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June 19, 1987

The Honorable Lynn Adelman
Chairman, Judiciary & Consumer
Affairs Committee
Wisconsin State Senate
State Capitol
P.O. Box 7882
Madison, WI 53707-7882

Dear Mr. Chairman:

The staff of the Federal Trade Commission is pleased to have the opportunity to respond to your request for comments on Senate Bill 47.[1] In essence, the bill would remove the portions of Wis. Stat. § 218.01 (1985-86) that provide existing retail automobile dealers with administrative avenues for challenging the establishment or relocation of other dealerships within their relevant market area. These are hereinafter referred to as the "RMA laws". As we discuss below, we believe that the existing RMA laws inhibit competition and, in so doing, may raise costs for consumers. We therefore support the passage of SB 47. By removing restrictions on competition, SB 47 may result in lower automobile prices for consumers. We are also taking this opportunity to comment on two other provisions of § 218.01 that we believe also may raise consumer costs.

The Federal Trade Commission is charged by the United States Congress with maintaining competition and protecting consumers from restraints of trade.[2] In accordance with this role, the Commission and its staff submit comments upon request to federal, state, and local governmental bodies to help assess the competitive and consumer welfare implications of pending policy issues.

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1 These comments represent the views of the Chicago Regional Office and the Bureaus of Competition, Consumer Protection, and Economics of the Federal Trade Commission and do not necessarily represent the views of the Federal Trade Commission or any individual Commissioner. The Federal Trade Commission, however, has voted to authorize the submission of these comments.

2 See 15 U.S.C. § 41 et seq.

Section 5 of the Federal Trade Commission Act prohibits unfair methods of competition, and unfair or deceptive acts or practices. By enforcing this statute, the Commission staff has gained substantial experience in analyzing the impact of various restraints on competition and the costs and benefits to consumers of such restraints. In recent years, the Commission staff has been involved in a number of issues specifically dealing with retail automobile dealerships. In January 1986, for example, the FTC's Bureau of Economics published the results of a study of the "Effect of State Entry Regulation on Retail Automobile Markets."[3] Commission staff has also gained experience relating to the automobile industry through many investigations and litigated cases.

We believe that the current Wisconsin RMA law tends to restrict competition unnecessarily. It requires motor vehicle manufacturers and distributors who seek to establish or relocate automobile dealerships to give written notice to existing dealers selling vehicles of the same make within the relevant market area. (Wis. Stat. §§ 218.01(1)(r); (2)(c)2.b; 3(a)32; 3(f) and 9(a)(1985-86)). A "relevant market area" is defined as the area within a 10-mile radius of the site of an existing dealership or the existing dealer's area of sales responsibility, whichever is greater. The dealers entitled to notification may, within thirty days, file a protest with the office of the transportation commissioner alleging "good cause"[4] for not permitting the proposed dealership. Upon receipt of a protest, the office of the commissioner must schedule a hearing. If the matter is not settled, a hearing is held and a written opinion issued.

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3 We are enclosing a copy of this Staff Report (Attachment 1) for your information.

4 In determining if "good cause" exists the state must consider "the existing circumstances, including, but not limited to:" (1) the supply and demand of vehicles of the same make; (2) the nature of the existing dealers' investment; (3) the effect on the retail motor vehicle market in the area; (4) the public welfare; (5) the effect on competition; (6) the quality of services being provided by existing dealers; (7) the quantities of vehicles and parts promised to existing dealers compared to those actually delivered; and (8) the effect of a denial on an applicant. (Wis. Stat. § 218.01(3)(f)(2)).

Senate Bill 47 Will Benefit Consumers

SB 47 would repeal all the portions of Wis. Stat. § 218.01 dealing with the rights of existing dealers to notification, protest and a hearing. We support this change. We believe that SB 47 is likely to increase competition in retail automobile markets in Wisconsin and thereby benefit consumers. This conclusion is based in large part on the FTC's Bureau of Economics Staff Report[5] which concluded that RMA laws raised automobile prices, on average, by six percent.[6]

Because RMA laws limit manufacturers' freedom to expand in areas where automobiles are most in demand, the RMA laws tend to increase the cost of distributing automobiles and thus facilitate escalation of automobile prices. Consumers may find fewer opportunities to shop among dealerships for better prices and may have to travel farther and expend more time in the course of their shopping.

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5 Since the release of the Bureau of Economics (BE) Staff Report, Wharton Econometric Forecasting Associates (WEFA), at the request of the National Auto Dealers Association, has prepared a report that reviews the Staff Report and challenges its conclusion that prices of automobiles would rise as a result of RMA laws in areas of growing population. The WEFA report also discusses the theoretical arguments that RMA laws are desirable. Attachment 2 is a Bureau of Economics paper that responds to the WEFA report. WEFA's speculation that the Staff Report has demonstrated only that rapidly growing areas have higher automobile prices rather than that the price increases are a result of RMA laws is shown to be unfounded. The theoretical arguments that RMA laws are desirable are also shown to be unfounded.

6 These price increases that result from RMA laws are most likely to occur in counties or metropolitan areas experiencing increases in population (and therefore increases in demand). The results of this FTC study are consistent with other studies showing that increased prices result from RMA laws. See Eckard, E.W., Jr., "The Effects of State Automobile Dealer Entry Regulations on New Car Prices," Economic Inquiry, Vol. XXIV, No. 2 (April 1985), pp. 223-42, and Smith, R.L. "Franchise Regulation: An Economic Analysis of State Restrictions on Automobile Distribution." Journal of Law and Economics Vol. XXV (April 1982), pp. 125-57.

RMA laws may also provide opportunities for existing dealers to deter or delay the entry of new competition by filing spurious protests. The costs to existing dealers of such protests are probably small relative to the potential gains. A protest can delay the establishment of a new dealership by six months. Even if only a small percentage of protests succeed, they may impose significant costs on entrants and reduce the expected profits from entry. In addition, by interposing delay, an existing dealer has an opportunity to negotiate some concession from the manufacturer in settlement of the protest. The costs of such delays and concessions are ultimately passed on to the consumer.

We believe that existing dealers are not likely to be injured by repealing these RMA laws, except where the laws may have insulated a dealer from competition and thereby permitted the dealer to realize excessive profits. There is little basis for present dealers' fears of being flooded with more dealers than potential sales in a market can support. It would not be in the economic interest of either prospective dealers or manufacturers to invest in such a market. Prospective dealers are likely to give careful consideration to what the market will bear in order to protect their investment in real estate, inventory and personnel. Manufacturers will likewise avoid over-saturating a market, because they have an interest in the financial well-being of existing dealers. A manufacturer that treats existing dealers badly is likely to have difficulty finding new dealers when the need arises.

RMA laws do not appear to be necessary for the adequate protection of dealer's rights. Their rights are protected by existing laws and the right to sue in the same fashion as franchisees in any other industry. Consequently, it is difficult to see why automobile dealers require special treatment under the law.

Without the restraint that the RMA laws place on manufacturers' ability to meet competition, manufacturers can be more responsive to consumer demands. It is also unlikely that repealing RMA laws will reduce the quality of dealer service because vigorous competition among manufacturers will insure that consumers receive the mix of service quality, quantity and price they desire.

