State Sales-Below-Cost Laws:
An Econometric Analysis of Effectiveness

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I. Introduction

In 1984, 22 states had legislation prohibiting wholesale and retail sales at prices below cost.[1] Called unfair-sales or sales-below-cost or minimum-markup laws, the laws prohibit sales at prices below some statutory definition of cost.[2] Some laws enumerate the costs a seller is to include in determining his price floor.[3] Other statutes provide that, in the absence of proof of a lesser cost, the seller's cost equals the sum of delivered cost[4] plus some percentage markup.[5] The percentage markup at retail is, usually, 6 percent of delivered cost.

Legislative policy statements point to one or two objectives for sales-below-cost laws. Most states passed their law to prohibit below cost pricing aimed at eliminating competitors or destroying competition. A few states added a second objective of deterring implied misrepresentations of generally lower prices.[6] The focus in the misrepresentation or deception argument is on loss leader selling. This refers to pricing conduct where the seller takes deep price cuts on certain highly visible products important in the consumer's market basket, doing so to convey what is actually a false impression that prices on all products are generally lower than those of a competitor.[7] The seller undertakes the pricing policy hoping consumers will respond to the low margin goods and, in patronizing his store, will also purchase his high margin, price-insensitive goods.

Whether predatory pricing or loss leader selling motivates a seller's price cuts, some economic consequences from success are not much different. Those rivals not able to sustain losses from predation may exit or

acquiesce to the predator's price leadership. Those rivals not able to respond adequately to the deception lose market share and may also exit or, by avoiding price competition, accept the other firm's dominance. In each case, either the market will be less competitively structured or firms will engage in less price competition.

Since enactment in the late 1930's and early 1940's, scant empirical analysis has been done on whether sales-below-cost laws satisfy legislative objectives. A basic problem is how to test for effectiveness. The simplest way to test for effectiveness is to compare market structure in those states having a sales-below-cost law with those states which do not.[8] While simple, there can be problems with this approach. If there is no significant difference between market structures in states with and without the laws, this is not particularly useful information. Nonsignificance might merely indicate that if the law is not enforced, the law will not deter conduct leading to increases in market concentration.[9] But even if differences exist, this fact has only limited interpretive power. It is difficult to contend that just because a state has a law the law is effective. And because different states enforce the law differently, the findings mask the relationship between enforcement and effectiveness.[10] Jurisdictions having a law must be distinguished beyond the point of whether they have a law--say, by looking at enforcement--in order to have any meaningful test of the law's effectiveness in the jurisdiction.

In this paper we test the effectiveness of state sales-below-cost laws in the retail grocery industry. Our purpose is two-fold. First we consider whether the laws have been effective in deterring the predatory or deceptive pricing conduct that might lead to less competitive market structures. Second, our analysis suggests the role econometrics can have

in studying statutory effectiveness--no mean objective for legislators or
enforcement officials--and emphasizes some of the institutional stumbling
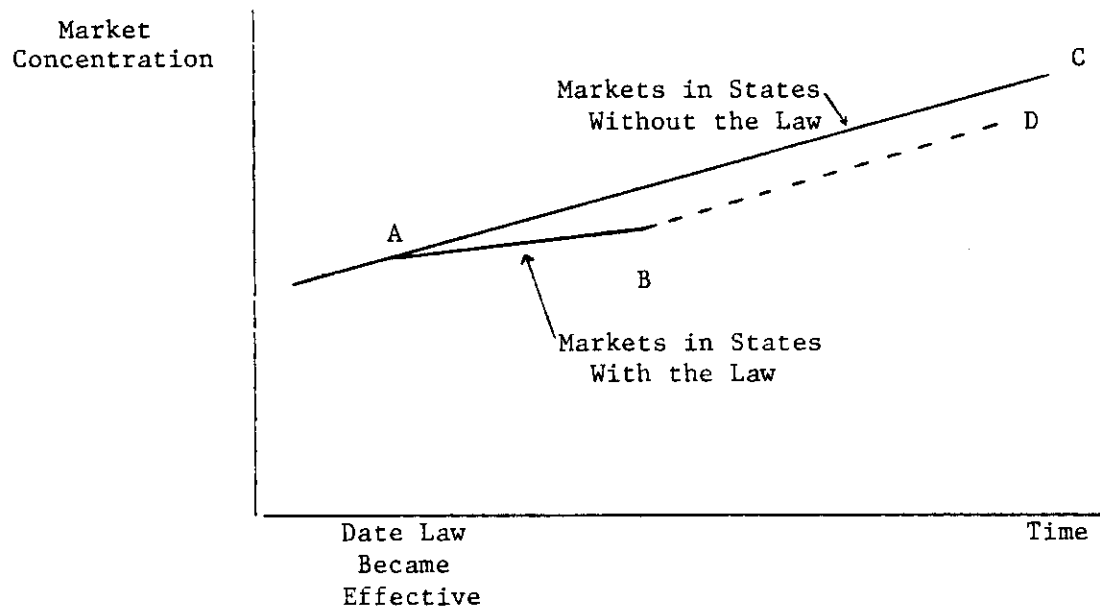blocks along the way.

