654	0.0000427	0.0592	0.00000839	0.4958	-0.0000155	0.2090	-0.000043	0.0000
Urban	-0.470325	0.0000	-0.409532	0.0122	0.022897	0.6105	0.228228	0.0000	0.133609	0.3299
PCPI	-0.0000107	0.0024	-0.0000151	0.0108	-0.0000119	0.2075	-0.00000498	0.0333	0.0000141	0.1383
ALL	0.016535	0.0009	0.024659	0.2300	0.020337	0.2879	0.011655	0.2745	0.017107	0.1858
SBCFT	0.021022	0.0041	-0.009547	0.6169	0.030919	0.0550	0.023851	0.1108	0.002778	0.8155
FTNS	0.00663	0.0225	-0.003079	0.8664	0.009174	0.4011	-0.001516	0.8556	0.026277	0.0001
FT	0.001023	0.9227	-0.008101	0.6446	0.029238	0.0280	0.009816	0.4612	0.020925	0.0000
SBCO	0.010887	0.2293	0.022724	0.3203	0.047527	0.0876	0.043199	0.0000	0.0044985	0.8350
R-Sq	0.825765		0.691396		0.395395		0.580249		0.631804	
Adj. R-Sq.	0.792112		0.63179		0.260793		0.4868		0.549834	

Figure 4-10 (A)

Impact of State Sales Below Cost Laws after Brooke and Matsushita on Small Firms										
Dependent Variable: Percentage Small Establishments to the Total Number of Establishments based on Employment Size										
Food		General Merchandise		Automotive		Building Materials		Furniture		
Variable	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.
Retail	-0.00000761	0.0000	-0.0000235	0.0000	-0.00000783	0.0000	-0.00000904	0.0000	-0.00000264	0.0180
Urban	-0.176076	0.0001	-0.212011	0.0000	-0.076774	0.0000	0.013834	0.5134	-0.006627	0.5688
PCPI	0.00000454	0.0000	0.0000153	0.0000	-0.00000298	0.5377	-0.00000106	0.2924	-0.000000615	0.1479
SBCM	0.001639	0.0248	0.00084	0.6150	0.00196	0.0005	0.000996	0.4008	0.001744	0.0398
SBCB	0.001417	0.1881	-0.014946	0.0000	0.002002	0.0145	0.001496	0.2219	0.001146	0.2389
R-Sq	0.865773		0.911023		0.893153		0.866068		0.818427	
Adj. R-Sq.	0.855585		0.90427		0.885043		0.855903		0.804646	

Figure 4-10 (B)

Impact of State Sales Below Cost Laws after Matsushita on Small Firms										
Dependent Variable: Total Number of Establishments										
Grocery		Variety		Tire		Hardware		Furniture		
Variable	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.
Retail	0.696833	67.0000	0.054047	0.0046	0.0311	0.5587	0.126414	0.0001	0.008612	0.7481
Urban	16933.87	0.0000	190.528	0.2795	-462.3817	0.0010	1448.191	0.0000	345.0896	0.1736
Pop	-0.000217	0.0003	-0.00000196	0.8834	0.000149	0.0000	0.0000352	0.0611	0.000188	0.0000
PCPI	-0.375912	0.0001	-0.016154	0.0502	-0.029304	0.1185	-0.035278	0.0273	-0.00177	0.8930
SBCM	338.2294	0.0123	-27.43595	0.3310	25.26562	0.3134	99.67316	0.0004	83.07748	0.0315
R-Sq	0.86367		0.603395		0.769396		0.880238		0.864075	
Adj. R-Sq.	0.849047		0.560855		0.762927		0.866526		0.848513	

## Appendix B:

### References:

- Anderson, Rod W. and Johnson, Ronald N., *Antitrust and Sales-Below-Cost Laws: The Case of Retail Gasoline*, Review of Industrial Organization 14, 189-204, 1999
- Areeda, Phillip and Turner, Donald, *Predatory Pricing and Related Practices Under Section 2 of the Sherman Act*, 88 Harv. L. Rev. 697 (1975)
- Baumol, William, *Quasi-Permanence of Price Reductions: A Policy for Prevention of Predatory Pricing*, 89 Yale L.J. 1 (1979)
- Bolton, Patrick and Brodley, Joseph F., *Predatory Pricing: Strategic Theory and Legal Policy*, 88 Geo. L.J. 2239 (August 2000)
- Bork, R., *The Antitrust Paradox*, (1988), New York; Basic Books
- Brooke Group Ltd. v. Brown & Williamson Tobacco Corp.*, 509 U.S. 209 (1993)
- Cabral, Luis, Introduction to Industrial Organization, MIT Press, 2000, 128-131
- DeGraba, Patrick *Volume Discounts, Loss Leaders, and Competition for More Profitable Customers*, Working Paper, April 2003, pp. 2
- Diamond, Sidney A., *Antitrust Problems of Fair Trading*, 1 The Antitrust Bulletin 97, 98 (1955)
- Dougherty, Francis M., *Validity, Construction, and Application of State Statutory Provision Prohibiting Sales of Commodities Below Cost- Modern Cases*, 41 A.L.R. 4<sup>th</sup> 612 (2000)
- Dr. Miles Medical Company v. Park & Sons*, 220 U.S. 373 (1911)
- Easterbrook, Frank, *Predatory Strategies and Counterstrategies*, 48 U. Chic. L.Rev. 263
- Edlin, Aaron S., *Stopping Above-Cost Predatory Pricing*, 111 Yale L.J. 941, 941 (2002)
- Elzinga, Kenneth G. and Mills, David E., *Trumping the Areeda-Turner Test: The Recoupment Standard in Brooke Group*, Antitrust Law Journal, 62, 559-585, (1994)
- Houston, Michael J., *Minimum Markup Laws: An Empirical Assessment*, Journal of Retailing Vol. 57, No. 4, 98-113 (Winter 1981)