Other Provisions That May Harm Consumers

Two other provisions of § 218.01 may also raise consumer costs. One provision gives existing dealers the right to 60-days notice of a manufacturer's intent to terminate a franchise and the right to an administrative hearing concerning the fairness of the termination. (Wis. Stat. § 218.01(2)(bd) and 218.01(3)(a)17 (1985-86)). This notice and hearing provision, like the provisions addressed by SB 47, may decrease manufacturers' ability to adapt to changing conditions and thus hinder the establishment and maintenance of efficient distribution systems. Manufacturers may also be thwarted from terminating inefficient dealers. The result is that consumers are denied the procompetitive benefits of a responsive distribution system and are forced to pay the higher costs associated with an inefficient system. Without this provision, dealers would remain protected from unfair terminations by the terms of their contracts and their private right to sue, including the option to seek a preliminary injunction which could maintain the status quo until a final judicial determination regarding the legality of the termination.

The other provision requires dealers to close on Sundays, unless they close on Saturdays instead for religious reasons. (Wis. Stat. § 218.01(3)(a)21 (1985-86)). Studies have shown that mandatory Sunday closing laws may harm consumers directly by increasing the costs and inconvenience of shopping, and indirectly by increasing prices.[7] For many people, the option to shop on Sunday enhances the ease and convenience of buying a car. Eliminating one of the weekend's two days from car shopping forces potential buyers to make personal and economic sacrifices they would not otherwise have to make. If they cannot shop on Sunday, some potential buyers may find it necessary to take time from work, give up some activities reserved for Saturday, or lose leisure time on weeknights. Measuring the cost to consumers of inconvenience or lost leisure is difficult, but the cost is real. The costs of taking off work, or taking several week nights to accomplish what can be done during one full day is more easily measured in terms of lost wages, vacation time and transportation and other costs.

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7 See, e.g., Carlson & Gieseke, "Price Search In a Product Market," Journal of Consumer Research, March 1983, pp. 357-65; Morrison & Newman, in "Hours of Operation Restrictions and Competition Among Retail Firms," Economic Inquiry, Vol. XXI, January 1983; Stigler, "The Economics of Information," Journal of Political Economy, June 1961, pp. 213-25.

Increased shopping costs may lead to increased automobile prices. As the cost of shopping rises, consumers may shop less for automobiles. To the extent that consumers who shop less are less informed about the market, they may be willing to pay higher prices than would be likely in a well-informed market.

Conclusion

In summary, we endorse SB 47, which would remove certain of the restraints imposed by the present law on the retail automobile market. By removing these restraints, we believe Wisconsin will be continuing its tradition of progressive consumer legislation. We also encourage you to consider legislation eliminating the other provisions discussed in this letter. We appreciate this opportunity to provide our views on SB 47 and related provisions.

Very truly yours,

William P. Golden

William P. Golden
Acting Director
Chicago Regional Office

TTE:jd

6/03/87

Response to Wharton Econometric Forecasting Associates' Comments On the Bureau of Economics Study of Relevant Market Area Laws

This paper[1] responds to comments by Wharton Econometric Forecasting Associates ("WEFA")[2] concerning a 1986 Bureau of Economics Staff Report entitled "The Effects of State Entry Regulation on Retail Automobile Markets" ("Staff Report"). The Staff Report concluded on the basis of an econometric study that state relevant market area laws ("RMA laws") increase the retail prices of automobiles.[3] The WEFA comments suggest that the Staff Report's conclusions are not valid because of errors in specification of the price model. Below, we respond to WEFA's comments and affirm our earlier conclusion that RMA laws increase retail automobile prices in areas of positive population growth.

In addition to criticizing the Staff Report, WEFA argues that in theory RMA laws may be desirable and that these laws will not be likely to impose costs on society. Below, we respond to WEFA's comments and conclude that RMA laws are neither necessary nor desirable for the proper functioning of the automobile dealer market. Instead, because of the price effects discussed above, we conclude that these laws can be very costly.

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[1] This report has been prepared by Dr. Alan Mathios. It represents the views of the Bureaus of Competition, Consumer Protection, and Economics, and does not necessarily represent the views of the Commission or any individual Commissioner. The Commission has, however, voted to authorize its submission.

[2] WEFA, "An Evaluation of the FTC's Analysis of the Effects of RMA Laws on Auto Markets" (January 1987). The WEFA report was prepared at the request of the National Automobile Dealers Association (NADA).

[3] State relevant market area laws in general give existing franchised automobile dealers a right to challenge the establishment or relocation by their franchisor of other dealerships within a certain distance of their dealership.

Section I of the report evaluates the theoretical arguments that RMA laws are desirable. Section II briefly discusses the econometric model used in the Staff Report. We then turn to WEFA's comments concerning the Staff Report model. WEFA's comments can be divided into three types: 1) criticisms that apply to any econometric analysis, 2) comments that can be empirically investigated to see if they cause changes in the conclusion of the Staff Report, and 3) comments that cannot be addressed without additional data, some of which can be obtained only from the auto dealers themselves. We respond to these comments in Sections III, IV, and V respectively. We present our conclusions in Section VI.

I. The Alleged Need for RMA Laws

WEFA discusses the arguments put forth by proponents of RMA laws. For example, WEFA reports (at pp. 8-12) that RMA laws are necessary because without such laws: 1) manufacturers will have an incentive periodically to grant franchises in an area even when the market cannot support an additional dealership, 2) the value of goodwill developed by dealers is diminished by the establishment of new dealers, 3) consumers' interests are not protected because divergence between the interests of manufacturers and consumers causes a deterioration of dealership service quality, and 4) the existing legal system does not provide adequate protection of dealers' rights. In addition, WEFA claims that the costs of RMA laws are small in terms of dealerships that are denied. Below we discuss each of these issues.[4]

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[4] WEFA provides no empirical evidence for any of the arguments concerning the necessity for RMA laws.

WEFA contends (at p. 11) that "[w]hile the manufacturer cannot maintain a healthy and productive dealer organization if the dealerships, on balance, are unprofitable, the manufacturer may benefit by granting new franchises in a given market area even when the market cannot support an additional dealership." This argument ignores the incentives both manufacturers and dealers have to maintain a strong dealer network. It is not in the interest of either prospective dealers or manufacturers to invest in a market in which an additional dealer cannot profitably exist. While a "fly-by-night" manufacturing company would engage in actions that decrease the value of a franchise after a dealer-manufacturer agreement has been reached, this is not the case for auto manufacturers, whose treatment of dealers will be widely known and who must rely on dealers in the future. If a manufacturer is too willing to experiment with additional dealerships, the resulting dealership failures would make it more costly for the manufacturer to attract new dealers in the future. Therefore, it is in the manufacturer's best interest to establish a strong dealer network. Even if a manufacturer attempted to mislead potential dealers regarding the profit potential of a new dealership, the prospective dealers have strong incentives to obtain unbiased estimates of the potential sales of the market. Therefore, whether RMA laws exist or not, there is little reason to believe that manufacturers will have either the ability or incentive to open too many dealerships in any market.