II. The Effect of Sales-Below-Cost Laws on Market Structure

Sales-below-cost laws seek to deter pricing conduct unrelated to
efficiency or competition on the merits. By prohibiting sales at prices
below some statutory definition of the firm's costs, sales-below-cost laws
address pricing practices that are predatory.[11]

If sales-below-cost laws deter predation, market structures in
sales-below-cost states should differ from market structures in states
without the law or its equivalent. If trend has been towards market
concentration,[12] diagram 1 explains the effect sales-below-cost laws would
have had on concentration. Markets in states with sales-below-cost laws
would have lower concentration levels than in states without the law. The
underlying notion is that a sales-below-cost law deters the predatory
pricing conduct that can accelerate increases in concentration and result
in higher levels of concentration. Should point B be reached where the law
is declared unconstitutional or repealed or no longer enforced,[13]
predation-induced increases in concentration may follow path BD,
paralleling or perhaps eventually intersecting with AC.

If a sales-below-cost law tends to place firms with different
financial resources on a more equal footing in a market, size disparity
among firms might be less than in states without the law. This is because
even if a firm has the resources to survive a below cost pricing campaign
aimed at market dominance or to engage in deceptive pricing for the same
ends, the firm cannot set price lower than the statutory definition of its

Diagram 1

Diagram showing Market Concentration (vertical axis) versus Time (horizontal axis). A line labeled "Markets in States Without the Law" rises from point A to point C. A dashed line labeled "Markets in States With the Law" rises from point A through B to point D. The horizontal axis origin is labeled "Date Law Became Effective."

cost without violating the law. An equally efficient but less powerful firm can therefore be a more effective competitor in markets in jurisdictions with the law. Instead of a few firms dominating market sales, market shares will be more evenly distributed among a number of firms. For example, if there are four leading firms in a market, their share of market sales will be a smaller proportion of the top eight or twenty firms' sales in states with the law. This means that the less dominant firms, taken as a group, will control more market sales in states with the law than in states without the law.

III. Empirical Analysis

    A.   Factors influencing market concentration and change in
           concentration

Market concentration is one dimension of market structure. The more dominant are a few firms, the more concentrated is the market. Market shares at a given point in time will depend on various factors. Among these factors are technology, market size, market conduct, and government policies.

Economies of scale and market size interact to influence market concentration. Economies of scale refer to the decreasing costs of production associated with producing larger quantities of output. Scherer observes that these lower costs derive from product, plant, and multi-plant economies.[14] The economies of scale available in a market indicate the level of production firms will try to achieve in order to minimize costs. Market size is a constraint on the number of firms that can exist in the market at efficient levels of production. If economies of scale are large relative to market size, the market will be able to support fewer firms at

efficient levels of output. Because market size affects the number of firms that can realize all cost advantages, it influences market concentration.

Firm conduct affects market structure. When leading firms merge, concentration increases. Firm entry or exit influences structure. How a firm responds to existing and potential competitors will affect market structure. Firm conduct includes pricing policies designed to eliminate equally efficient rivals,[15] pricing policies designed to keep new firm entry or fringe firm expansion at zero (limit pricing),[16] as well as advertising or counter-advertising. To the extent an incumbent drives competitors out and deters new entry, market concentration will increase or at least not decrease. Since success depends on having resources to withstand losses incurred in predation, not all firms will be successful predators.

Firms produce and respond to one another in a marketplace subject to government rules. State or federal competition policy affects market structure when it operates to deconcentrate a market by breaking up a monopoly. Competition policy can also influence market concentration by deterring predatory or other anticompetitive conduct.

