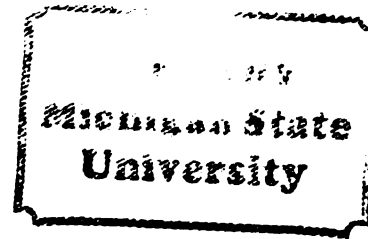


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**Pricing Behavior in the Deregulated
Motor Carrier Industry;
An Empirical Investigation**

presented by

Harwood Hoover, Jr.

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of the requirements for

Ph. D. degree in Marketing

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PRICING BEHAVIOR IN THE DEREGULATED
MOTOR CARRIER INDUSTRY;
AN EMPIRICAL INVESTIGATION

By

Harwood Hoover, Jr.

A DISSERTATION

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

DOCTOR OF PHILOSOPHY

Department of Marketing and Transportation Administration

1984

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1984

ABSTRACT
PRICING BEHAVIOR IN THE DEREGULATED
MOTOR CARRIER INDUSTRY;
AN EMPIRICAL INVESTIGATION

By
Harwood Hoover, Jr.

The motor carrier act of 1980 allowed motor carriers substantial new pricing freedoms, and reduced constraints upon market entry. This act culminated a period of academic and political debate concerning the outcomes of such a substantial policy change.

A central theoretical issue in this debate was the applicability of the competitive economic model. Strong arguments were made to the effect that all segments of the industry would not, in fact respond competitively. Less than truckload carriers, operationalized as carriers of general commodities with substantial terminal investments, might be expected to react with increasing concentration and eventual departure from competitive pricing behavior.

This research examined whether or not the pricing behavior of this carrier group was conforming to specific competitive expectations. The conformity of carrier behavior to the expectations of the Stigler theory of economic regulation was also examined. The Stigler theory would expect that regulation benefited, and therefore was supported by, the carriers.

To examine carrier pricing behavior, a mail survey was conducted with presidents of firms in the identified carrier group. Seven hundred and thirty-two presidents of regular route common carriers of general commodities were surveyed. One hundred and eighty-five useful responses were subjected to data analysis.

This carrier group was found to be making greater use of tariffs than of contracts, but to be individualizing their rate behavior through the use of special tariffs or special items aimed at one or a few shippers. Carriers were engaging in discounting, and reported changes in their revenue cost relationships such that prices were closer to costs. The cross subsidy situation was reported to be changing, but the carrier group reported that the cross subsidy of shipments which were losing money prior to deregulation continues. They also report that powerful shippers are negotiating prices closer to the carriers costs than other shippers have been able to do. Carriers are innovating by adopting certain marketing perspectives and by adding service to new geographic areas. Substantial heterogeneity of pricing behavior was documented, and support for the Stigler perspective was found.

TO MY WIFE
CAROL

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CHAPTER I
INTRODUCTION

Problem and General Approach

Among the major industrial nations of the world, the United States has historically placed a relatively large degree of reliance upon markets, and, therefore, upon marketing activities, as a means of resource allocation. The appropriateness of this reliance, when the resource allocations in question are those of the transportation industries, has been the subject of considerable debate and experimentation. Are these industries so structured as to provide a satisfactory social result when the firms are allowed their market freedom, or should some components of these industries be considered entities which must be extensively regulated by the government?

In the case of the motor carrier industry, opinion concerning this question remains divergent. Over the course of the industry's development, U.S. policy has varied. In 1935, it moved in the direction of extensive regulation; and most recently, it has moved in the direction of substantially greater market freedom. The Motor Carrier Act of 1980 substantially deregulated the U.S. motor carrier industry.

The results of substantial policy change such as that embodied in the Motor Carrier Act of 1980, cannot be known in advance with certainty. Many writers have taken the position that these markets are essentially competitive in nature and that less regulation would, therefore, result in improved performance.¹⁻⁸ Others have disputed this evaluation of the situation, some taking the position that certain components of the industry deviated too substantially from the competitive model to react to deregulation competitively.^{9,10} Others have

cited or developed empirical evidence of price increases in a deregulation scenario,^{11,12} or have emphasized the possibility of price instability,¹³ (rate "chaos"), or damage to existing carriers.¹⁴

Beyond this discussion, there are questions as to which theoretical position provides a most appropriate perspective for analysis of the situation. While there is general agreement as to the applicability of micro economic price or industrial organization theory, there is some divergence of opinion as to which of several views provides the better explanation of the causes and effects of economic regulation. The public interest theory of regulation (regulation protects the public from monopoly behavior) has provided an influential perspective in transportation policy.¹⁵ But other perspectives, notably those of Stigler, who suggests that regulation may, in fact, be instituted and maintained for the benefit of the regulated firms,¹⁶ and Posner who notes that the internal cross subsidy implicit in many regulatory situations may be a useful form of taxation,¹⁷ provide alternative or complementary theoretical structures.

These and other such positions provide an opportunity to view the results of the 1980 deregulation in their context. An empirical investigation of pricing might determine whether prices have in fact declined, as anticipated by the competitive model and as predicted by many; or whether prices have risen, as the research findings of Chow might suggest.¹⁸ Such research might also investigate the extent to which pricing has become individualized, as might be deduced from marketing theory,¹⁹ and as suggested by Mossman and Maiers.²⁰

Innovative behavior should also be studied, as some authors have associated regulation with the inhibition of innovation.²¹ Cross

subsidy might be examined in the context of arguments related to Posner's position,²² and reported behaviors might be compared with Stigler's expectations. Finally, the study might focus upon that segment of the industry for which the applicability of the competitive model has been questioned.²³

This research adopts these perspectives. It is not the first reporting of results following the motor carrier act. But, earlier results should be considered preliminary, as suggested by their authors.²⁴ Further research should be conducted as the effects of deregulation have had time to evolve, and as there is an opportunity to separate them from the effects of the economic recession of 1980-1982.

This study addresses the question of empirical results of the deregulation. It focuses upon pricing as pricing is the nexus of the market exchange. It also focuses upon pricing because many of the predictions made concerning the results of deregulation have been based upon applications of price theory. Regular route common carriers of general commodities are motor carriers which operate between fixed terminal points, carrying general freight. The study focuses upon these carriers as these are firms for which the applicability of the competitive model has been questioned.^{25,26} These are trucking firms with heavy terminal investments and significant LTL traffic. These are the firms which may react to the deregulation with increasing concentration and which, therefore, demonstrate a potential for price behavior deviating from the competitive model. The study provides an empirical description of the current pricing behavior of these firms in the context of specific predictions made concerning motor carrier pricing behavior.

Purpose and Research Questions

The purpose of the study is to address the following general questions:

1. What is the current (Fall, 1983) pricing behavior of class I and Class II regular route common carriers of general commodities?
2. How has this behavior changed since deregulation?
3. Is it possible to develop a taxonomy (classification) of such pricing behavior?

In order to address these general questions, specific research questions were selected which comprised expectations of pricing behavior results of the deregulation, and which were also recent, researchable, and applicable to regular route common carriers of general commodities. The resulting research questions are straightforward derivations from motor carrier pricing trends identified by Temple, Barker, and Sloane in a 1982 special report for the National Council of Physical Distribution Management.²⁷

RESEARCH QUESTIONS

- 1A. To what extent is carrier pricing behavior characterized by the use of contracts vs. tariffs (currently, Fall 1983)?
- 1B. Does carrier top management see this as constituting a change since deregulation?
- 2A. To what extent is carrier pricing behavior characterized by extensive discounting?
- 2B. Does carrier top management see this as constituting a change since deregulation?

- 3A. To what extent is carrier pricing behavior characterized by the use of cross subsidies?
- 3B. Does carrier top management see this as constituting a change since deregulation?
- 4A. To what extent is carrier pricing behavior characterized by innovation? (innovative price/service combinations)
- 4B. Does carrier top management see this as constituting a change since deregulation?

These research questions serve to focus the first two general questions of the study (what is the current pricing behavior and does that constitute a change since deregulation). The questions may also be seen in the context of important theoretical and empirical arguments.

The first questions (1A and 1B) recognize the new rate-making freedoms in the context of the essential heterogeneity of the motor carrier industry and of the shippers which they serve.²⁸ Harper has recognized heterogeneity as an important problem when applying micro economic theory to transportation markets.²⁹ According to some marketing writers, this heterogeneity would require individualistic "matching" of supply with demand.³⁰ Mossman and Maiers have noted that there is more opportunity for individual negotiation between shippers and carriers as a result of motor carrier deregulation;³¹ and have suggested that, in a deregulated environment, carriers are providing a more creative, individually priced service.³²

A bureau tariff structure, even one of the complexity that had evolved in the U.S., would be unlikely to provide a sufficient number of options to accommodate this need for variety when the market matching process is subjected to competitive pressure. Temple, Barker, and Sloane observed that, in some cases, shippers were interested in an

expanded use of contract rates even within the LTL business.³³ Their study made a move away from tariffs toward contracts a motor carrier strategy planning assumption for the 1980's.³⁴ The research examines both contracts per se and independent tariff making behavior which often serves many of the functions of contracting.³⁵

The second questions (2A and 2B) recognize the competitive assumption in terms of price reduction behavior. Many of those making predictions prior to the deregulation expected greater entry and reduced prices,³⁶ while some disagreed.³⁷ Substantial new entry in motor carrier markets has been documented.³⁸ Price reductions have been documented, but documented in the context of recession.³⁹ What will occur among regular route common carriers of general commodities as demand for their services expands with a resurgent economy? Will their price behavior be competitive, with new entry responding to the accrual of any economic profit? Or, will their relatively high barriers to entry prevent this? The longer term effects in a segment of the industry where concentration might be expected have not yet been fully documented. The research examines both discounting interpreted as specific discounts and discounting interpreted as price reductions.