WEFA is correct in its assertion that it is important for a dealer to establish a favorable reputation (goodwill) with the public. However, it is not evident that the establishment of another dealership diminishes the value of the goodwill. For example, upon receiving high quality service from a

Chevrolet dealer in an area where there are two Chevrolet dealers, purchasers are likely to recommend the particular dealer from whom they purchased the car. In any event, WEFA correctly asserts (at p. 12) that "an individual dealer who establishes a good reputation will also establish value for the manufacturer because of the linking of the dealership with a make of vehicle (*e.g.*, Smith Chevrolet or Jones Dodge)." Because this is the case, it is in the manufacturer's economic interest to keep this franchise healthy. Actions by the manufacturer that would diminish the return to the individual dealer would also hurt the manufacturer. Therefore, RMA laws do not seem necessary to protect the value of a dealer's goodwill.

WEFA also claims (at p. 7) that RMA laws are needed "because manufacturer and consumer interests are not coincident and the unrestricted ability of manufacturers to open new dealerships may result in a deterioration in the quality and quantity of dealer service." This argument is inconsistent with the workings of a competitive automobile market. Competition from dealers of other manufacturers will insure that consumers receive the mix of service, quality, quantity and price they want. In fact, it is possible that the reduced level of competition in RMA states may cause dealers to be less responsive to the desires of consumers, and provide a lower quality of service. In addition, manufacturers and consumers have congruent interests in the maintenance of dealer quality since consumers are unlikely to recommend the dealer to other consumers, or purchase the manufacturer's product from the dealer in the future, unless they receive adequate service from the dealer.[5]

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[5] Most car sales by dealers are probably concentrated in the immediate local area. Therefore, "word of mouth" communication concerning the quality of the service may be an important determinant of sales.

WEFA argues that dealers' rights are not adequately protected in spite of existing dealer-licensing laws and the dealer's right to sue the manufacturer. For example, it is argued that use of the court system is so costly to dealers that is does not adequately protect their rights. But there would seem to be nothing distinctive about automobile dealerships that makes the protection of their rights under existing laws less adequate than those of any other franchisee. Consequently, it is difficult to see why automobile dealers in particular require special treatment under the law. In addition, the establishment of an alternative to the court system that imposes low costs on existing dealers can create incentives for those dealers to raise spurious protests. This is particularly true if unsuccessful protests can delay the opening of new dealership by several months.[6]

WEFA claims that existing data do not support the claim that RMA laws will lead to higher prices by stopping the opening of new dealerships. The data WEFA cites are from a National Automobile Dealers Association survey which shows that only 6 percent of incumbent dealer protests resulted in new dealerships being denied. However, the 6 percent figure represents only the "tip of the iceberg" in terms of the impact of RMA laws on the number of dealerships. First, RMA laws provide existing dealers with the opportunity to delay the opening of new dealerships by filing spurious protests. Such delays will reduce the number of dealerships at any point in time. Second, the 6% figure does not reflect dealerships that the manufacturer decided not to establish because of the expected costs and

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[6] WEFA cites a survey by the NADA which shows that only 6% of protests are decided in favor of the protesting dealer. This is consistent with the notion that many of the protests are unfounded and are made simply to delay the opening of new dealerships. See discussion *infra*.

delays associated with defending themselves against the protests of existing dealers.[7] To correctly ascertain the effect of the RMA laws on the number of new dealerships, one needs to know the number of dealers that would have been established in the absence of RMA laws. The percentage of protests decided in favor of the manufacturer gives the minimum number of dealerships not established because of RMA laws. The actual deterrence effect on entry may exceed this minimum by a substantial amount.

In summary, the theoretical arguments that RMA laws are desirable are unfounded. RMA laws do not seem necessary for the proper functioning of the automobile dealer market. Manufacturers do not have incentives to over-saturate a market with dealerships or to provide inferior quality. Moreover, RMA laws appear unnecessary for the protection of dealers' rights. Their rights are protected by existing laws and the right to sue in the same fashion as those franchisees in any other industry. Finally, rather than providing evidence on the total number of dealerships that have not been established because of RMA laws, WEFA has provided evidence concerning the *minimum* number of dealerships that have not been established.

Although the theoretical arguments on which WEFA relies are flawed, the actual effect of RMA laws is still an empirical issue. It is to this more important issue that we now turn our attention.

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[7] In other words, the effect of the RMA laws cannot be judged by the percentage of protests that are decided in favor of the manufacturer. Those manufacturers that attempt to establish new dealers in spite of the RMA law are those manufacturers who are relatively confident they will win the protest. Those manufacturers who feel that the RMA laws put them at too much of a disadvantage may not even try to establish a dealership even if that would be in their (and the consumer's) best interest. Therefore, it is not surprising that only 6 percent of the protests are decided in favor of the protesting dealer.

II. The Staff Report Model

To examine the effects of RMA laws on the retail price of automobiles, the Staff Report developed a model of supply and demand for new automobiles, using 1978 cross section data.[8] Unlike models developed by others, the Staff Report model takes account of the possibility that variations across areas of the country in the laws regulating auto dealers may be in part due to different conditions in local auto retail markets. Previous authors have assumed that the laws are established independently of any influence by auto dealers.

In addition, the Staff Report model allows for different effects of RMA laws depending on whether or not the region is experiencing an increase in population. This latter consideration is extremely important. Laws that restrict entry of dealers into areas where there is zero or negative population growth are likely to have no effect, because in those areas it is unlikely that manufacturers would find it in their interest to start a new dealership anyway. Therefore, an econometric analysis that does not distinguish between areas with negative and positive growth is likely to mask some of the effect of RMA laws.

The effect of RMA laws on the price of automobiles is estimated from the price (supply) equation, within a multivariate framework that accounts for the effects of various factors on price. While taking account of

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[8] This model is similar to the models of Smith and Eckard. See Eckard, E.W., Jr. "The Effects of State Automobile Dealer Entry Regulation on New Car Prices", *Economic Inquiry*, Vol XXIV, No. 2, (April 1985), pp. 223-42, and Smith, R.L., "Franchise Regulation: An Economic Analysis of State Restrictions on Automobile Distribution", *Journal of Law and Economics*, Vol XXV, (April 1982), pp. 125-57.

population growth, the prices of automobiles in areas with RMA laws, are compared to those in areas where there is no law. The Staff Report concludes that in areas experiencing population growth, RMA laws have a large and statistically significant positive effect on the price of automobiles. This is the conclusion that WEFA claims is invalid, because according to WEFA, the conclusion results from a misspecification of the supply model.

III. WEFA Comments on the Econometric Analysis

We address first WEFA's assertion that the Staff Report's econometric analysis has specification errors. This is a relatively easy claim to make with respect to any econometric analysis. It is more difficult to evaluate the effect of any asserted specification error on the results of the analysis. After carefully considering the misspecifications asserted by WEFA we are unable to find any indication that the Staff Report omitted any variables that would be expected to be correlated with RMA laws.[9] Absent a relationship with RMA laws, the omission of such variables clearly does not affect the validity of the analysis. In addition, WEFA asserts that relationships among included variables can lead to misleading or biased results. We explain below why this is untrue. Finally, WEFA mistakenly equates the total explanatory power of an econometric model with the significance of an individual variable.

WEFA asserts (at p. 4) that "Viewed from the perspective of its ability to explain regional variations in the dealer margin, the FTC model is a failure. The model introduces 108 factors of which 75% have an incorrect

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[9] By correlation we mean the regression coefficient of the RMA law in the regression of the excluded variable on all included variables.