B.   Econometric model of market concentration

Equation 1 specifies the general econometric model used for estimating the relationship between the sales-below-cost law and the level of market concentration.

$$(\text{eq. 1}) \quad CR_{1977} = b_0 + b_1 Sales_{1977} + B_2 MultiMarketFirms + b_3 SBC + u_i$$

The model examines retail grocery concentration in 237 Standard Metropolitan Statistical Areas (SMSAs) in the United States in 1977.[17]

The dependent variable in the model is a concentration ratio. It represents three concentration measures in this study. First we estimate the 1977 Herfindahl-Hirschman, or just Herfindahl, Index (H_{1977}).[18] As a concentration measure, the Herfindahl Index is sensitive to disparity in market shares, giving greater weight to the role a dominant firm in a market plays.[19] We also estimate the share of 1977 grocery story sales held by the largest four firms ($CR4_{1977}$) and the share held by the ninth through twentieth largest firms ($CR9-20_{1977}$) in each SMSA.

The independent variables--those variables explaining variation in concentration among the SMSAs--account for economies of scale, firm conduct, and state government competition policy. For each of these factors influencing concentration, we use a proxy to assess the relationship between that factor and concentration levels.

We assume that economies of scale in grocery retailing are not significantly different among SMSAs. Market size is different, however, and restricts the number of firms that can operate at a minimum efficient scale in the market. The proxy we use for market size is retail grocery sales in an SMSA in 1977 ($Sales_{1977}$). We expect that larger markets will be less concentrated; the coefficient will be negative.

Firms in a given market do not necessarily have the same conduct options. Predatory pricing requires survival resources that small competitors may lack. Advertising can convey information; it can also convey impressions vis-a-vis competitors. Like predatory pricing, aggressive price advertising campaigns can be costly. We assume that the firms most likely to engage in predatory pricing or to undertake loss-leader advertising in order to deter entry or to capture market share are those firms in the SMSA having the most extensive financial resources.

The proxy we use to capture the capacity for anticompetitive firm conduct is the number of firms among the largest four in the SMSA in 1972 that had grocery stores in 10 or more other SMSAs in 1972 ($MultiMarketFirms_{1972}$).[20] The greater this value, the greater the capacity to enhance market share among the top four firms or to deter new entry. We therefore expect the coefficient on this variable to be positive.

A sales-below-cost law represents a government policy to deter pricing conduct that tends to increase concentration for reasons other than efficiency or competition on the merits. Insofar as sales-below-cost laws are effective, the market share of the largest firms will be lower in an SMSA in a state with the law than in an otherwise identical SMSA in a state not having the law. We use alternative measures to gauge the effectiveness of sales-below-cost (SBC) laws. The alternatives for the SBC variable indicate presence of the law and enforcement activity.

$SBC\text{-}Law_{1970's}$ is a zero-one dummy variable indicating whether the SMSA was in a state having a law during the 1970's. Using this variable follows the example of prior research[21] and subjects the results to the same criticisms.[22] Unlike prior research, though, we assigned a value of one to the variable if the SMSA was in a state having a sales-below-cost law sometime during the early 1970's though perhaps not in 1977.[23] This recognizes that these states had the law for several decades prior to repeal or a finding of unconstitutionality and that the legislative or judicial activity occurred, at most, five years prior to 1977. Concentration levels in 1977 should therefore still reflect the state having previously had the law.

Ideally, a variable could be specified that would precisely reveal the relationship between a sales-below-cost law and market concentration. The

variable would indicate each instance where the law deterred predatory or deceptive pricing that would have led to increases in market concentration. Data for such a variable are not available. A next best alternative are variables revealing public and private enforcement of sales-below-cost laws.[24] Since data on private enforcement are not readily available, public enforcement is a remaining alternative.

In 1983, we surveyed enforcement officials in each state having the law in that year.[25] State attorneys general or enforcement agencies responded to survey questions seeking assessments of overall enforcement effectiveness of the respective laws from 1960 to 1982; the number of complaints received from 1960 to 1982 alleging below cost selling; the number of investigations from 1960 to 1982 into alleged below cost selling; the number of formal complaints issued from 1960 to 1982 charging violations; the judicial decisions in sales-below-cost cases from 1960 to 1982; and the budget for enforcing the law from 1960 to 1982. Responses show that enforcement agencies did not maintain records on much of the requested information, especially for the period prior to the late 1970's-- the period for which concentration data are available. Responses also suggest a rapid turnover in enforcement personnel, limiting recall of past enforcement activity. The most enforcement agencies were usually able to provide were general indications, often estimates based on contemporary activity, of past activity. This fact prevents being able to test variables specified in continuous terms for a particular time period--for example, the number of complaints received during the 1970's or the number of investigations undertaken or the monies spent on enforcement.