The third questions (3A and 3B) recognize the effect of the competitive assumption upon the welfare goals of the earlier tariff structure. Prior to the deregulation, carriers were expected to transport some types of shipments (notably rural shipments and small LTL shipments) at rates which did not meet their costs. There has been some evidence that carriers would not, in fact, have actually provided this service despite the tariff structure.⁴⁰ But those carriers that did actually provide service in accordance with that structure would have cross subsidized the losing shipments. A substantial argument prior to

deregulation was that this cross subsidization was desirable and that deregulation would eliminate it.⁴¹ The competitive assumption would be that such cross subsidy would not be possible to sustain, as any shipments carried at rates so substantially above costs as to allow cross subsidization of other shipments would logically be taken by competitors.

The fourth questions (4A and 4B) address the expected effects of a change in market structure upon the innovative propensity of an industry. As the industry begins to behave more in accordance with the competitive model, prices can be expected to be driven to costs. Firms may then elect to escape the effects of competition by differentiating their offerings or innovating. Thus:

...expectations of achieving a monopoly with accompanying supranormal profits through successful invention and innovation may induce firms to invest in creating new products and processes⁴²

An alternative perspective suggests that the possession of monopoly power "might provide conditions that make business managers more willing and able to undertake the burdens of innovation."⁴³ Scherer suggests that what is needed for rapid technical progress is a:

subtle blend of competition and monopoly with more emphasis in general on the former than the latter.⁴⁴

and importantly:

Likewise it seems important that barriers to new entry be kept at modest levels and that established industry members be exposed continually to the threat of entry by technically audacious newcomers.⁴⁵

The research examines an industrial situation wherein the balance may have shifted toward more competition and wherein some entry barriers have been lowered.

The development of a taxonomy of pricing behaviors provides a first step in the scientific investigation of marketing in this particular industry, now that the industry has been given the freedom to develop true marketing strategies. The research examines pricing behavior and attempts to classify firms according to pricing behavior. Finally, the research will examine whether or not motor carrier pricing behavior and motor carrier executive attitudes and behaviors conform with the expectations of the Stigler Theory of economic regulation. The Stigler Theory would expect that the regulation had benefited the industry. Findings that the firms were opposed to the deregulation, both before and after its institution, would support the Stigler framework. Findings that they supported active political resistance to the legislation would also support the perspective, as would findings that they were more profitable prior to deregulation.

Methodology

This study was comprised of several steps. The first step involved an extensive literature review to identify research questions. The second step involved a reexamination of the literature in order to identify observations or predictions which could be viewed as supportive of one of the research questions. For example, Harper had identified several specific innovations and specific forms of discounting in the industry.⁴⁶ These observations or predictions, together with open-ended questions, were then incorporated into an interview guide which was used in the third step.

The third step consisted of exploratory interviews with a pilot sample of carrier management, industry observers, and transportation/-physical distribution management. Individuals were selected based upon

an interest in and an ability to observe motor carrier pricing activities. These interviews were undertaken during June, 1983, and varied in format from a five-hour one-on-one personal interview to a two-hour telephone interview. In all cases, the interview guide was followed to the maximum extent allowable by the participants' time, interest, and knowledge. A total of ten pilot interviews were completed. During this third phase of the research, the research questions, as narrowed and focused during the second phase, were further narrowed, focused, and translated into specific industry terms and activities. At this point, certain pricing behavior patterns which had not been anticipated in the literature were discovered, and potential classifications for the development of a pricing taxonomy were identified.

The fourth step in the research consisted of a mail survey of presidents of Class I and II regular route common carriers of general commodities. The purpose of this component was to quantify the impressions gained during the earlier phases in the context of the research questions, as well as to pick up characteristics and behavior in support of taxonomy development and the Stigler Theory of economic regulation. Questions were developed in true, false, multiple choice, and open-ended formats.

The questionnaire was developed and pretested using a convenience sample of carrier top management. Nine questionnaires were pretested in one-on-one situations, and an additional ten were mailed to a random sample of carrier presidents derived from the American Trucking Association's roster of regular route common carriers of general commodities. Following pretest corrections, the questionnaire was translated into a self-scoring computer readable brochure style questionnaire and mailed.

The questionnaire was mailed to a census of 732 Class I and Class II regular route common carriers of general commodities. The census listing was developed using the American Trucking Association's carrier file list accessed on July 22, 1983. This file list is used by the ATA to develop the American Trucking Association's Executive and Ownership Report Class I and II Motor-Carriers of Property. Accessing the file directly provided a more recent and complete listing than use of the ownership report itself. The initial mailing was accomplished on November 7, 1983, with a follow-up mailing on November 28, 1983. Upon receipt of the responses, a Statistical Package for the Social Sciences (SPSS) data file was established to facilitate the fifth step in the research.

The fifth step of the research consisted of data analysis using the SPSS statistical package augmented by manual calculations. The extent to which carrier pricing behavior was characterized by the use of contracts versus tariffs was approached by asking presidents of carrier firms to estimate the percent of their firm's revenue falling into those categories. Executives were asked if this estimated level constituted a change since deregulation, and statistical inference was used to determine whether or not the response pattern of the respondent group was likely to be indicative of a change on the part of the entire population.

The question of discounting interpreted as the use of specific discounts was approached by identifying specific discounts and asking presidents of carrier firms whether their firms had started or stopped this behavior, engaged in more, less, or the same amount of it since deregulation, or had never engaged in the behavior. Change was inferred

from these data. Open-ended questions were also included. Discounting interpreted as price cutting was examined by asking carrier presidents about the extent to which the particular rate categories examined were used to offer prices below the bureau tariff that would ordinarily apply to the traffic, and by asking about the relationship of rates to costs. These questions were followed by questions concerning change in these areas. Appropriate statistical procedures were used to estimate the population characteristics from the characteristics of the respondent group.

Extent and nature of cross subsidy were examined by asking for executive estimates of the percentage of their traffic (\$ revenue) which was not profitable, and by asking specific questions concerning the nature of cross subsidy. Questions concerning change were also asked.

Innovation was approached in the same manner as specific discounts, asking executives about specific industry innovation, deriving change from the format used and using open-ended questions.

Taxonomy development, the question of whether or not pricing "types" can be identified and characterized, was approached using extensive cross tabulation. Candidate pricing types, derived from the exploratory interviews, were identified using specific questions. These questions were then used to cross tabulate all other responses. Appropriate statistical tests were applied to determine whether or not the candidate types differed from those not belonging to the "type" along the other dimensions included in the survey.

The Stigler perspective was approached by asking carrier presidents how they felt about deregulation, whether they had supported efforts to stop deregulation prior to its passage, whether they now support efforts to slow or roll back deregulation, and whether they were more profitable

before or after deregulation. These data were examined to determine whether they conformed with the idea that regulation is sought by a group of firms for their own protection.

The research methodology is discussed in greater detail in chapter four.

Limitations of the Study

Some limitations of the study are inherent in the area of study selected. The research can only provide a very limited evaluation of theoretically-based predictions for several reasons. First, there is the inability to compare the results of the change in regulatory environment with parallel results for a control group. The research compares post change pricing behavior with both pre-change pricing behavior and predictions of post change pricing behavior. Secondly, as a function of the inability to provide a control group, the research is unable to separate pricing effects of the deregulation from pricing effects of the economic climate. However, comparison of this research with the research of others conducted before the nation had begun to recover from the 1980-82 recession, can begin to correct for this deficiency. Third, the predictions being tested are based upon both theoretical assumptions and empirical assumptions. For example, there is disagreement as to just how much competition is desirable in order to stimulate innovation.⁴⁷ This ambiguity is confounded with the argument as to whether the particular type of carrier under study here possesses an institutional structure sufficiently close to the competitive model to allow a competitive result when deregulated.⁴⁸ Despite these problems, specific predictions have been made, and evaluation of their accuracy is an important contribution. The timing of this research may

be late enough to allow measurement in a non-recession environment, but it may be too early to evaluate the results of concentration. This should argue for a replication of this study.

Some of the limitations of the study are methodological. Despite the large number of trucking firms in the United States, the number of regular route common carriers of general commodities is relatively small. The ATA listing utilized provided a 742 firm census of this type of carrier in the Class I and Class II size groupings. This constraint, when coupled with the expectation of a limited respondent group, prevented the research from utilizing statistical techniques which required large respondent groups for taxonomy development. The methodology also assumed an ability and a willingness on the part of trucking company presidents to provide an accurate report of their firms' pricing behavior.