(using FTC criterion) directional or a statistically insignificant effect on the margin". We believe this statement is misleading because it fails to consider that if the factors in the model were not explaining variation in dealer margins, using common statistical tests, 95% of the factors would be insignificant. In fact, a very simple statistic exists to determine whether the entire set of factors in a model, taken together, are statistically meaningful.[10] Each of the 9 equations in the Staff Report passes this test at more than the conventional level of significance.[11]

WEFA also claims (at p. 14) that the Staff Report demand model "leads to clearly incorrect estimated relationships" because "it introduces all the separate relevant explanatory factors individually, [where] the various explanatory factors are interrelated". This is not true.[12] Interrelated explanatory variables do not cause incorrect estimation (bias). In fact, if the estimation yields significant coefficients they are perfectly valid and

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[10] This statistic is called an F-statistic. The F-statistic is based on how much variation in the variable of interest is explained by the factors in the model. For the two-stage least squares model (the model used in the Staff Report) the relevant statistic is actually a chi-square statistic.

[11] We present these statistics in Appendix C, where the results of the dealer margin equation are presented.

[12] In fact, if a model has interrelated explanatory variables, the omission of any of these variables from the analysis will bias the results. To avoid misspecification, it is essential that all variables that affect the dependent variable and are interrelated with other explanatory variables be included. See Pindyck, R., and Rubinfeld, D., *Econometric Models & Economic Forecasts*, McGraw-Hill, 1981 (pp. 128-130).

correct.[13] An interrelationship among variables is an explanation only for why individual coefficients may appear to be insignificant.

According to WEFA if a relevant variable[14] is excluded from the analysis, the results concerning the included factors are not valid. This is not always true. The exclusion of relevant variables biases the estimates of the included factors only if the included factors are correlated with the excluded relevant factor.[15] WEFA's criticism of the Staff Report is unfounded because they provide no evidence of correlation between the excluded and included factors. For example, WEFA suggests that specific regional costs of owning and operating an automobile dealership should be included in the analysis. The issue is not whether these regional costs affect price (they probably do), but rather whether they differ for dealers that operate under RMA laws and those that do not. If regional costs do not differ in this way, then the estimates obtained without including the regional cost variables are unbiased.

WEFA suggests that if a model does not explain most of the variation in the variable being studied, *i.e.*, have a high R^2, then the model has not performed well.[16] For example, WEFA states (at p. 21) "the objective of the

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[13] See Kmenta, J., *Elements of Econometrics*, Macmillan Publishing Co., New York, New York, 1971. Kmenta states (p. 388) "Let us now examine the connection between the degree of multicollinearity and the properties of the least squares estimators of the regression coefficients. Under the basic assumptions of the classical normal linear regression model, the least squares estimators of the regression coefficients have all the desirable properties."

[14] By relevant, we mean that the variable is important in explaining the dealer price or margin.

[15] See Pindyck, R., and Rubinfeld, D., pp. 128-130.

[16] R^2 indicates the percentage of variation in the dependent variable explained by the model.

FTC supply model was to explain regional variations in the dealer margin and to determine whether introducing RMA laws increased this margin. If essentially all the explanatory power in the average unit retail price equation comes from the unit dealer cost variable, the FTC model is not doing a good job at explaining variation in the dealer margin". If the question is whether RMA laws increase the retail price of automobiles, a statistically significant positive relationship between retail price and RMA laws is entirely sufficient to conclude that they do.[17] The percentage of the variation in retail price explained by the Staff Report model is not a relevant consideration.[18]

The WEFA analysis next turns to more substantial matters of misspecification. The major misspecification cited by WEFA can be analyzed by simple respecifications of the model. This is discussed below.

IV. Empirical Investigation of WEFA Comments

The WEFA report claims that, rather than finding that RMA laws result in higher prices in areas that are experiencing large percentage increases in population, the Staff Report has really found that either: 1) market areas with large absolute population increases have higher retail motor vehicle prices, or 2) market areas with old RMA laws and large absolute population increases have higher retail motor vehicle prices. In particular WEFA notes

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[17] This conclusion assumes that there are no omitted factors that are correlated with the laws. There are many examples of empirical models where there is a low R^2 and very reliable effects on a specific factor. For example, in examining earnings across individuals, those who have more experience earn more than those with less experience. The typical R^2 in such models is approximately .2 yet the factor "experience" is statistically significant.

[18] The measure of goodness-of-fit used in the Staff Report model is actually the square of the correlation coefficient between the actual and predicted value of the dependent variable.

(at p. 4) that "since only large rapidly growing cities have large absolute population increases, the FTC may merely have documented that wage and other dealer costs are higher in major metropolitan areas than in smaller urban areas and rural areas."

The Staff Report included the *percentage* change in population (whether positive or negative) as a factor to explain retail prices. WEFA asserts that the *absolute* change in population for areas with growing population should have been used as a factor, since a large growing city can have a small percentage increase in population but a large absolute increase. To account for this we have re-estimated the identical price (supply) equation, except that this time we have included a variable that captures whether an area has positive absolute population growth and, if so, how large an absolute growth. Our results confirm the conclusion drawn from the original equation, namely that RMA laws in areas with growing populations (whether absolute or percentage) have a positive effect on motor vehicle prices.[19]

We have also re-estimated the identical specification, except that this time we use the percentage increase in population only if positive, and zero otherwise. This will allow us to compare prices in areas with population growth and RMA laws to prices in areas with population growth but without RMA laws. The results using this variable confirm the conclusion that in growing areas, RMA laws have a positive and significant effect on the price of automobiles.[20]

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[19] The new and original regression results are presented in Appendix A, along with a brief summary of the findings regarding the law variables.

[20] The regression results for the original and new specifications are given in Appendix B along with a brief summary of findings regarding the law variables.

The WEFA study suggests that it is more appropriate to explain dealer margins than to explain retail prices. WEFA claims that by including dealer cost as an explanatory variable, the R^2 of the equation is higher and offers a misleading indicator of performance of the model. While we do not agree with WEFA's claim[21], in the interest of completeness we have re-estimated the equation with dealer margin as the dependent variable to be explained. The results confirm our conclusion that in growing areas RMA laws have a positive effect on automobile prices.[22]

V. WEFA Comments that Require Additional Data

We agree with WEFA that it is preferable to include dealer cost variables that are associated with the specific market area (SMSA or county level) than to use statewide averages. For example, WEFA suggests that wages should be collected for each market area, but, as WEFA notes, such data may not exist. In lieu of specific wage data, WEFA suggests using wholesale-retail trade and service-sector wage rates, which can be calculated for all the market areas. It is not clear whether these variables would be superior to statewide averages of wages specific to the auto dealer sector. This would depend on how similar auto-dealer wages are to the entire retail-

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[21] We have already dismissed the role of R^2 in evaluating the impact of RMA laws on the price of motor vehicles. In addition, the econometric model was originally specified as a demand and supply equation for automobiles. Consumers do not care about margins, they care about price. It is appropriate to estimate the model with price as the dependent variable and include determinants of price as explanatory variables. In fact, by including the cost of the automobile to the dealer as an explanatory variable, the Staff Report is being less restrictive since is not restricting the coefficient on this factor to be equal to 1, as is the case if dealer margin is used as the dependent variable.