Enforcement agency responses clearly revealed, however, that states enforce the law differently. With the limited information from the

surveys, we constructed three variables reflecting our subjective assessment of the states' budgetary commitment to enforcing the law from 1960 to 1980. Based on the financial resources enforcement officials indicated had been allocated to enforcement, we characterized SBC states as having had a low, moderate, or high level of enforcement during the 1960's and 1970's. We did this to test the hypothesis that the more aggressive the enforcement, the more effective the law. If the SMSA was in a state having a law in 1977 and enforcement officials did not respond to the survey or responded but said that nothing was spent to enforce the law, we assigned a value of one to the relevant low enforcement variable and a zero otherwise. If the SMSA was in a state having the law in 1977 and enforcement officials responded indicating with certainty that money was allocated to enforcement, we assigned a value of one to the appropriate "aggressive" enforcement variable and a zero otherwise. We assigned a value of one in the intermediate, moderate enforcement level cases--SMSAs in states having the law in 1977 and where enforcement officials alluded to some budget commitment but not of a nature approaching "aggressive" enforcement--and a zero otherwise. From our characterization of enforcement in the states having sales-below-cost laws, we determined that there was a low level of enforcement in 93 SMSAs, a moderate level of enforcement in 11 SMSAs, and a high level of enforcement in 11 SMSAs.

A low, moderate, or a high level of enforcement for states having a sales-below-cost law in 1977 necessarily assigns a zero value for each variable to all SMSAs in states not having the law in that year. These SMSAs would be in states that had never had a sales-below-cost law and states that once had the law but no longer had it in 1977. As shown in diagram 1, states not having the law in 1977 but having had it in the not

too distant past might still have had some residual influence from the law, especially since the laws were passed in the late 1930's and early 1940's. To distinguish SMSAs in these states[26] from SMSAs in states never having had the law or having repealed it many years earlier,[27] we added a fourth SBC variable in the equations testing the budget variables. For each SMSA we assigned a one to the SBC-Repeal variable if the SMSA was in a state where the law was repealed or found unconstitutional from 1972 to 1977 and a zero otherwise. To the extent legislative or judicial activity on these laws reflected general awareness of the laws or enforcement activity in those states, we expect the laws were effective. That is, larger firms would have controlled a smaller proportion of market sales in those states than in states without the law or in states where there was minimal enforcement activity.

C.   Estimation Results

Using multiple regression analysis, we tested equation 1. Table 1 summarizes the ordinary least squares coefficient estimates and statistics using alternative variables to capture the relationship between the sales-below-cost law and market concentration. Each of the equation specifications is significant at the 1 percent level based on an F-test.[28]

In each equation, market sales in 1977 has the expected negative sign and is significant at the 1 percent level. The coefficients indicate that the larger were market sales, the less concentrated was the market, as measured by the Herfindahl Index. The most pronounced effect is on the market sales of the top four firms. For example, in two otherwise identical SMSAs, if four-firm concentration in an SMSA with $1.0 billion in annual grocery sales had been 50, the CR4 on average would have been slightly under 46 in the SMSA with $2.0 billion in annual sales.

Table 1

The Relationship Between Sales-Below-Cost Laws
and Retail Grocery Concentration in 1977

Equation	Dependent Variable	Constant	Sales$_{1977}$ ($ billion)	MultiMarket-Firms$_{1972}$	Law$_{1970's}$	Sales-Below-Cost-Law Budget				$\bar{R}^2$	F
						Low (n=93)	Moderate (n=11)	High (n=11)	Repeal (n=24)		
2(a)	H$_{1977}$	1376.85 * (16.03)	-217.92 * (3.14)	-29.38 (.95)	-209.34 * (3.50)					.08	7.80*
2(b)	CR4$_{1977}$	59.58 * (27.34)	-4.15 * (2.35)	.32 (.41)	-4.28 * (2.81)					.04	4.54*
2(c)	CR9-20$_{1977}$	13.84 * (15.22)	-2.73 * (3.71)	-.14 (.43)	1.75 * (2.76)					.08	7.47*
3(a)	H$_{1977}$	1370.17 * (15.53)	-225.77 * (3.24)	-25.34 (.78)		-179.78 * (2.75)	-3.66 (.02)	-304.68 * (2.06)	-353.35 * (3.43)	.09	4.82*
3(b)	CR4$_{1977}$	59.41 * (26.68)	-4.42 * (2.51)	.43 (.53)		-3.20 ** (1.94)	.36 (.10)	-7.31 ** (1.95)	-9.09 * (3.47)	.06	3.60*
3(c)	CR9-20$_{1977}$	13.76 * (15.06)	-2.50 * (3.46)	-.14 (.42)		.79 (1.16)	1.26 (.85)	4.54 * (2.94)	4.41 * (4.10)	.12	6.54*