Pretest interviews with presidents of those firms indicated that this assumption was warranted. The executives had little difficulty in recalling pre-deregulation behavior and estimating revenue percentages as required by the questionnaire. When queried about the confidential nature of pricing information, presidents responded to the effect that it was an "open" industry and that they were used to reporting this kind of information.

Contribution of the Study to Marketing

The study provides an empirical examination of specific pricing behavior in considerable depth. This will provide a contribution to knowledge and an understanding of one of the major components of the marketing mix. The study also provides a comparison of specific pricing

behaviors with expectations associated with deregulation. These expectations have been based upon differing combinations of empirical and theoretical knowledge and assumption. A comparison of specific results with these expectations will serve to provide or withdraw support for the combinations of empirical and theoretical assumption which lend to the prediction. For example, a finding of substantial price reduction behavior might support the argument that these carriers are behaving in accord with the competitive theoretical model. Alternatively, one might make the empirical assumption that barriers to entry are "high enough" and that entry has "not been sufficient" for the pricing behavior to be explained in this fashion. The same pricing behavior might then be seen as simply a manifestation of a breakdown in oligopoly price discipline due to recession. Thus, the study does not isolate all that is required to provide a definitive judgment in these areas. It does provide a clean description of what has been the focal point of many theoretically and empirically based arguments; post deregulation pricing behavior. Finally, the study will develop a taxonomy or classification of the pricing behaviors which have occurred in an industry where there was little previous market pricing precedent.

From the standpoint of the marketing practitioner in the motor carrier industry, the study will provide insights into the relationship of specific pricing behaviors and price service combinations to financial success in the reregulated motor carrier industry.

Organization

The remainder of this study is divided into the following chapters:

Chapter II discusses the historical development of regulation in the motor carrier industry and the subsequent development of a rationale for deregulation.

Chapter III presents evidence and perspectives used in the debate over deregulation to understand and make predictions concerning motor carrier pricing behavior. The chapter reviews literature concerning positions on deregulation, the application of a marketing perspective to motor carriers, predictions of rate results of deregulation, motor carrier economies of scale, and the initial results of deregulation.

Chapter IV explains the methodology used in the study. It presents the research instrument, sample and sampling methods, and analytical procedures.

Chapter V summarizes the major findings of the study in the context of the research questions, taxonomy development, and the Stigler Theory.

Chapter VI details the analysis of data and its results.

Chapter VII discusses the implications of the study's findings. Implications to theory, practice, national policy, and further research are considered.

The appendixes include copies of the cover letter, the questionnaire, the follow-up letter, and supporting data.

Footnotes

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CHAPTER II
THE HISTORICAL DEVELOPMENT OF
REGULATION IN THE MOTOR CARRIER INDUSTRY

Regulation of a Common Carrier

The regulation of the motor carrier industry entails the regulation of common carriers. Understanding the duties and responsibilities of the common carrier will serve to clarify the economic discussion of their regulation. Common carriage is a concept derived from English common law, and it has been carried forward to be reflected in the U.S. laws concerning motor carriers.¹ Historically, common law recognized various activities as "common callings;" these activities were seen as essential to community life and affected with the "public interest."² These activities were subject to special obligations and could be undertaken only by those who had authorization. The authorization often took the form of a grant of monopoly privilege, and public regulation often accompanied the special obligations.³ Pegrum outlines the rationale for the early inclusion of transportation activities in this category:

Undertakings connected with transportation, such as inns and wharves, were placed in this category because of the special need for protecting the public, and because of the limitation on alternatives faced by the buyer.⁴

The question of the applicability of this kind of criterion to the motor carrier industry as it is currently structured constitutes a major question in the literature. But as motor carriers came under federal regulation in 1935 the legal definition of a motor common carrier was officially set forth, and large segments of the motor carrier industry in the United States were to be considered common carriers. Section 203 (a) (14) of the Motor Carrier Act of 1935 as revised in 1940 states:

The term "common carrier by motor vehicle" means any person which holds itself out to the general public to engage in the transportation by motor vehicle in interstate or foreign commerce of passengers or property or any class or classes thereof for compensation, whether over regular or irregular routes...⁵

The 1935 act was to apply the common carriage philosophy to segments of the emerging motor carrier industry. The act provided for control of supply through a certification procedure and minimum as well as maximum rate regulation. In return, the carriers were required to fulfill the obligations of common carriers as construed in the twentieth century. These obligations have been summarized as including: (1) the duty of service, (2) the responsibility for safe delivery of that which is entrusted to the carrier's charge, (3) the duty to treat all customers without discrimination, and (4) the duty to charge a reasonable and only a reasonable price for the service that is performed.⁶

As will be shown in a later section, the Motor Carrier Act of 1935 with some modification was to constitute U.S. motor carrier policy until the administrative deregulation of the late 1970s and the passage of the Motor Carrier Act of 1980.

Evolution of State Regulation

The individual states initiated the regulation of motor carriers. Drawing upon court decisions related to railroads, the precedent for state regulation of private property clothed with a public interest was found in the Munn vs. Illinois case.⁷ The power the states used had two bases. The first was "police power." Supreme Court Justice Roberts characterized the nature of a state's police power in 1934:

... There can be no doubt that upon proper occasion and by appropriate measures the state may regulate a business in any of its aspects, including the prices to be charged.⁸

A second source of state authority is what is termed proprietary power, which allows the states authority over the use of highways constructed at public expense.⁹ For various stated reasons to include protection of the highways, prevention of excess competition, control of intermodal competition, encouragement of adequate service, and coordination of transportation facilities, the states used these powers to regulate the new trucking industry.¹⁰ Regulation took the form of highway system rules, safety regulation, and economic regulation in the form of entry control, rate regulation, and service regulation.

Using the *Munn vs. Illinois* precedent to their advantage, state governments were not unaware of the precedent in the *Wabash* case.¹¹ In the *Wabash* case, the State of Illinois was prevented from regulating the interstate activities of a railroad. The states took the position that, in the absence of federal interstate regulation, they were empowered to provide nondiscriminatory regulation of interstate carriers.¹² Two cases were to have the effect on motor carrier regulation that the *Wabash* case had provided in rail regulation.

In *Buck vs. Kuykendall* (1925) the state of Washington denied Buck a certificate to operate an auto stage (bus) line between Seattle, Washington, and Portland, Oregon.¹³ The state took the position that the area was already adequately served, but the Supreme Court decided in favor of Buck. The court stated in essence that Washington was not regulating the use of its own highways but regulating interstate commerce in such a way as to obstruct it.¹⁴

In *Bush vs. Maloy* (1925), the Bush Company had been denied permission to provide interstate common carrier service in the state of Maryland. Maryland denied based on its interpretation of the overall

welfare and convenience of the public. The Supreme Court took the position that individual state governments did not have the power to decide which interstate carriers would be allowed to operate in their respective states.¹⁵

Federal Policy

The political pressure to achieve federal motor carrier regulation was evidently not as great as the pressure to achieve rail regulation. Only one year elapsed between the Wabash case and the act to regulate commerce, while ten years elapsed between the Buck and Bush cases and the Motor Carrier Act of 1935. The period was one of argument and controversy.¹⁶ Important positions taken during this period have been summarized by Johnson:

Arguments for Regulation

1. Stability of rates
2. Decrease in discrimination
3. Low rates resulted in low service quality
4. Equality (railroads were subject to control)
5. Coordination among modes
6. Existing subterfuge to gain interstate status and avoid state regulation
7. Improved financial stability for carriers
8. Effective safety regulation of drivers and vehicles
9. A federal guide for uniform state regulation

Arguments Against Regulation

1. Impracticality, requirement of a large bureaucracy
2. States in a better position to regulate
3. Public benefited from low rates in interstate trucking¹⁷

The Motor Carrier Act of 1935 was preceded by several attempts at federal motor carrier legislation, including one prior to the Buck and Bush precedents.¹⁸ In general, these bills proposed that the I.C.C. be given jurisdiction over interstate motor carrier activities.¹⁹ Prior to passage of the Motor Carrier Act, the Federal Coordinator of Transportation published his recommendations. These recommendations are cited by Pegrum:

The public interest in transportation may, then, be summarized as requiring at least the following: (1) a minimum of outright duplication of facilities or services, (2) a transportation system which is well organized and functions in an orderly and dependable way rather than one which is unstable, uncertain and a breeder of discriminations; (3) responsibility in both the narrow and broad sense... (4) financial stability and good credit.

There are some who think that the thing to do is let down the bars and allow the competitors to fight it out to the finish. This would of course require practical abandonment of railroad regulation, leaving redress of grievances to the courts. The eventual result might be a kind of coordinated system of transportation achieved through survival of the fittest, but the greater competitive strength of the railroads would be likely to distort the results. The fact is that this plan of free for all competition has never worked successfully either here or elsewhere. It has been tried and found wanting.