[22] The results of these regressions are given in Appendix C along with a brief summary of the findings regarding the law variables.

wholesale trade wages versus how similar local auto dealer wages are to statewide auto dealer wages.

WEFA also suggests that it would be useful to obtain data for dealerships over time and compare the prices of automobiles before the RMA laws were passed to the prices afterwards. They claim that because many of the potential omitted variables would not change over time, by comparing pre- and post-law prices we would avoid many problems. While we agree that this would be a useful additional exercise, the lack of such a comparison does not imply that the cross-sectional analysis in the Staff Report is invalid. In fact, in the time-series, cross-sectional analysis suggested by WEFA, the number of cross section observations (different dealers) will far exceed the number of time periods (the number of years of data for each dealer). Consequently, the bulk of the econometric analysis would still compare prices across dealers, rather than prices across time.

In summary, WEFA suggests that to "fix" the Staff Report model, regional differences in dealer ownership and operating cost must be properly and completely incorporated into the model. Additionally, WEFA suggests that regional differences in dealership size, sales mix within makes, dealer supplied options, and regional differences in legislation must be included. As discussed above, because WEFA provides no evidence that these variables are systematically related to the existence of RMA laws, it cannot be concluded that their omission from the Staff Report model will affect the validity of the conclusions about the effects of RMA laws.

VI. Conclusion

Although WEFA has claimed that the Staff Report may be subject to specification error, WEFA provided no examples of misspecification that are likely to affect the report's conclusion. WEFA cited a few variables that are not included in the analysis but WEFA provides no evidence that these variables differ systematically between regions that are subject to RMA laws and regions that are not, a necessary condition for obtaining biased results.

WEFA's speculation that the Staff Report has demonstrated only that rapidly growing areas have higher automobile prices has been shown to be unfounded. When controlling for the absolute growth of an area, we still find that RMA laws in areas with growing populations have a positive effect on motor vehicle prices. Other specifications of the growth variable also confirm the effects of RMA laws. Finally, examination of dealer margins instead of prices does not change the report's conclusion.

Appendix A

In this appendix we report the original and new estimates of the supply equation. The following change was made in the equation. The growth rate variable (GR) was originally defined as the logarithm of the ratio of the observation year population to that in 1970 (percentage change in population since 1970). The new growth variable is defined as the absolute change in population between 1970 and 1978, if positive, and zero otherwise.[22] All of the other variables are defined as they were in the original report. Obviously, this change will affect the coefficient on the growth variable. Table 1 reports the old and new coefficient estimates for the supply equation. A Comparison of the old and new results reveals that, while the coefficients involving the RMA law variables (ROLD, IAGRO, IAGR1, and IAGR1SQ) have changed slightly, the new estimate of the coefficient on the interaction of the law variable and absolute population growth, IAGR1, is larger and more significant for every car model. In Table 1, coefficients with t-values (which appear in parentheses under the coefficient) greater than or equal (in absolute value) to 1.96 are significant at the 95% level.

Table 2 presents the old and new estimates of the impact of RMA laws on the price of each model type.[23] It is clear from Table 2 that for both the old and new equations, RMA laws in areas of growing populations have a positive impact on price. In addition, for 7 of the 9 model types, the new equation yields larger positive price effects than did the old.

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[22] To be consistent with the original specification we have transformed the absolute growth variable. The transformation is identical to the transformation of the AGR variable in the Staff Report (p. 62).

[23] This estimated effect involves a combination of some of the coefficient estimates of the supply equation.

Appendix A - Table 1

The Estimated Regression Coefficients for the Retail Supply Equation for the Nine Chevy Auto Body-Types for 1978 (Dependent Variable = Log of Retail Price)

Variable	Body Type					
	Regular		Malibu		Camaro	
	Old	New	Old	New	Old	New
C	.7875	.6810	.5426	.4512	.2226	.1447
RNEW	-.0028	-.0027	-.0032	-.0028	.0032	.0037
	(-.94)	(-0.83)	(-1.16)	(-0.90)	(1.10)	(1.07)
ROLD	-.1013	-.1253	-.0941	-.1317	.0395	-.0218
	(-1.68)	(-2.10)	(-1.70)	(-2.32)	(.66)	(-0.34)
IAGR0	.0103	.0124	.0095	.0130	-.0067	-.0004
	(1.49)	(1.79)	(1.50)	(1.97)	(-.97)	(-0.57)
IAGR1	2.0869	3.1406	1.6992	2.7910	2.8680	4.0269
	(4.72)	(5.70)	(4.17)	(5.46)	(6.65)	(7.08)
IAGR1SQ	-5.348	-9.5244	-4.530	-7.5770	-9.169	-13.401
	(-1.91)	(-5.14)	(-1.75)	(-4.36)	(-3.42)	(-7.10)
PW	.9077	.9162	.9306	.9381	.9926	.9949
	(69.83)	(67.25)	(77.80)	(70.06)	(99.74)	(88.82)
WAGE	.0121	.0158	.0208	.0235	-.0118	-.0048
	(1.32)	(1.76)	(2.43)	(2.73)	(-1.28)	(-0.51)
ADV	-.0043	-.0055	-.0038	-.0054	-.0014	-.0035
	(-3.61)	(-5.00)	(-3.43)	(-5.04)	(-1.14)	(-3.01)
DENS	-.0039	-.0028	-.0022	-.0015	.0014	.0022
	(-5.46)	(-4.18)	(-3.38)	(-2.26)	(1.95)	(3.05)
GR	-.0031	-.1755	.0053	-.1993	.0150	-.1741
	(-.40)	(-2.02)	(.73)	(-2.41)	(1.96)	(-1.97)
FORCE	-.0135	-.0162	-.0121	-.0170	-.0071	-.0106
	(-2.53)	(-2.70)	(-2.39)	(-2.90)	(-1.41)	(-1.77)
CANCEL	.0174	.0226	.0172	.0241	.0074	.0137
	(3.34)	(3.81)	(3.52)	(4.19)	(1.48)	(2.29)
LD	-.0131	-.0107	-.0160	-.0146	-.0116	-.0090
	(-2.47)	(-1.90)	(-3.14)	(-2.65)	(-2.22)	(-1.54)

Appendix A - Table 1 (Continued)

The Estimated Regression Coefficients for the Retail Supply Equation
for the Nine Chevy Auto Body-Types for 1978
(Dependent Variable = Log of Retail Price)