* 1 percent level of significance using a one-tail test.
** 5 percent level of significance using a one tail test.
t-statistics are in parentheses. CR4$_{1977}$ and CR9-20$_{1977}$ are estimated using 234 observations. H$_{1977}$ is estimated using 237 observations.

The predatory-capacity variable, $MultiMarketFirms_{1972}$, is not significant in any equation. This result does not support the hypothesis that the more firms in a market with substantial extra-market resources, the more concentrated is the market.[29]

The results on the dummy variable $Law_{1970's}$ support the Cook, Dieter, and Mueller findings.[30] The coefficient is significant in each equation and has the expected signs. According to the Herfindahl Index (eq. 2(a)), retail grocery concentration was lower in states having a law during the 1970's. The top four firms had a smaller market share (eq. 2(b)) and the less dominant ninth through twentieth firms had a greater market share (eq. 2(c)). These findings are consistent with more competitively structured markets. As already discussed, however, this evidence is misleading because we cannot distinguish between SMSAs in different states.[31] We expect that SMSAs in some states bias the results.

The various enforcement variables provide more useful results on the relationship between market concentration and sales-below-cost laws than does the $Law_{1970's}$ variable. The Herfindahl Index shows that SMSAs in states characterized as having a low level of enforcement had lower levels of overall concentration than in markets without the law (eq. 3(a)). Concentration among the largest firms in the market was lower in these SMSAs than in SMSAs in states without the law (eq. 3(b)). Market share among the less dominant ninth through twentieth firms was not significantly greater in SMSAs with low enforcement than in SMSAs without the law (eq. 3(c)).[32]

In no case is the coefficient for a moderate level of enforcement significant.[33] Given the results on the other SBC variables, we are inclined to think that either we inappropriately characterized enforcement

in these states or the enforcement officials overstated past budgetary commitment.

In markets where there was a high level of budget commitment--Minnesota and Wisconsin--the model predicts a statistically lower Herfindahl Index than in markets without the law (eq. 3(a)). Market share among the top four firms was lower than in SMSAs without the law (eq. 3(b)). On average, if CR4 in an otherwise identical SMSA had been 50, it would have been less than 43 in these SMSAs. A result supporting the aggressive enforcement hypothesis is the difference in predicted market share among the ninth through twentieth largest firms in markets with the law. Whereas a low level of enforcement did not have a statistically significant influence on their market share, these less dominant firms had a statistically larger market share in states "aggressively" enforcing the law (eq. 3(c)). If market share for the ninth through the twentieth firms in a state without the law or with the law but low enforcement had been 15, the model would predict that in SMSAs in aggressive jurisdictions their share would have been between 19 and 20 percent of the market. This result is consistent with more competitive market structures in grocery retailing in these states.

There is a statistically significant relationship between concentration and whether an SMSA was in a state abandoning a sales-below-cost law during the 1970's. In SMSAs in states where the law was repealed or declared unconstitutional between 1972 and 1977,[34] the Herfindahl Index shows that concentration was less than in states without the law (eq. 3(a)). The top four firms in these SMSAs controlled a significantly smaller proportion of market sales than in states without the law or in states classified as having a low level of enforcement (eq. 3(b)).[35] The

smaller firms in these markets controlled a statistically greater proportion of all market sales than in markets in states without the law or with minimal enforcement (eq. 3(c)).[36]

To the extent that declaring a statute unconstitutional or that repealing a law reflects public awareness of the law, the SBC-Repeal variable is an indicator of activity in the state qualitatively similar to what we tried to construct in the high level of enforcement variable. If this is correct, the statistical results on the SBC-Repeal variable further support the hypothesis that concentration among leading firms is lower in SMSAs in states where there is more public and private enforcement or awareness of the law.