On the other hand a partial and incomplete system of regulation, much as we have had will not work.²⁰

Clearly competition was not the zeitgeist of the 1930s. The Federal Coordinator saw the alternatives in terms of the choice between abandonment of regulation with reliance upon anti-trust laws and subjecting all transportation agencies to the same kind of regulation which had been developed for railroads.²¹ In this context S. 1629 became the Motor Carrier Act of 1935.

The Motor Carrier Act

The Act of 1935 placed for hire motor carriers of passengers and property engaged in interstate and foreign commerce under the jurisdiction of the I.C.C. Common carriers and contract carriers were treated differently. The provisions for common carriers as summarized by Harper, required:

1. That common carriers must obtain a certificate of public convenience and necessity from the commission before they enter the industry.
2. That carriers must publish their rates and adhere to them.
3. That rates must be reasonable and without unjust discrimination.
4. That 30 days notice must be given before a rate or fare could be changed.
5. That such proposed changes could be suspended by the I.C.C.
6. That the commission could prescribe the maximum, minimum or actual rates and fares to be charged.
7. That the I.C.C. had control over the adequacy of service.
8. That the commission had control over consolidation, mergers and security issues.
9. That personal injury, property damage and cargo insurance must be carried.²²

Provisions for contract carriers required:

1. That they obtain permits to enter, but not certificates of public convenience and necessity as was required of common carriers.
2. That entry requirements were to be less rigorous.
3. That they file their minimum rates and not charge less than the minimum (the commission could prescribe only the minimum rates).
4. That they have public liability and property damage coverage (they were not required to carry insurance to cover cargo).²³

Numerous categories of for hire carriage were exempted from economic regulation. These included "vehicles carrying livestock, fish, horticultural and agricultural commodities (not manufactured products thereof)";²⁴ "school buses, taxicabs, hotel limousines, vehicles operated by the Department of the Interior in and about national parks, vehicles used to distribute newspapers, vehicles used incidental to air transportation, vehicles within one municipality and casual occasional or incidental transportation of passengers or property...."²⁵

Private carriers were subject to safety provisions of the act but not subject to economic regulation. The legal definition of a private carrier was thus to become critical, as many carrier operations would be created in technical conformity with the definition so as to avoid economic regulation.

The 1935 act defined a private carrier in the following way:

The term "private carrier of property by motor vehicle" means any person not included in the terms "common carrier by motor vehicle"; who or which transports in interstate or foreign commerce by motor vehicle property of which such person is the owner, lessee or bailee when such transportation is for the purpose of sale, lease, rent or bailment or in the furtherance of any commercial enterprise.²⁶

A special term has been applied to trucking operations which technically conform to this clause but actually function as common or contract carriage. "Grey area" operations are exemplified by trucking operations which might purchase the goods to be transported and sell them immediately after the transportation is accomplished.²⁷ The I.C.C. has applied the "primary business test" in this area. In this test the criterion is whether transportation or another business constitutes the primary business.²⁸

Administration of the Act

Pegrum has summarized the administrative interpretation of the 1935 act.²⁹ According to Pegrum, entry controls have been utilized to limit competition. In the case of common carriers, the burden of proof has been placed on the applicant, in that one who would enter motor carriage has had to prove that the public convenience and necessity required the granting of the certificate. Existing carriers were to be given the privilege of handling all the traffic in the area if they could do so "efficiently, economically."³⁰ In the case of contract carriers, the applicant had to prove that the new permit would be "consistent with public interest."³¹ When viewing these applications, the commission considered the effect on the other carriers. Contract carriers were interpreted to be carriers "under continuing contracts with one person or a limited number of persons."³² This limited number was interpreted as being eight or fewer.

Entry thus constrained, the commission also adopted aggressive rate regulation. The commission did not adopt the previous precedent of "fair return on fair value," but instead chose to examine the carriers' operating ratios.³³ That protection of the carriers has been a criterion in the assignment of minimum rates is evident in the commission's statement concerning a 1950 case:

The important considerations here are that there is a rate war, that carriers have lost and are losing traffic because of rates that as a whole are substantially lower than necessary to yield adequate revenues, and that to regain and retain traffic they are engaging in destructive competitive practices. We know of no other way of correcting this situation than by placing a floor below which rates may not go without prior approval.³⁴

Other Major Legislation Affecting Trucking

The Transportation Act of 1940 was to make many specific amendments to the Motor Carrier Act of 1935. These amendments were largely administrative in nature; clarifying exemptions, adjusting administrative procedures, and extending a prohibition of dual operation as both common and contract carrier.³⁵ Beyond this, the Transportation Act of 1940 attempted a statement of national transportation policy. The national policy was declared to be:

To provide for fair and impartial regulation of all modes of transportation subject to the provisions of the act, so administered as to recognize and preserve the inherent advantages of each; to promote safe, adequate, economical and efficient service and foster sound economic conditions in transportation and among the several carriers; to encourage the establishment and maintenance of reasonable charges for transportation services, without unjust discriminations, undue preferences or advantages, or unfair or destructive competitive practices; to cooperate with several states and the duly authorized officials thereof; and to encourage fair wages and equitable working conditions; - all to the end of developing, coordinating and preserving a national transportation system by water, highway and rail, as well as other means, adequate to meet the needs of the commerce of the United States, of the postal service, and of the national defense. All of the provisions of this act will be administered and enforced with a view to carrying out the above declaration of policy.³⁶

As would later become evident, when the different positions taken prior to the 1935 act would again be argued, the 1940 policy act was a perfect stage for conflicting interpretation. Indeed, even without the encumbrance of vested interest, it would be difficult to interpret the policy direction intended in a document which advocated both "preservation of inherent advantage, economy...efficiency" and, at the same time, "equity and the avoidance of destructive competitive practices."

As the Motor Carrier Act of 1935 and its administrative interpretation adopted railroad perspectives and precedents,³⁷ the Reed

Bulwinkle Act of 1948 may be seen as adopting the perspective of the Shipping Act of 1916. The Reed Bulwinkle Act granted certain anti-trust exemptions for rate bureaus or conferences used by land common carriers. This was made subject to the authority of the I.C.C. The rate bureaus were to provide a mechanism for the coordination of through rates and joint rates and had the power to set uniform rates for member carriers. Individual carriers were to have the right to establish an independent action, although some writers believe that the mores of the industry were such that this would have been unlikely.³⁸

In 1965, Congress passed the Grey Area Act in order to close specific loopholes in the 1935 law. This act provided:

1. Increased fines and forfeitures for illegal operations.
2. Better working relationships between the states and the I.C.C.
3. That the I.C.C. may prosecute both shippers and carriers.
4. More efficient ways of informing states as to which carriers were authorized to operate in their areas.
5. The I.C.C. with power to award reparation to shippers when they had incurred injuries as a result of being charged an unreasonable and therefore an unlawful rate.³⁹

The Grey Area Act is seen as having been effective in closing some loopholes which had allowed the operations of illegal truckers to hurt common carrier truckers.⁴⁰

The Debate

The Reed Bulwinkle Act was passed in 1948. It provided a completion of the kind of industrial organization selected when price and entry controls were adopted in 1935. With the passage of this act, oligopolistic interdependence was facilitated. By 1949, the question of

the appropriateness of this form of industrial organization was again taken up in earnest. A lengthy debate was to precede the substantial change in motor carrier policy represented by the 1980 act. The debate will be presented by first examining arguments in favor of deregulation and then examining arguments against the idea. Empirical evidence in support of these positions is examined in chapter three.

ARGUMENTS IN FAVOR OF DEREGULATION

Innovation and Flexibility

Within a year of the passage of the Reed Bulwinkle Act, the Brookings Institution published an extensive evaluation of national transportation policy authored by Dearing and Owen.⁴¹ In their evaluation of motor carrier policy, Dearing and Owen reviewed the commission's interpretation of the 1935 act. Among their observations were:

- A. That the application of restrictive standards of entry tended to protect established carriers from competition, and that there was therefore inherent in the regulatory process a tendency to resist experimentation and slow technological progress.⁴² (This author's underlines)
- B. That the long range wisdom of applying severe limitations to the operating rights of an essentially small scale industry whose chief advantage lies in flexibility has been questioned.⁴³

While Dearing and Owen observed difficulties stemming from the I.C.C.'s interpretation of the 1935 act and while they were generally favorable toward the use of competition, they also recognized the potential difficulties of implementing transportation competition as a

national policy. Dearing and Owen recognized that competition in the presence of either "private manipulation or government interference" would become "unreliable as the arbiter of economic survival."⁴⁴ They thus became early advocates of systems of user fees as necessary to the equitable utilization of intermodal competition in the transportation industry.⁴⁵ Other observations put forth in this study included the ideas that regulation was unable in fact to actually prevent unfairness and discrimination, that government created discrimination exists in the form of differing levels of subsidy, that division of regulatory authority made the goal of transportation economy through appropriate integration difficult, and that regulation with its judicialized procedure has been harmful to private carrier management.⁴⁶ Dearing and Owen set forth several principles to encourage movement in the direction of "transport efficiency and technological progress." Among those principles, the following pertain most directly to this study:

- A. If the potential contributions of the private enterprise system are to be realized, available traffic must be allocated among competing forms of transportation in accordance with economic standards of price and service competition. This means that all rates must reflect the true economic cost of performing service. Where a portion of the transportation plant is supplied initially by government, workable competition can be maintained only if the cost of providing and maintaining such facilities is charged against the direct user rather than against the general taxpayer.
- B. Initiative and responsibility for basic managerial decisions must be restored to private enterprise...⁴⁷

An Industry Competitively Structured

In 1959, the Economics Department at Harvard produced what was to be a much cited work by Meyer, Peck, Stenason, and Zwick. Entitled The Economics of Competition in the Transportation Industries,⁴⁸ the work picked up the theme presented by Dearing and Owen. Analyzing the various transportation industries in depth, Meyer et. al. made the following observations about trucking:

1. Aggregate numbers present the picture of an industry with a very low level of concentration.
2. The market must be defined by the number of carriers operating between two geographic points. Given this perspective, a trucking transportation market may sometimes be placed in the small numbers or oligopolistic category of market structure.
3. The present market structure is largely a consequence of I.C.C. policy. Without control of entry by the I.C.C. the trucking industry would be even more unconcentrated.
4. Excess capacity in the industry was partially due to I.C.C. regulation.
5. Excess service competition was resulting from current policies.⁴⁹

Meyer et. al. believed that U.S. trucking policy was resulting in misallocation of resources and felt that the "burden of change" lay with the common carrier industry and its regulation, rather than in restrictions on private and contract trucking.⁵⁰

Lower Rates and Adaptability to Economic Change

On April 5, 1962, President Kennedy gave a transportation message in which he advocated "greater reliance on the forces of competition and less reliance on the restraints of regulation."⁵¹ Kennedy's specific

proposal was that minimum rate regulation should be eliminated on bulk commodities where substantial nonregulated transportation existed.⁵² The Kennedy message was analysed by Peck in a paper presented at an anti-trust seminar in 1963 and later published in a collection of essays.⁵³ Peck's approach was to review the concentration of sellers, economies of scale and relative costs of various transportation modes in the context of predictions made by opponents of deregulation (price discrimination, rail price wars damaging to truckers, ruinous competition among railroads and financially weakened railroads).⁵⁴ Peck's evaluation did not bear these criticisms of deregulation out. Peck took the position that the public would gain from lower rates and reduction of excess capacity.⁵⁵ He went so far as to extend the argument:

All the arguments for deregulation for bulk and agricultural commodities apply also to manufactured miscellaneous traffic.⁵⁶

He concluded that a competitive policy was not only possible but desirable in transportation, advocating a much broader deregulation than that proposed by Kennedy. Peck saw the failings of regulation as providing insights into the achievements of competition; quoting his earlier work:

Thus in a very real sense, the American experience with transportation regulation stands as an eloquent though negative testimonial to the great strength of free enterprise: an ability to adapt quickly and efficiently to change in the economic environment.⁵⁷

Lack of Economies of Scale; Failure to Match Shipper Requirements

Nelson's 1965 argument in favor of a deregulation focused on entry control, which he termed the "handmaiden" of minimum rate regulation.⁵⁸ Nelson identified motor carriers as the transportation mode subject to the most restrictive entry limitations.⁵⁹

Nelson cited the potential benefits of entry control (requirement of essential service, encouragement of adequate investment, improved service and safety, avoidance of duplicate investment, coordination of through and joint rates) and contrasted them with the problems of shippers and carriers in the regulated environment. Carriers were complaining of long drawn out commission proceedings, uncertainty of proceeding results and limited grants of authority. Shippers were complaining of inadequate and costly service.⁶⁰ Nelson felt that the "effects of entry control upon market structures in the transport industries are the most vital considerations in evaluating allocative efficiency"⁶¹ and drew attention to the trend toward fewer and larger carriers in the regulated motor carrier industry.⁶² Nelson could not find justification for entry control in the industry economies of scale and documented specific inefficiencies created by regulation.⁶³

Nelson believed there was potential for rate reductions should the markets be deregulated and associated rate reductions on the carriage of agricultural products with entry policy in that segment of the industry.⁶⁴ Nelson went so far as to cite the I.C.C.'s own statement to the effect that rates would be likely to fall should deregulation occur.⁶⁵ Nelson also discounted the argument that regulation resulted in improved service, noting that:

1. There was no adequate market test of the shippers' general willingness to pay for higher service under regulated conditions.
2. That shipper complaints did not support the argument that service standards were high.
3. That lobbying efforts by agricultural and industrial shippers in support of deregulation "suggests that regulated services are not generally regarded as worth the higher rates."⁶⁶

Dissatisfaction with Results and a Willingness to Experiment

In a later Brookings study, Friedlaender prepared a background paper entitled "The Dilemma of Freight Transport Regulation."⁶⁷ The paper and a summary of the 1967 conference involving a group of industry experts was published by Brookings in 1969. Of the three viewpoints identified by Friedlaender, two were in favor of at least some deregulation. One group felt that regulation was working badly, incurring excessive cost, and that rate deregulation, the end of common carrier obligations, and the formation of integrated transportation companies would be desirable. This group was generally composed of economists.⁶⁸ The second pro-deregulation position was characterized by Friedlaender as one of unhappiness with current regulatory policy in that it had created both static costs of resource misallocation and dynamic costs of excess capacity and poor investment decisions.⁶⁹ The majority group could not agree on changes in policy, but most of the majority group supported experiments with deregulation.⁷⁰

The Costs and Feasibility of Regulation

In 1971, the President's Advisory Council on Executive Organization reported on the activities of selected independent regulatory agencies. The Interstate Commerce Commission was included in this review. The report proposed that the I.C.C., C.A.B., and F.M.C. be abolished and their regulatory responsibilities be combined within a new transportation regulatory agency.⁷¹ The I.C.C. was characterized as representing "collegial" administration of its transportation industries,⁷² and of failing to take into account the inherent economic advantages of one mode over others by interpreting the phrase "preserve inherent advantages of (regulated modes)"⁷³ as requiring the commission protect the

existence of such modes.⁷⁴ The report also advocated separation of the regulation function from the promotion function, noting that the I.C.C. and the C.A.B. each held both kinds of responsibility.⁷⁵

Criticism of the I.C.C. continued with the 1973 publication of a compendium of papers for the Joint Economic Committee of the Congress. Entitled "The Economics of Federal Subsidy Programs," the collection included an article by Hilton on the costs to the economy of the Interstate Commerce Commission.⁷⁶ Hilton characterized the I.C.C. as administering an "incomplete cartel" of common carriers which entailed costs to the economy.⁷⁷ The I.C.C.'s administration of this cartel was seen by Hilton as resulting in an underutilization of resources, misallocation of traffic among modes, incentives to avoid common carriage, and inhibition of the retirement of obsolete service.⁷⁸ Hilton cited a report by Ralph Nader's study group criticizing the professional competence of political appointees within the Commission, and undertook a review of various economists' estimates of the cost to the economy of the cartel.⁷⁹ The principle beneficiaries of the cartelization were seen as proprietors of major intercity truck lines and the International Brotherhood of Teamsters.⁸⁰ Hilton concluded:

The economic loss from the cartelization of the transportation industry is probably the largest from the inappropriate organization of any industry, with the possible exception of the agricultural price support program.⁸¹

Eventually economic losses are paid for by the consumer. Ralph Nader added a consumerist's voice to the call for deregulation. A harbinger of the political coalition which would allow passage of the 1980 act was a 1973 contribution by Green and Nader.⁸² They argued that the system of economic regulation lacked both comprehensive theory and a consistent goal and that the regulatory system had undermined competition and entrenched monopoly. Green and Nader stated:

If the problem is over-regulation based on irrational economics, then the most effective remedy is deregulation. Where there would be a viable competitive market but for economic regulation, the industry should be freed from all such restraint. By this standard, trucking air and water transport, radio and television could return to the open market.⁸³

In 1975 Brookings published a collection of essays which included Moore's classic and much debated estimate of the societal costs of regulation.⁸⁴ Moore identified the five costs of regulation as being:

1. Costs within a single mode, or inefficiency costs such as empty backhauling in the motor carrier industry.
2. Costs to the economy of shifting from low cost to high cost modes of transportation.
3. Pricing of transportation above marginal costs and non-shipment of goods due to higher prices.
4. Distortions in non-transport sectors of the economy due to locational and product price discrimination.
5. Dynamic loss caused by a reduction in incentives to innovate.