Variable	Body Type					
	Nova		Monte Carlo		Monza	
	Old	New	Old	New	Old	New
C	.7723	.6915	.4099	.3389	.6682	.5300
RNEW	-.0006 (-.20)	-.0006 (-.21)	-.0023 (-.82)	-.0022 (-.72)	-.0045 (1.28)	-.0041 (-1.12)
ROLD	.0155 (0.30)	-.0260 (-0.51)	-.0990 (-1.79)	-.1184 (-2.21)	-.0231 (-.32)	-.0951 (-1.42)
IAGR0	-.0024 (-.40)	.0021 (0.35)	.0100 (1.58)	.0120 (1.91)	.0008 (.09)	.0086 (1.10)
IAGR1	1.5946 (4.06)	2.1550 (4.60)	1.7007 (4.02)	2.3502 (4.59)	1.3734 (2.70)	2.6807 (4.64)
IAGR1SQ	-5.024 (-2.03)	-7.4424 (-4.67)	-4.621 (-1.73)	-7.7015 (-4.52)	-.9754 (-.31)	-8.0685 (-4.14)
PW	.9067 (90.34)	.9112 (87.77)	.9495 (81.92)	.9540 (79.95)	.9235 (104.7)	.9275 (104.34)
WAGE	.0151 (1.72)	.0207 (2.57)	.0172 (1.96)	.0213 (2.57)	.0103 (.95)	.0243 (2.50)
ADV	-.0021 (-1.96)	-.0035 (-3.47)	-.0027 (-2.44)	-.0037 (-3.63)	-.0015 (-1.04)	-.0044 (-3.58)
DENS	-.0007 (-1.10)	-.0003 (-0.56)	-.0021 (-3.05)	-.0014 (-2.25)	-.0016 (-1.84)	-.0003 (-0.41)
GR	.0108 (1.54)	-.0768 (-1.02)	.0017 (.23)	-.0908 (-1.13)	.0201 (2.22)	-.1485 (-1.64)
FORCE	.0031 (0.63)	.0013 (0.24)	-.0162 (-3.22)	-.0172 (-3.14)	-.0062 (-1.00)	-.0075 (-1.17)
CANCEL	.0036 (.76)	.0071 (1.35)	.0179 (3.68)	.0206 (3.83)	.0128 (2.09)	.0183 (2.88)
LD	-.0087 (-1.82)	-.0076 (-1.54)	-.0121 (-2.37)	-.0103 (-1.96)	-.0168 (-2.77)	-.0118 (-2.02)

Appendix A - Table 1 (Continued)

The Estimated Regression Coefficients for the Retail Supply Equation for the Nine Chevy Auto Body-Types for 1978 (Dependent Variable=Log of Retail Price)

Variable	Body Type					
	Chevette		Sportvan		Corvette	
	Old	New	Old	New	Old	New
C	.5561	.4336	.2245	.1123	.4131	.2340
RNEW	-.0025	-.0027	-.0077	-.0080	.0033	.0053
	(-.81)	(-0.77)	(-1.61)	(-1.58)	(.36)	(0.57)
ROLD	-.0672	-.1037	-.0280	-.0831	.3033	.3303
	(-1.03)	(-1.61)	(-.24)	(-0.79)	(1.69)	(1.97)
IAGR0	.0053	.0089	.0012	.0077	-.0402	-.0447
	(.70)	(1.18)	(.09)	(0.62)	(-1.95)	(-2.30)
IAGR1	1.9861	3.2553	1.7323	2.1992	3.1587	6.4510
	(4.33)	(5.65)	(3.45)	(3.59)	(2.36)	(4.24)
IAGR1SQ	-4.4453	-9.9334	-3.6972	-7.4675	-1.7200	-15.84
	(-1.54)	(-5.21)	(-1.31)	(-3.69)	(-.21)	(-3.08)
PW	.9289	.9368	.9649	.9688	.9743	.9806
	(95.60)	(88.95)	(89.67)	(89.24)	(39.72)	(39.62)
WAGE	.0198	.0268	.0222	.0336	.0044	.0186
	(1.99)	(2.81)	(1.39)	(2.33)	(0.15)	(0.73)
ADV	-.0038	-.0057	-.0056	-.0070	.0002	-.0035
	(-2.99)	(-4.81)	(-2.76)	(-3.96)	(0.06)	(-1.07)
DENS	-.0005	.0008	-.0018	-.0006	-.0087	-.0046
	(-.66)	(1.09)	(-1.72)	(-0.61)	(-3.82)	(-2.33)
GR	-.0022	-.1941	-.0060	-.0602	-.0169	-.5242
	(-.27)	(-2.13)	(-.46)	(-0.68)	(-.70)	(-2.21)
FORCE	-.0096	-.0121	-.0120	-.0097	-.0031	-.0041
	(-1.71)	(-1.93)	(-1.60)	(-1.28)	(-.19)	(-0.25)
CANCEL	.0186	.0246	.0222	.0234	.0124	.0217
	(3.38)	(3.92)	(3.25)	(3.34)	(.79)	(1.32)
LD	-.0212	-.0174	-.0050	-.0030	.0222	.0344
	(-3.93)	(-3.10)	(-.67)	(-0.40)	(1.37)	(2.18)

Appendix A - Table 2

The Impact of the RMA Laws on the Price of Chevrolet Cars in 1978

Body Type	Average Percentage Price Change For Areas with Positive Population Growth	
	Old	New
Regular	5.90**	7.68**
Malibu[1]	5.02**	8.35**
Camaro	8.43**	11.80**
Nova	4.18*	5.09*
Monte Carlo	5.30**	6.03**
Monza	8.81**	7.08**
Chevette	5.87**	7.58**
Sportvan	3.68	3.28
Corvette	16.82**	18.75*

[1] The estimate of the price effect for the Malibu in the Staff Report should have been reported as 5.02 rather than 14.31.

* significantly above zero at the 95% level.

** significantly above zero at the 99% level.

Appendix B

In this appendix we report the original and new estimates of another specification of the supply equation. The following change was made in the specification. The growth rate variable, GR, was changed from the percentage growth rate to the growth rate if positive, otherwise zero. All of the other variables are defined as they were in the original report. Table 1 reports the old and new coefficient estimates for the supply equation. It is clear from the results below that the equation is not sensitive to this change in the growth rate variable. Like the original equation, the interaction of the law variable and areas with population growth, IAGR1, is positive and significant in all 9 equations. In the following tables, coefficients with t-values of greater than or equal (in absolute value) to 1.96 are significant at the 95% level. The t-values are reported under the coefficients and appear in parentheses.

Table 2 presents the old and new estimates of the impact of RMA laws on the price of each model type.[24] It is clear from Table 2 that for both the old and new equations, RMA laws in areas of growing populations have a positive impact on price.

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[24] This estimated effect involves a combination of some of the coefficient estimates of the supply equation.