IV. Conclusions

The econometric evidence in this study supports the following hypotheses: SMSAs in states with sales-below-cost laws have lower levels of leading firm concentration than in SMSAs in states without the laws. The market share of less dominant firms is larger in SMSAs in sales-below-cost jurisdictions than in jurisdictions without the law. Among SMSAs in states with the law, the level of concentration among the top firms is lower and among the smaller firms is larger the more aggressively the law is enforced.

These results are subject to a number of qualifications. First, we must emphasize that our characterization of states as having had a low, moderate, or high level of enforcement depends on enforcement officials' 1983 recollection of past enforcement activity. Second, we ignore the effects of private enforcement. Some states may have had more private than public enforcement. Third, we have avoided saying that sales-below-cost

laws are responsible for lower levels of concentration found in states with the laws. States with a law or with more active enforcement might also have had complementary laws on such practices as comparative price advertising or might have had more aggressive consumer protection or antitrust divisions that would have contributed to more competitive markets.

Recognizing these qualifications, market concentration in states with the law differed considerably from concentration in states without the law. The observed difference in concentration in the Herfindahl equations (eq. 2(a) and eq. 3(a)) is substantial. The mean Herfindahl Index in the 233 SMSAs was 1144. The model predicts that relative to no law, in SMSAs in states aggressively enforcing the sales-below-cost law, the Herfindahl would have been 304 points lower than the mean adjusted for market size.

The potential significance of lowering the Herfindahl by this magnitude is apparent when viewed in the context of the Department of Justice merger guidelines.[37] The Department generally considers markets with a post- merger Herfindahl below 1,000 as "unconcentrated" and "will not challenge mergers falling in this region, except in extraordinary circumstances."[38] On the other hand, the Department considers markets with a Herfindahl between 1,000 and 1,800 as being in the region "at which the competitive concerns associated with concentration are raised to the point at which they become quite serious . . . ."[39] Absent special circumstances, the Department will challenge mergers in this region producing an increase in the Herfindahl of more than 100 points.[40] When the Herfindahl exceeds 1,800, the Department is particularly sensitive to merger activity. It will challenge mergers increasing the Herfindahl by more than 50 points unless special conditions exist.[41] From these

guidelines it is therefore apparent that a 300 point difference in the Herfindahl can represent a substantial difference in a market's competitive environment.

It would be a serious oversight, however, to measure the potential impact of sales-below-cost laws solely in terms of their relationship to market concentration. Of considerable importance as well is their potential effect on strategically created entry barriers even when concentration is not different among jurisdictions.[42] Simply put, if the laws deter predatory conduct, they tend to make markets more contestable.[43] Even if actual entry does not materially lower concentration in markets that are more contestable, competition in the marketplace may be enhanced.

The policy implications from our study are straightforward. States having sales-below-cost laws had more competitively structured retail grocery markets in 1977 than in states never having had the law. Because sales-below-cost laws define a price floor tied to the most efficient firm's costs, this evidence on market structure is consistent with competitive performance in grocery retailing in these states. Absent alternative solutions, our findings counsel against the repeal movement of the 1970's and 1980's.[44] But having a law is not enough. The more actively states enforce the law, which most likely requires greater awareness of the law's long-run potential benefits for consumers, the more significant the relationship between the law and competitive markets.

Notes

1.   Ark. Stat. Ann. § 70-303 (1979);

Cal. Bus. & Prof. Code §§ 17000-17100 (West 1964 and Supp. 1984);

Colo. Rev. Stat. §§ 6-2-101 - 6-2-117 (1973 and Supp. 1983);

Hawaii Rev. Stat. §§ 481-1 - 481-11 (1976);

Idaho Code §§ 48-401 - 48-413 (1977 and Supp. 1984);

Ky. Rev. Stat. §§ 365.020 - 365.070 (1971);

La. Rev. Stat. Ann. §§ 51:412 - 427 (West 1965);

Me. Rev. Stat. Ann. tit. 10 §§ 1201 - 1207 (1980 and Supp. 1984);

Md. Com. Law Code Ann. §§ 11-401 - 406 (1983);

Mass. Gen. Laws Ann. ch. 93, § 14E-K (West 1974);

Minn. Stat. §§ 325D.01 - 325D.08 (1981);

Mont. Code. Ann. §§ 30-14-201 - 30-14-224 (1983);

N.D. Cent. Code §§ 51-10-01 - 51-10-14 (1981);

Okla. Stat. tit. 15, §§ 598.1 - 598.11 (1965);