Using rough estimates, Moore attempted to provide what he termed an "order of magnitude" quantification of the first three cost categories in the U.S. economy. The methodology was by Moore's own admission "Very crude,"⁸⁵ but Moore was confident enough to provide an order of magnitude cost estimate of between \$4 billion and \$9 billion.⁸⁶ Moore saw the alternatives as including the granting of more power to the I.C.C., merger of the I.C.C. with other regulatory agencies, relaxation of regulatory rules, or abolition of regulation. After discussing each in detail, Moore concluded:

The available evidence supports the proposition that there are no substantial economies of scale in any of the major modes of transportation, with the possible exception of pipelines, and with the same exception, a

substantially unregulated industry could be a major improvement over the existing situation. An investigation of the costs of regulation suggests that they are not only substantial but monumental. It is a matter of urgent concern that steps be taken to eliminate or reduce significantly the regulation of surface freight transportation.⁸⁷

Wilson agreed with Moore that economic regulation of freight transportation had been a relative failure.⁸⁸ But Wilson stressed a different perspective. Wilson felt that, although economic and even social regulation of monopoly or oligopoly could be effective or desirable, the administrative problems associated with the regulation of 20,000 firms were overwhelming.⁸⁹ Wilson argued that it was mainly for this reason that some alternatives in the direction of simplification and reduction of regulation seemed "long overdue."⁹⁰

Objections Discounted; Cross Subsidy, Chaos, Predation

In 1977, on the eve of the administrative deregulation, another influential document was published. The effects of the two "handmaidens" of economic regulation, entry and pricing control, upon the trucking industry were considered in a work edited by MacAvoy and Snow and published by the American Enterprise Institute.⁹¹ This was one of a group of such works collectively referred to as the "Ford Administration Papers on Regulatory Reform." Summarizing numerous other studies, Snow concluded that under the regulatory system then in effect, rates were "high, inflexible, irrational, discriminatory" and the whole rate structure was "needlessly complex."⁹²

Snow treated several objections to regulatory reform. He believed that the common carrier obligation to service had not, in fact, functioned as an effective guarantee of service to rural communities. Snow noted that the Wyoming Public Service Commission in a survey of rural

service had found that only half of the carriers authorized to provide service to the towns actually did so, and that the larger carriers appeared to be serving in truckload lots only.⁹³ Snow summarized the situation: "Clearly certification does not confer an obligation to serve."⁹⁴

Snow also discounted the rate "chaos" argument, by viewing the stability of markets which were not regulated and concluding that unsettled price conditions would be brief and mild.⁹⁵ Fear of monopoly was discounted, referring to lack of economies of scale and atomistic competitive market structure.⁹⁶ Predatory price cutting was also seen as unlikely because it required both 1) a predator firm with superior resources and 2) high barriers to entry in order for the predator firm to recoup losses. Snow felt the second condition was not present in the industry.⁹⁷

Overseas Precedent

The study of overseas regulatory policy also brought support for a deregulation. In 1977, Nelson and Whitten provided the Department of Transportation with a report entitled "Foreign Regulatory Experiments: Implication for U.S." the study evaluated regulatory results in Australia, Canada, France, Germany, Great Britain, and Japan as well as policies specific to the European Common Market.⁹⁸ Several points in this analysis were relevant to U.S. motor carrier policy. The British, for example, had deregulated trucking in 1968.⁹⁹ British shippers had experienced no degradation of service, even in rural communities.¹⁰⁰ The British had also experienced a shift away from "own account" or private trucking since their deregulation. Nelson and Whitten also observed an "absence of excessive competition, competitive chaos,

generally unprofitable operations and irresponsible operators"¹⁰¹ in the deregulated British environment. The authors noted, however, in what might be considered a caveat for current researchers of U.S. deregulation, that "in times of recession, excessive competition arises in an easy to enter business in the sense that returns are temporarily limited."¹⁰² Nelson and Whitten summarized the implications for the U.S. which they had found in the British experience.

The British experience shows rather clearly that an industrial economy can have stable and profitable motor goods carriers and fully satisfactory, adequate and efficient road freight service without restrictive entry and rate controls. This is undoubtedly the principle lesson of earlier British liberalized regulation and of today's total deregulation...¹⁰³ (this author's underlines)

Lessons from such overseas studies were summarized by Hazard in 1977.¹⁰⁴ Hazard believed that "Western European experience indicates that regulatory reform does not result in competitive chaos as the carriers maintain, or in competitive utopia as the advocates (of deregulation) claim."¹⁰⁵

A Growing Consensus

In 1977, Hazard took a position concerning the status of the debate on deregulation.

In any event the theoretical debates between the technical advocates and expert opposition in the United States have gone on too long. This is the type of issue that leads itself to public choice of systems after appropriate education on the merits and disabilities of competitive and regulated approaches. In the meantime a moratorium should be placed on extension of regulation and some experimental progress made toward regulatory reform along liberalized Western European lines.¹⁰⁶

Many agreed with Hazard that the debate had gone on long enough to be able to make a decision. Administrative deregulation was beginning to occur as the I.C.C. began to reinterpret existing legislation, and a

new motor carrier act was only three years away. Official reports and documents increasingly sounded the deregulation theme. National Transportation Trends and Choices, an extensive report issued by the secretary of transportation in 1977, set forth several "planning assumptions."¹⁰⁷ Among these was the assumption that future LTL rates would reflect the cost of shipping as a result of "administrative restructuring of motor carrier rates now underway at the I.C.C. or as a result of the various measures for regulatory reform proposed by the Department of Transportation."¹⁰⁸ Motor carrier regulatory reform was becoming a planning assumption.

Official reports delivered to the Congress in the late 1970s continued to advocate deregulation and entered into extensive discussions of the possible outcomes. A report for the Committee on Commerce, Science and Transportation, requested in the first session of the 95th Congress, overviewed the trucking industry. The report was both exhaustive and sophisticated, noting problems with conventional economic analysis of the industry.¹⁰⁹ The report predicted relaxation of regulation and greater freedom of entry and ratemaking together with reductions in point to point gateway and commodity restrictions.¹¹⁰ The authors predicted opposite effects of deregulation in the TL and LTL segments, with TL becoming less concentrated and LTL becoming more concentrated upon deregulation.¹¹¹

A report produced for the second session of the 95th Congress contained a section on "marketing considerations."¹¹² The authors of this report felt that "aside from cost economies, marketing considerations favor long haul carriers and ambiguously small short haul carriers."¹¹³ The logic was that, in a deregulation scenario, large

carriers offering reliable direct service to a large number of points without interline connections would be able to achieve differential advantage in the transportation markets of large national shippers. In markets provided by regional shippers, density within a region, informality and custom tailored service could be expected to provide a differential advantage.¹¹⁴ The report concludes as a result of both its marketing and economic analysis that:

The predicted impact of total deregulation of motor carriage on small communities is surprisingly undramatic ... on balance they are positive effects...¹¹⁵

The second session of the 95th congress also produced Wiedenbaum's report, The Costs of Government Regulation of Business. Wiedenbaum attached large costs to regulation, suggesting:

In the case of the traditional one industry type of government regulation (as of airlines, trucking, and railroads) a greater role should be given to the competitive process and to market forces.¹¹⁶

The first session of the 96th Congress produced a study of the purpose and effectiveness of regulatory agencies.¹¹⁷ In this report, Nelson characterized the I.C.C.:

The salient feature of the Interstate Commerce Commission is not how much it does, or how much it does well or badly, but how much it does not do, does not want to do and in the last analysis cannot do for either political or economic reasons.¹¹⁸

Nelson felt that, although quantitative measures of the costs of regulation were likely to be inaccurate, there were many costs that simply did not lend themselves to measurement at all, and that any benefits accruing from deregulation should be consigned to the past.¹¹⁹

As Congress considered motor carrier legislation, the National Transportation Policy Study Commission published its final report.¹²⁰ While the document did not go without criticism,¹²¹ it was comprehensive

and represented a continuation of the deregulation theme. The call for substantial deregulation was becoming consensus.

ARGUMENTS AGAINST DEREGULATION

The consensus was not developed without substantial and continuing opposition. These arguments are now presented.

Price Discrimination

Among the arguments reviewed by Peck was the price discrimination argument.¹²² This argument noted that one effect of deregulation would be to allow differential pricing among accounts. This could conceivably allow more powerful accounts to gain substantial competitive advantage over smaller or less powerful accounts by virtue of their ability to purchase transportation services at a price advantage.

Loss of Specific Benefits

Nelson identified several potential benefits of entry control. These included the requirement of essential service, encouragement of adequate investment, improved service and safety, avoidance of duplicate investment, and the coordination of through and joint rates.¹²³ Nelson's evaluation of these benefits when weighed against the disadvantages of regulation was such that he could not recommend entry control as motor carrier policy. Nonetheless, such benefits continued to be part of the argument against a deregulation.

The I.C.C identified the general benefits of regulation as including social goals such as national defense, economic development, distribution equity and environmental protection.¹²⁴ In the specific context of the motor carrier industry, the commission identified the benefits as including industry stability, improved costs of capital,

service to rural areas and small business, reduced inventory holding costs for shippers, and the carriage of marginally profitable traffic.¹²⁵

Rate Chaos

Friedlaender's 1969 study illuminated specific positions held by interested groups.¹²⁶ A group composed largely of representatives of industry and the I.C.C. felt that major changes in the rate structure would lead to "chaotic" adjustments.¹²⁷ The implication was that price adjustments in a freer market environment would be frequent and substantial, hindering the planning process of those relying upon common carrier services. This argument is summarized by a statement made in the 1961 report of the Specific Studies Group on National Transportation Policy for the Senate committee on Interstate and Foreign Commerce (the Doyle Report).