Appendix B - Table 1

The Estimated Regression Coefficients for the Retail Supply Equation
for the Nine Chevy Auto Body-Types for 1978
(Dependent Variable = Log of Retail Price)

Variable	Body Type					
	Regular		Malibu		Camaro	
	Old	New	Old	New	Old	New
C	.7875	.7803	.5426	.5327	.2226	.2119
RNEW	-.0028	-.0029	-.0032	-.0032	.0032	.0032
	(-.94)	(-.98)	(-1.16)	(-1.21)	(1.10)	(1.08)
ROLD	-.1013	-.1091	-.0941	-.1060	.0395	.0196
	(-1.68)	(-1.84)	(-1.70)	(-1.93)	(.66)	(.33)
IAGR0	.0103	.0112	.0095	.0109	-.0067	-.0044
	(1.49)	(1.65)	(1.50)	(1.73)	(-.97)	(-.64)
IAGR1	2.0869	2.073	1.6992	1.6939	2.8680	2.888
	(4.72)	(4.69)	(4.17)	(4.14)	(6.65)	(6.69)
IAGR1SQ	-5.348	-5.39	-4.530	-4.619	-9.169	-9.315
	(-1.91)	(-1.93)	(-1.75)	(-1,78)	(-3.42)	(-3.47)
PW	.9077	.908	.9306	.9314	.9926	.9924
	(69.83)	(69.78)	(77.80)	(77.43)	(99.74)	(99.54)
WAGE	.0121	.012	.0208	.0213	-.0118	-.0102
	(1.32)	(1.33)	(2.43)	(2.49)	(-1.28)	(-1.11)
ADV	-.0043	-.0043	-.0038	-.0389	-.0014	-.0017
	(-3.61)	(-3.66)	(-3.43)	(-3.54)	(-1.14)	(-1.42)
DENS	-.0039	.0039	-.0022	-.0022	.0014	.0013
	(-5.46)	(-5.41)	(-3.38)	(-3.34)	(1.95)	(1.86)
GR	-.0031	-.0024	.0053	.0050	.0150	.0095
	(-.40)	(-.30)	(.73)	(.66)	(1.96)	(1.19)
FORCE	-.0135	-.0138	-.0121	-.0125	-.0071	-.0075
	(-2.53)	(-2.58)	(-2.39)	(-2.45)	(-1.41)	(-1.49)
CANCEL	.0174	.0177	.0172	.0177	.0074	.0080
	(3.34)	(3.39)	(3.52)	(3.59)	(1.48)	(1.60)
LD	-.0131	-.0132	-.0160	-.0161	-.0116	-.0116
	(-2.47)	(-2.48)	(-3.14)	(-3.15)	(-2.22)	(-2.23)

Appendix B - Table 1 (Continued)

The Estimated Regression Coefficients for the Retail Supply Equation
for the Nine Chevy Auto Body-Types for 1978
(Dependent Variable=Log of Retail Price)

Variable	Body Type					
	Nova		Monte Carlo		Monza	
	Old	New	Old	New	Old	New
C	.7723	.7672	.4099	.4073	.6682	.6641
RNEW	-.0006 (-.20)	-.0007 (-.26)	-.0023 (-.82)	-.0023 (-.84)	-.0045 (1.28)	-.0046 (-1.30)
ROLD	.0155 (0.30)	.0095 (.19)	-.0990 (-1.79)	-.1036 (-1.91)	-.0231 (-.32)	-.0309 (-.43)
IAGR0	-.0024 (-.40)	-.0017 (-.28)	.0100 (1.58)	.0106 (1.69)	.0008 (.09)	.0017 (.20)
IAGR1	1.5946 (4.06)	1.5921 (4.05)	1.7007 (4.02)	1.6952 (4.00)	1.3734 (2.70)	1.3833 (2.73)
IAGR1SQ	-5.024 (-2.03)	-5.14 (-2.08)	-4.621 (-1.73)	-4.6641 (-1.74)	-.9754 (-.31)	-1.109 (-.35)
PW	.9067 (90.34)	.9071 (90.32)	.9495 (81.92)	.9497 (81.91)	.9235 (104.7)	.9234 (105.04)
WAGE	.0151 (1.72)	.0154 (1.76)	.0172 (1.96)	.0173 (1.99)	.0103 (.95)	.0109 (1.02)
ADV	-.0021 (-1.96)	-.0022 (-2.00)	-.0027 (-2.44)	-.0027 (-2.48)	-.0015 (-1.04)	-.0016 (-1.13)
DENS	-.0007 (-1.10)	-.0007 (-1.01)	-.0021 (-3.05)	-.0020 (-3.00)	-.0016 (-1.84)	-.0015 (-1.77)
GR	.0108 (1.54)	.0121 (1.65)	.0017 (.23)	.0021 (.27)	.0201 (2.22)	.0193 (2.05)
FORCE	.0031 (.63)	.0031 (.63)	-.0162 (-3.22)	-.0163 (-3.23)	-.0062 (-1.00)	-.0062 (-.99)
CANCEL	.0036 (.76)	.0037 (.78)	.0179 (3.68)	.0180 (3.70)	.0128 (2.09)	.0128 (2.10)
LD	-.0087 (-1.82)	-.0088 (-1.83)	-.0121 (-2.37)	-.0122 (-2.37)	-.0168 (-2.77)	-.0168 (-2.78)

Appendix B - Table 1 (Continued)

The Estimated Regression Coefficients for the Retail Supply Equation
for the Nine Chevy Auto Body-Types for 1978
(Dependent Variable=Log of Retail Price)

Variable	Body Type					
	Chevette		Sportvan		Corvette	
	Old	New	Old	New	Old	New
C	.5561	.5474	.2245	.2191	.4131	.4097
RNEW	-.0025	.0026	-.0077	-.0077	.0033	.0037
	(-.81)	(-.82)	(-1.61)	(-1.60)	(.36)	(.41)
ROLD	-.0672	-.0813	-.0280	-.0353	.3033	.3059
	(-1.03)	(-1.26)	(-.24)	(-.31)	(1.69)	(1.72)
IAGR0	.0053	.0069	.0012	.0020	-.0402	-.0405
	(.70)	(.93)	(.09)	(.16)	(-1.95)	(-1.99)
IAGR1	1.9861	1.9853	1.7323	1.7278	3.1587	3.1541
	(4.33)	(4.31)	(3.45)	(3.44)	(2.36)	(2.35)
IAGR1SQ	-4.4453	-4.4903	-3.6972	-3.7050	-1.7200	-1.508
	(-1.54)	(-1.55)	(-1.31)	(-1.31)	(-.21)	(-.18)
PW	.9289	.9292	.9649	.9652	.9743	.9741
	(95.60)	(95.16)	(89.67)	(89.68)	(39.72)	(39.51)
WAGE	.0198	.0207	.0222	.0226	.0044	.0051
	(1.99)	(2.08)	(1.39)	(1.43)	(.15)	(.18)
ADV	-.0038	-.0040	-.0056	-.0057	.0002	.00005
	(-2.99)	(-3.16)	(-2.76)	(-2.83)	(.06)	(.01)
DENS	-.0005	-.0006	-.0019	-.0019	-.0087	-.0088
	(-.66)	(-.73)	(-1.72)	(-1.73)	(-3.82)	(-3.82)
GR	-.0022	-.0053	-.0060	-.0071	-.0169	-.0234
	(-.27)	(-.62)	(-.46)	(-.53)	(-.70)	(-.93)
FORCE	-.0096	-.0102	-.0120	-.0122	-.0031	-.0035
	(-1.71)	(-1.80)	(-1.60)	(-1.62)	(-.19)	(-.22)
CANCEL	.0186	.0192	.0222	.0224	.0124	.0126
	(3.38)	(3.48)	(3.25)	(3.28)	(.79)	(.80)
LD	-.0212	-.0212	-.0050	-.0050	.0222	.0222
	(-3.93)	(-3.92)	(-.67)	(-.68)	(1.37)	(1.37)

Appendix B - Table 2

The Impact of the RMA Laws on the Price of Chevrolet Cars in 1978

Body Type	Average Percentage Price Change For Areas with Positive Population Growth	
	Old	New
Regular	5.90**	5.79**
Malibu[1]	5.02**	4.69**
Camaro	8.43**	8.44**
Nova	4.18*	4.06*
Monte Carlo	5.30**	5.28**
Monza	8.81**	8.64**
Chevette	5.87**	5.81**
Sportvan	3.68	3.89
Corvette	16.82**	17.28*

[1] The estimate of the price effect for the Malibu in the Staff Report should have been reported as 5.02 rather than 14.31.