73 Pa. Cons. Stat. §§ 211 - 217 (1971);

R.I. Gen. Laws §§ 6-13-1 - 6-13-8 (1969);

S.C. Code Ann. § 39-3-150 (Law. Co-op. 1976);

Tenn. Code Ann. §§ 47-25-201 - 47-25-206 (Supp. 1979);

Utah Code Ann. §§ 13-5-1 - 13-5-18 (1972 and Supp 1983);

W. Va. Code §§ 47-11A-1 - 47-11A-7 (1980 and Supp. 1983);

Wis. Stat. § 100.30 (1982);

Wyo. Stat. §§ 40-4-101 - 40-4-116 (1977 and Supp. 1984).

2.   We refer to the laws as sales-below-cost laws because that label avoids any confusion that might come either from thinking that minimum-markup laws require all sellers to mark up merchandise by a given amount or from erroneously equating these laws with resale price maintenance statutes.

For a detailed legal-economic analysis of sales-below-cost laws, see Paterson and Mueller, "State Sales-Below-Cost Laws: A Legal-Economic Analysis of Effectiveness" (N.C. 117 Working Paper No. 80, University of Wisconsin-Madison, Sept. 1984) [hereinafter cited as Paterson and Mueller].

3.   E.g., Arkansas, Colorado, and Kentucky.

4.   Delivered cost refers to invoice cost on merchandise plus any costs associated with delivering the product to the store for sale.

5.   E.g., Massachusetts, Oklahoma, and Wisconsin.

6.   E.g., California, Idaho, and Wisconsin

7.   In grocery retailing, loss leaders might include fresh meats, coffee, margarine, lettuce, potatoes, pet food, and paper products. Leed and German, Food Merchandising Principles and Practices at 124-28 (1973).

The depth of the price cut depends to some extent on market conditions. In a market where there is already extensive price cutting, a markdown below cost of 50 percent may be necessary to attract consumers. In a relatively more stable market, markdowns below cost of 20 to 30 percent may be sufficient to attract consumers. Telephone interview with Robert Park, Compliance Officer, Wisc. Dept. of Agriculture, Trade, and Consumer Protection, Madison, Wisc. (Aug. 20, 1984).

8.   Generally researchers use a dummy variable, assigning a one when the unit of observation is in a jurisdiction with the law and a zero otherwise.   Houston, "Minimum Markup Laws: An Empirical Assessment," 57 J. Retailing 98 (Winter 1981); Cook, Deiter, and Mueller, "The Effects of Wisconsin's Minimum Markup Law" (Staff Paper Series No. 62, Dept. of Agri. Econ., UW-Madison, May 30, 1973) [hereinafter cited as Cook].

9.   Without explaining the basis for his hypothesis, Houston found that sales-below-cost laws did not explain variation in either the number of sole proprietors and partnerships or their proportion to all stores in states having the law in 1977.   He did this for aggregate retail trade and individually for grocery stores, apparel stores, variety stores, automobile dealers, furniture stores, and liquor dealers.   Based on these results, he concluded that repeal would not be a detriment to small retailers.   57 J. Retailing at 106-12.

10.   Cook, Deiter, and Mueller found that the law explained variation in the share of business done by grocery chains in 1967.   Grocery chains in states with the law controlled a smaller share of business than in states without the law.   Based on this, they concluded the law had been effective in deterring concentration in retail grocery sales.   Cook, supra note 8. The Cook, Deiter, and Mueller finding supports effectiveness but it probably exaggerates the law's significance in those states which do nothing to enforce the law.

11.   We refer to pricing conduct that tends to increase concentration for reasons other than efficiency or competition on the merits as predatory pricing.   The concept includes deceptive, loss-leader pricing supported by advertising that has the capacity to restructure markets.   This concept of

predation is broader than that embraced by contemporary commentators such as Areeda and Turner in "Predatory Pricing and Related Practices Under Section 2 of the Sherman Act," 88 Harv. L. Rev. 697 (1975).

12.   The historical trend in grocery retailing in most SMSAs has been toward increased concentration. B. Marion, W.F. Mueller, R. Cotterill, F. Geithman, and J. Schmelzer, The Food Retailing Industry: Market Structure, Profits, and Prices at 14-15 (1979).

13.   The point is that, for whatever reason, the law is no longer enforced.

14.   F. Scherer, Industrial Market Structure and Economic Performance at 81-84 (2d ed. 1980) [hereinafter cited as Scherer].