Hovencamp, Herbert, Antitrust, 3<sup>rd</sup>. Edition, West Group, 1999

Johnson, Ronald N., *The Impact of Sales-Below-Cost Laws on the U.S. Retail Gasoline Market*, A Report Prepared for Industry Canada, Competition Bureau, February 1999

Jordan, William H. *Comment: Predatory Pricing After Brooke Group: The Problem of State "Sales Below Cost" Statutes*, 44 Emory L.J. 267 (Winter 1995)

Joskow, P. and A. Klevorick, *A Framework for Analyzing Predatory Pricing Policy*, 89 Yale L.J. 213 (1979)

Koller II, Ronald H., *The Myth of Predatory Pricing: An Empirical Study*, Antitrust Law & Economics Review, 4 Antitrust Law and Economics Review 105 (1971)

Kreps, David M. and Wilson, Robert, *Reputation and Imperfect Information*, Journal of Economic Theory, Vol. 27, 253-279, 1982

Lal, Rajiv, *Price Promotions: Limiting Competitive Encroachment*, Marketing Science, Vol. 9, No. 3, (Summer, 1990)

Lal, Rajiv and Matutes, Carmen, *Retail Pricing and Advertising Strategies*, The Journal of Business, Vol. 67, No.3, July 1994, p.346

Liebeler, Wesley J., *Whither Predatory Pricing? From Areeda and Turner to Matsushita*, 61 Notre Dame L. Rev. 1052, 1052 (1986)

*Lormar v. Kroger Co.*, 1979-1 Trade Cas. ¶62,498 (S.D. Ohio)

*Matsushita Electric Indus. Co. v. Zenith Radio Corp*, 475 U.S. 574 (1986)

McGee, John S., *Predatory Price Cutting: The Standard Oil Case*, Journal of Law and Economics, 137 (1958), 137-159

Milgrom, Paul and Roberts, John, *Predation, Reputation and Entry Deterrence*, Journal of Economic Theory, Vol. 27, 280-312, 1982

Mueller, Willard F. and Patterson, Thomas W., *Effectiveness of State Below-Cost-Sales Laws: Evidence From the Grocery Trade*, Journal of Retailing, Volume 62 No. 2 (Summer, 1986), 166-184

*Multistate Legal Studies, Inc. v. Harcourt Brace Jovanovich Legal and Professional Publications, Inc.*, 63 F.3d. 1540 (1995)

Note, *Constitutionality of Statute Prohibiting Sales at Less than Cost*, 47 Yale L.J. 1201 (1939)

Note, *Statutory Bans Against Selling Below Cost: The Latest Antidote for Big Business*, 25 Va. L. Rev., 699, (1939)

Oler, *Statutory Inhibition against Sales Below Cost* 43 Dick. L. Rev. 112 (1939)

Ordover and Saloner, Handbook of Industrial Organization, Elsevier Science Publishing, 1992, 551-556

Perkins, Samuel, L. *A Place for Fair Competition Acts in Motor Fuel Marketing*, 26 N. Ky.L. Rev. 211 (Summer 1999)

P'ng, I.P.L, *Strategic Behavior in Suit, Settlement, and Trial*, The Bell Journal of Economics, vol.14 no. 2, (Autumn, 1983), 539-550

Posner, Richard A., Economic Analysis of Law, 4<sup>th</sup> Edition, Little, Brown, and Company, 1992, pp. 305-310

Richards, Timothy J., Patterson, Paul, and Padilla, Luis, *Price Promotion by Multi-Product Retailers*, Paper presented at *the First Biennial Conference of the Food Systems Research Group* Madison, Wisconsin, *June 26 - 27, 2000*

Skidmore, James, Peltier, James and Alm, James, *Do State Motor Fuel Sales-Below-Cost Laws Lower Prices*, Journal of Urban Economics, 57 (2005) pp. 189-211

*So-Lo Oil Company, Inc. v. Total Petroleum, Inc.*, 832 P.2d 14 (1992)

*Spectrum Sports, Inc. v. Shirley McQuillan*, 506 U.S. 447 (1993)

Sullivan, Lawrence and Grimes, Warren S. The Law of Antitrust: An Integrated Handbook, West Group, 2000

Sullivan, E. Thomas and Harrison, Jeffrey L., Understanding Antitrust and its Economic Implications, Third Edition, Lexis Publishing, 1998

*Standard Oil Co. v. U.S.*, 221 U.S. 1 (1911)

Tesler, L., *Cutthroat Competition and the Long Purse*, Journal of Law and Economics, 9, (1966), 259-277

Tirole, Jean, The Theory of Industrial Organization, MIT Press, 1998

Trade Regulation Reporter, Commercial Clearing House, various issues

*Utah Pie Co. v. Continental Baking Co.*, 386 U.S. 685 (1967)

*U.S v. Socony-Vacuum Oil Co., Inc.*, 310 U.S. 150 (1940)

Verbeek, Marno, A Guide to Modern Econometrics, John Wiley & Sons, Ltd., 2000, p. 81

Yamey, B., *Predatory Price Cutting: Notes and Comments*, Journal of Law and Economics, 15, (1972)

*Wal-Mart Stores v. American Drugs, Inc.* 891 S.W.2d 30 (Ark. 1995)