* significantly above zero at the 95% level.

** significantly above zero at the 99% level.

Appendix C

In this appendix we report the estimates of the dealer margin equation. As opposed to the original specifications, the following table uses the dealer margin as the dependent variable. Since the dealer's unit cost (cost of the car to the dealer) is part of the dependent variable, it is no longer used as either a regressor or as an instrumental variable. The growth rate variable as specified in appendix B (rather than the absolute growth variable or the original growth variable) was used in the analysis. All of the other explanatory variables are defined as they were in the original report. The dependent variable is simply defined as the difference of the log of retail price and the log of dealer's cost. This represents the percent markup to the dealer. Obviously, the estimated coefficient vector will change since we are now explaining dealer margins. The results in Table 1 show that in 8 of the 9 model types the interaction of the law and population growth variable, IAGR1, is still positive and significant. In the tables, coefficients with t-values of greater than or equal (in absolute value) to 1.96 are significant at the 95% level. The t-values are given under the coefficient and appear in parentheses.

In response to WEFA's claim that the Staff Report model is a failure in explaining dealer margins, we present the chi-square statistic, which is a test for whether all the factors, when taken together, are statistically significant. The critical chi-square value for the 99% significance level in a

model with 12 factors is 26.22. The results in Table 1 show that all the models far exceed this critical value.[25]

Table 2 reports the total impact of RMA laws in areas of growing population on the dealer margin for each model type.[26] We obtain a statistically significant positive impact on dealer margins for 7 of the 9 model types.

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[25] In this appendix we use the chi-square statistic to test the significance of the model. The measure of goodness-of-fit used in the Staff Report was the square of the correlation between the actual and predicted value of the dependent variable. However, even for a well specified model, we would not always expect a high correlation between the actual dealer margin and the predicted dealer margin especially when the prediction comes only from the supply equation and ignores the demand side of the model. For example, in the dealer margin equation presented in this appendix, the correlation between predicted and actual dealer margin for the 9 models are small (they range from .05 to .17 -- the square of these numbers will be close to zero) while the chi-square statistics reveal that the factors in the model are significant at more that the 99% level of significance.

[26] This estimated effect involves the combination of some of the estimated coefficients of the supply equation.

Appendix C - Table 1

The Estimated Regression Coefficients for the Retail Supply Equation for the Nine Chevy Auto Body-Types for 1978
(Dependent Variable=Dealer Margin)

Variable	Body Type				
	Regular	Monte Carlo	Malibu	Camaro	Nova
C	-.0450	-.0401	-.0854	.1379	-.1003
RNEW	-.0053 (-1.75)	-.0025 (-0.88)	-.0050 (-1.73)	.0028 (0.96)	-.0035 (-1.25)
ROLD	-.1795 (-3.01)	-.1311 (-2.40)	-.1715 (-3.05)	.0133 (0.22)	-.0955 (-1.85)
IAGR0	.0195 (2.85)	.0139 (2.21)	.0183 (2.84)	-.0037 (-0.54)	.0106 (1.78)
IAGR1	1.7217 (3.73)	1.5557 (3.59)	1.4993 (3.43)	2.9117 (6.69)	1.1881 (2.87)
IAGR1SQ	-5.7698 (-1.98)	-4.9421 (-1.82)	-4.7864 (-1.73)	-9.6570 (-3.59)	-4.8222 (-1.85)
WAGE	.0192 (2.04)	.0204 (2.31)	.0281 (3.11)	-.0087 (-0.96)	.0317 (3.59)
ADV	-.0042 (-3.42)	-.0027 (-2.42)	-.0041 (-3.55)	-.0018 (-1.55)	-.0030 (-2.70)
DENS	-.0033 (-4.47)	-.0016 (-2.34)	-.0020 (-2.88)	.0014 (2.04)	-.0001 (-0.18)
GR	-.0041 (-0.49)	.0013 (0.17)	.0034 (0.42)	.0098 (1.22)	.0114 (1.48)
FORCE	-.0177 (-3.22)	-.0188 (-3.71)	-.0186 (-3.57)	-.0081 (-1.61)	-.0064 (-1.28)
CANCEL	.0207 (3.87)	.0188 (3.82)	.0230 (4.53)	.0090 (1.82)	.0118 (2.44)
LD	-.0197 (-3.65)	-.0161 (-3.15)	-.0238 (-4.64)	-.0127 (-2.49)	-.0184 (-3.78)
Chi Square	106.64	105.65	138.83	209.09	123.85

Appendix C - Table 1 (Continued)

The Estimated Regression Coefficients for the Retail Supply Equation for the Nine Chevy Auto Body-Types for 1978 (Dependent Variable=Dealer Margin)

Variable	Body Type			
	Monza	Chevette	Sportvan	Corvette
C	-.0422	-.1281	-.1444	.1645
RNEW	-.0080 (-2.18)	-.0062 (-1.95)	-.0086 (-1.80)	.0032 (0.36)
ROLD	-.1443 (-1.95)	-.1596 (-2.44)	-.1096 (-1.02)	.2982 (1.71)
IAGR0	.01497 (1.76)	.0162 (2.16)	.0109 (0.87)	-.0395 (-1.97)
IAGR1	.8204 (1.54)	1.7638 (3.67)	1.6019 (3.20)	3.1715 (2.38)
IAGR1SQ	.7973 (0.24)	-4.1036 (-1.36)	-3.9513 (-1.40)	-1.9699 (-0.24)
WAGE	.0027 (2.05)	.0360 (3.61)	.0321 (2.05)	.0066 (0.24)
ADV	-.0027 (-1.81)	-.0054 (-4.25)	-.0067 (-3.41)	.0001 (0.03)
DENS	-.0014 (-1.50)	-.0004 (-0.54)	-.0014 (-1.28)	-.0083 (-3.71)
GR	.0181 (1.83)	-.0055 (-0.63)	-.0080 (-0.60)	-.0228 (-0.92)
FORCE	-.0145 (-2.24)	-.0145 (-2.50)	-.0146 (-1.98)	-.0029 (-0.18)
CANCEL	.0206 (3.31)	.0243 (4.33)	.0243 (3.61)	.0119 (0.76)
LD	-.0237 (-3.80)	-.0244 (-4.35)	-.0103 (-1.45)	.0224 (1.39)
Chi Square	115.85	191.24	77.99	46.73

Appendix C - Table 2

The Impact of the RMA Laws on Dealer Margins for Chevrolet Cars in 1978

Body Type	Average Percentage Markup (Dealer Margin) Change For Areas with Positive Population Growth
Regular	3.69*
Malibu	3.41**
Camaro	8.17**
Nova	2.23
Monte Carlo	4.07*
Monza	7.67**
Chevette	5.15**
Sportvan	3.42
Corvette	16.49**

* significantly above zero at the 95% level.

** significantly above zero at the 99% level.