15.   This is Posner's definition of predatory pricing. Antitrust: An Economic Perspective 188 (1976) [hereinafter cited as Posner].

16.   Scherer, supra note 13, at 234.

17.   Data in this study are from the Food Systems Research Group, North Central Project 117, University of Wisconsin-Madison.

18.   The Herfindahl Index is a summary concentration measure reflecting market share and dispersion of market share among firms. The market Herfindahl is the sum of each firm's squared market share; for the largest four firms the Herfindahl is the sum of each's squared market share. If there were five firms in a market and one firm had 40 percent of sales and each of the other firms had 15 percent, the Herfindahl would be 2500. If the same five firms each had twenty percent of the market, the Herfindahl would be 2000. The difference reflects the disparity of market power in the first example. See Scherer, supra note 13, at 58-59. We measure the Herfindahl using 234 SMSAs.

19. For this reason, the U.S. Department of Justice uses the Herfindahl Index in assessing the competitive impact of horizontal mergers. [Jan.-June] Antitrust and Trade Reg. Rep. (BNA) No. 1169, at S-1, S-5 (June 14, 1984) [hereinafter cited as Merger Guidelines].

20. A preferable variable would be the number of these firms in 1977. Data are only available for 1972, however. By using 1972 data, we assume that there is a high correlation between the 1972 and 1977 data.

Posner discusses the incentives firms with extra-market resources have to prey at Posner, supra note 15, at 185-186.

21. See note 8 and accompanying test supra.

22. See notes 9 and 10 and accompanying text supra.

23. The 1970's cut-off excludes SMSAs in Kansas--which repealed its law in 1961. During the early 1970's, Connecticut (1973), Nebraska (1972), New Hampshire (1977), New Jersey (1975) and Oregon (1975) each had a sales-below-cost law which was declared unconstitutional or repealed or both. Paterson and Mueller, supra note 2, at Table 1.

24. Most states authorize both public and private enforcement. Paterson and Mueller, supra note 2, at Table 5.

25. Questionnaires on enforcement and effectiveness of state sales-below-cost laws were sent to 25 states. All states having the law in 1983 also had the law in 1977. Some response was received from all states but Louisiana, Rhode Island, and Tennessee. Oklahoma, South Carolina, and Virginia declined to provide any response due to limited staff time. The most complete answers were received from Arkansas, California, Colorado, Hawaii, Idaho, Minnesota, Montana, Washington, West Virginia, Wisconsin, and Wyoming.

26. See note 23 supra.

27. <u>Id</u>.

28. A 1 percent level of significance means that the probability of the specified equation having only a random effect on the dependent variable is less than one percent. Unless otherwise indicated, statistical tests will be at the 5 percent level.

29. This finding differs from that of Cotterill and Mueller who used more precise proxies for extra-market resources in a data set with fewer observations. "The Impact of Firm Conglomeration on Market Structure: Evidence for the Food Retailing Industry," 25 <u>Antitrust Bull.</u> 577 (1980).

30. See note 10 <u>supra</u>.

31. See text accompanying note 10 <u>supra</u>.

32. For the fifth through eighth largest firms, market share was statistically slightly higher than in states without the law.

33. These SMSAs were in Idaho, Maine, Montana, Washington, and West Virginia.

34. See note 23 <u>supra</u>.

35. This SBC-Repeal coefficient is not statistically different from the coefficient on a high level of enforcement.

36. This SBC-Repeal coefficient is not statistically different from the coefficient on a high level of enforcement.

37. Merger Guidelines, <u>supra</u> note 19.

38. <u>Id</u>. at S-5.

39. <u>Id</u>.

40. <u>Id</u>.

41. <u>Id</u>.

42. Wisconsin warehouse grocery store operators--in a separate confidential survey by the authors--frequently responded that they

encounted below cost selling when they first opened their warehouse stores. They generally maintained that, when enforced, the Wisconsin sales-below-cost law allowed them to compete more effectively. Most thought the law deterred some below cost selling and prevented large competitors from using advertised specials as loss leaders. See Paterson and Mueller, supra note 2.

43. For a summary of the contestable market literature, see W. Baumol, J. Panzar, and R. Willig, Contestable Markets and the Theory of Industry Structure (1982).

44. In addition to the states indicated in note 23 supra, the following states have repealed their statutes: Arizona (1982), Texas (1983), Virginia (1984), and Washington (1983).