It has been found to be in the public interest a degree of stability and uniformity be introduced in the rate structure of the several modes.¹²⁸

The Doyle Report suggested that policy not allow unregulated transportation to destroy or seriously compromise the effectiveness of regulated transportation, and suggested two alternatives:

1. Prohibit unregulated for hire transportation and enforce it.
2. Permit regulated transportation to so maximize its efficiency that there is less advantage to the unregulated carrier.¹²⁹

This concern for stability was echoed by Melton, who termed the competitive transportation system a "myth."¹³⁰ Melton pointed to the historical reasons for the development of regulation. He saw those reasons as being monopoly in the case of railroads and lack of stability in the case of the motor carrier industry.¹³¹ Melton felt that the same conditions would again obtain should regulation be abandoned.¹³²

Damage to Existing Carriers

Damage to the established infrastructure of carriers as the result of a more competitive industry was addressed by Harper.¹³³ Harper believed that eased entry control would be very harmful to the existing motor carriers and that, if freedom of ratemaking were extended across modes, the big gainers would be the railroad industry, as they would be able to cut rates considerably while still retaining some contribution to fixed expenses.¹³⁴

Non-Competitive Effects

Several believed that a deregulation would not necessarily result in competitive behavior. One problem was in the application of existing or modified anti-trust laws. Harbeson argued that while the Sherman Act would be applicable, the price discrimination section of the Clayton Act, as amended by the Robinson Patman Act would also apply.¹³⁵ Pointing out that the Robinson Patman Act was "...introduced into Congress only two weeks after the demise of the National Industrial Recovery Act, and carried forth the philosophy of the later measure regarding the desirability of restricting competition."¹³⁶ Harbeson raised doubts as to whether the desired competitive objective would be achieved.¹³⁷

Spychalski questioned whether segments of the industry conformed adequately to important assumptions in the competitive model.¹³⁸ He concentrated on the differences between what he felt economists' perceptions were concerning the motor carrier industry and what he felt the institutional realities were. Spychalski identified the key premises underlying the economists' arguments for deregulation as being:

1. Relative ease of entry and exit.
2. Absence of economies of scale.

3. Inability of any one firm to significantly influence or "administer" price.
4. A homogeneous product, or at least the existence of similarities sufficient to maintain high cross-elasticity of demand.
5. Low or insignificant indivisible costs.
6. Absence of significant externalities the benefits and costs of which cannot be internalized or assimilated into the market prices of the inputs.¹³⁹

Examining the industry with these points of reference. Spychalski advanced the opinion that the output of the industry was not homogeneous in terms of the types of services provided.¹⁴⁰ Larger carriers commanded an advantage according to Spychalski, because of their capabilities in such areas as insurance, ability to raise capital, traffic solicitation, investment in breakbulk facilities for LTL operations, and computer and information capabilities useful in carrier decision making and shipper logistics decisions.¹⁴¹ Spychalski thus questioned the extent to which the motor carrier industry conformed to the ease of entry, absence of economies of scale, homogeneous product, and low indivisible cost assumptions.

Wyckoff identified general commodities carriers as a segment of the industry which might react to a deregulation with increasing concentration.¹⁴² Wyckoff believed there would be a period of adjustment and instability following a deregulation, but that the eventual degree of concentration that would occur in the truckload segment and less than truckload segments would be different.¹⁴³ Wyckoff used "general commodities carriers" as surrogates for LTL carriers, recognizing some problems of specification with that means of identifying the group. He

noted several advantages that would accrue to large formally-managed carriers of general commodities. Wyckoff differentiates "advantages of size" from the stricter economic definition of economies of scale, noting that advantages include spreading fixed costs and providing direct service to a broader network of points.¹⁴⁴

The report for the Committee on Commerce, Science and Transportation, requested in the first session of the 95th Congress, adopted a viewpoint compatible with those of Sychalski and Wyckoff.

Why the large, long haul general freight carrier group enjoys greater relative profitability than other carrier groups is a question which deserves further research... profitability is not necessarily related in a simple way to scale economies as conventionally defined. Large carriers, for example, may enjoy higher profits related to number and location of authorized routes. Profitability reflects the overall suitability of firm size to market environment, not simply cost advantages.¹⁴⁵

A Debate Summary

Thus, proponents of motor carrier deregulation believed that the motor carrier industry was sufficiently competitive in structure to respond to a deregulation with lower rates, increased innovation, flexibility, and adaptability to individual shipper needs. They also believed that the welfare goals of cross subsidy in the regulated tariff structure were not being met, that the costs of regulation were high, that regulation did not serve the consumer, that rate chaos and predatory pricing were unlikely, and that overseas precedent was favorable to deregulation.

Those opposed to deregulation felt that a deregulation of the industry would result in rate chaos and price discrimination, loss of important benefits such as industry stability, high service levels, and adequate service to rural and small shippers, and would also result in

damage to the established carrier infrastructure. Strong arguments were also made to the effect that all segments of the industry would not, in fact, respond competitively. LTL carriers, operationalized as carriers of general commodities with substantial terminal investments, might be expected to react with increasing concentration.

This research examines whether or not the pricing behavior of regular route common carriers of general commodities, the group identified by Wyckoff, Spsychalski, and others as unlikely to behave competitively, is currently conforming to specific competitive expectations.

Administrative Deregulation

As the debate matured, and beginning in 1977, the I.C.C. began a process of administrative deregulation through interpretation of existing legislation. The commission effectively lowered barriers to entry,¹⁴⁶ narrowed the interpretation of who may protest an application, and shifted the test of claimed injury to those protesting to the level of being "contrary to the public interest."¹⁴⁷ Private carriers were no longer denied the opportunity to apply for common or contract carrier rights, and contract carriers were no longer rigidly held to the "rule of eight."¹⁴⁸ The commission made a general finding in 1978 that the holding of both common and contract authority was "consistent with the public interest"¹⁴⁹ and began to ease their policies concerning gateways, circuitous routing, and the carriage of regulated commodities by exempt carriers.¹⁵⁰ Additionally, the commission enlarged urban commercial zones and zones incidental to transportation by aircraft.¹⁵¹ By 1979, the commission had begun discussions of ratemaking flexibility and increased attention to the spirit of anti-trust legislation.¹⁵²

One author evaluated the commission's actions as having made regulatory reform a "fait accompli" and suggested that:

Until its changes have proved their worth, and the truckers charges are demonstrably lower and their services improved, there would seem to be little point in the Congress ratifying the commissions experiment.¹⁵³

But, "ratify" they would. In the mid 1970s a legislative process began which was to culminate in the Motor Carrier Act of 1980.

The Legislative Process

Bills aimed at regulatory reform appeared as early as 1972. In November 1975, President Ford introduced the Motor Carrier Act, HR 12793. The bill included provision for liberalization of entry and removal of gateway and route restrictions. It empowered haulers of agricultural commodities to carry regulated commodities on return trips, expanded commercial zones, enlarged areas of operation incident to air transportation, reduced restrictions on proprietary trucking, allowed for increased pricing flexibility and limited the activities of rate bureaus.¹⁵⁴

In early 1979, the legislative question was again put to the Congress. Senators Kennedy, Metzenbaum, Ribicoff, and Hayakawa introduced the "Kennedy Bill," (S. 710) to the first session of the 96th congress.¹⁵⁵ The bill proposed to withdraw the antitrust immunity which had been afforded the rate bureaus by the Reed Bulwinkle Act. The Trucking Competition and Safety Act of 1979 included provisions to remove restrictions on contract carriers, liberalize operations of exempt carriers, and provide greater rate freedom.¹⁵⁶ The next major piece of legislation proposed was H.R. 6418, which was to become the Motor Carrier Act of 1980.

The Motor Carrier Act of 1980

The committee report on H.R. 6418 characterized the Motor Carrier Act of 1980 as "the product of over 18 months of continuous study"¹⁵⁷ and characterized the bill as "offering increased opportunities for new carriers to get into the trucking business and for existing carriers to expand their services."¹⁵⁸ The bill would accomplish this by modifying the public convenience and necessity test, allowing existing carriers to expand service, and by eliminating gateway and circuitous route restrictions.¹⁵⁹ The bill would limit the scope of collective ratemaking and give carriers the right to raise or lower rates by 10% without I.C.C. interference. The bill would also allow for negotiation of reduced transportation rates in exchange for limited liability on the transported property.¹⁶⁰ The majority of the committee felt that the bill would result in adequate service to small communities and would result in no degradation of highway safety.¹⁶¹ Lower rates and lower consumer prices were expected, as well as improvements in energy efficiency.¹⁶²

Minority views expressed by committee members included Ertel's position that the legislation did not do enough to encourage additional competition. This would mean that increased rate freedom would be most likely to result only in rate increases.¹⁶³ Abdnor's minority view was that the bill would result in "price discrimination and a loss of service to small communities."¹⁶⁴ The major provisions of the 1980 bill have been summarized and are displayed in Figure 2-1.

The passage of the Motor Carrier Act of 1980 has been followed by I.C.C. interpretations which have allowed substantial market freedom for motor carriers. An effective deregulation has been realized. It now remains to evaluate evidence concerning the effects of this substantial policy change.

Figure 2-1

Major Provisions of the
Motor Carrier Act of 1980

1. Easier entry provisions:

Any "fit willing and able carrier" who provides a public service can enter the regulated trucking industry. Burden of proof in authority proceedings shifts from applicant to protestant. (sic)

2. Zone of ratemaking freedom:

Carriers can raise or lower rates by 10% without I.C.C. approval. The commission may under certain circumstances increase the flexibility zone by 5%.

3. Reduced bureau activity:

Curtails rate bureau activity by prohibiting bureau interference with any carriers right of independent action and by limiting rate discussions to companies actually participating in the traffic.

4. Expanded contract carriage:

The "rule of eight" shippers which had limited the number of shippers a contract carrier could serve was eliminated. The I.C.C. may not impose geographic restrictions on contract carriers and carriers can hold both common and contract operating authorities.

5. Compensated intercorporate hauling:

Is allowed where a 100% owner - subsidiary relationship exists.

6. Removal of operating restrictions:

Gateway and circuitous routing restrictions are lifted. Carriers may serve intermediate points on their authorized routes.

7. Value based pricing:

Carriers and shippers may negotiate reduced rates for reduced liability.

8. Agricultural co-op traffic:

Agricultural cooperatives may handle 25% of their total interstate tonnage in non-member shipments. This is up from 15%.165

Footnotes

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55 Ibid., p. 266.

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CHAPTER III
THEORETICAL AND EMPIRICAL ANALYSIS

Introduction

The debate concerning the outcomes of a substantial deregulation of the motor carrier industry has generally been informed by economic theory. The positive arguments have been based on the assumption that the industry would begin to price more in accordance with the competitive model. Lower rates and greater innovation might be expected. The opposition expected that the welfare effects of cross subsidy might be lost, existing carriers would be hurt, and the natural price adjustments of the competitive marketplace might be "chaotic." In the case of the regular route common carrier of general commodities, the LTL group, the argument against deregulation was different. The argument was that this group showed the potential for increasing concentration upon deregulation. Their pricing behavior might, therefore, in the longer run, be in accordance with the expectations of oligopoly price theory.

If, in fact, pricing behavior does approximate competitive behavior, and existing carriers are economically hurt by the deregulation, the situation may conform to the expectations of the Stigler theory of economic regulation. The carriers may have supported regulation which was in their economic interest.

This chapter first reviews the theory of competition and oligopoly, and complementary theory or issues in market regulation, marketing, strategy, and pricing. These are viewed in the context of their application to the industry case. Empirical evidence is then considered, first in the context of competitive effects, then in the context of market regulation and the application of a marketing per-

spective. Finally, the current study is placed in these theoretical and empirical contexts.

THEORETICAL ANALYSIS

Economic Models

Arguments in favor of substantial deregulation of the motor carrier industry have been largely based upon the proposition that the industry was structured competitively; that barriers to entry were low, that the fixed component of costs was small, that economies of scale were minimal to nonexistent, and that the industry showed a very low degree of concentration.¹ Deregulation of such an industry could be expected to result in pricing behavior more in line with the competitive economic model than that observed prior to the deregulation.

Dissenting opinion cited problems with competitive behavior but also cited the importance of considering not the trucking industry but the specific subindustries noting that, in certain of these subindustries, the conformance to the competitive model was not good. Of particular interest was the LTL carrier. LTL carriers, with their relatively high investment in fixed terminal facilities, and with advantages for larger carriers deriving from the provision of service to a broad network of points, might be expected to react to a deregulation with increasing concentration.² This would result in a potential for oligopoly pricing behavior. This approach adopts Wyckoff's use of "general commodities carriers" as a surrogate for the LTL group and examines the post deregulation pricing behavior of that group. Will this pricing behavior be more nearly competitive or more nearly oligopolistic?

The Competitive Pricing Model

Extensive economic regulation is difficult to defend if the case can be made that the the market under consideration approximates the competitive model. When conditions approximate those of the competitive model, a market without economic regulation will behave with a series of adjustments such that, after adjustment, price will equal minimum average cost of production. Economic profits attract new entrants when prices exceed this minimum average cost and the resulting shift of the supply curve drives prices toward costs. Should the price be less than minimum average costs, firms exit the industry and the supply curve shifts back to the left, allowing price to move upward to the minimum average cost. In the long run economic profits for firms in competitive industries are equal to zero.³ The perfectly competitive model requires several important assumptions. These include the assumptions that each economic agent acts as a price taker, that the product is homogeneous, that there is free mobility of all resources including free entry and exit of firms, and that all economic entities in the market possess complete and perfect knowledge.⁴

Application to the Motor Carrier Industry Case

If the motor carrier industry is structured competitively, entry control and minimum rate regulation are likely to be counterproductive, and a deregulation is likely to result in prices more nearly in alignment with costs and, up to the point of extremely rigorous competition, a greater innovativeness. If a segment of the motor carrier industry has the structural attributes which would lead to oligopoly behavior in a deregulated environment, removal of maximum price controls might not be warranted, or increased anti-trust vigilance may be required in the

case of that segment. These perspectives may be derived straightforwardly from micro economic theory. In this case, the question might be, did regulation allow a basically competitive industry to function as an oligopoly? Or, in the case of the industry segment under consideration, did regulation control an oligopoly?

Application: The Appropriateness of the Competitive Model

The initial conformance of the motor carrier industry with the competitive model is good. The way is publicly provided and available to all, and a tractor trailer combination is within the reach of an individual citizen. In this sense, barriers to entry must be considered to be low. The economies of scale argument is not straightforward, but numerous studies have supported the idea that they are minimal.⁵

Pegrum considers the facilities and equipment not to be so highly specialized as to prevent shifting between markets or geographic areas and notes that, in general, new traffic may be found to complement the purchase of new equipment in small increments.⁶ Studies have also demonstrated that the industry is an extremely high variable cost industry.⁷ Even maintenance of way expenses are distributed on a "use" basis which tends to be proportional to the traffic carried.⁸ Joint and common costs in the industry are considered to be small, and the potential for "ruinous" competition is seen as being low, because of the low proportion of fixed costs.⁹ Pegrum summarizes the case for the applicability of the competitive model to the motor carrier industry.

In other words, the cost structure of motor transport is such as to make it possible for competition to function as a fully effective force for establishing economical prices. In fact, obstacles placed in the way of such competitive pricing will redound only to the benefit of the protected carriers. It will be to the disadvantage of the consuming public and the carriers that are precluded from competing. This does not mean that there

is no place for the common carriers in motor transport. What it means is that the economic basis for imposing limitations on competition among common carriers is lacking.¹⁰

These arguments, together with the observation that the industry, when viewed in the aggregate, presents a low level of concentration,¹¹ have constituted a strong case for the appropriateness of market competition among motor common carriers.

Application: Problems With the Competitive Model

Commonly used in the context of manufacturing industries, the competitive model may require substantial interpretation when placed in the motor carrier industry context. The model has specific requirements. Furguson and Gould have noted that the model requires that each economic agent acts as price taker, that the product is homogeneous, that there is free mobility of all resources, including free entry and exit of business firms; and that all economic agents in the market possess complete and perfect knowledge.¹² In discussing the attributes of this model in the motor carrier industry context, Spsychalski notes that it also requires absence of economies of scale, low or insignificant indivisible costs, and absence of significant externalities, the benefits and/or costs of which cannot be "internalized" or assimilated into the market prices of the outputs which occasion them.¹³

Examination of a motor carrier market in this context presents some problems. Most straightforwardly, a motor carrier market exists between two points, and aggregate data concerning motor carrier numbers and concentration, even when corrected for geographic area of operation and type of commodity specialization, provide a poor approximation of carrier activity between any two points. Schary summarizes this observation.

The dilemma of measuring a transportation market is that there are no distinct boundaries, that any measure of a market is potentially inadequate in the long run. Ideally, freight transportation markets should be defined by origin and destination, commodity and shipment size, but even these parameters fail to hold when the long run is considered and transportation users are free to adjust their market choices in response to conditions of cost and service.¹⁴

Thus, the "structure" of a motor carrier transportation market may be difficult to gauge, atomistic competitive structure in an aggregate motor carrier group may not be indicative of competitive structure in individual motor carrier markets.

Spychalski noted that pro deregulation arguments ranged from the position that the market in question was at the very least "workably competitive" to "highly duplicative of the purely competitive model at best."¹⁵ He found difficulties with the homogeneity of output assumption, citing substantial differences in the types of services produced and differing shipper requirements.¹⁶ He noted, that while truckload movements of packaged or bulk commodities conform most closely to the model, LTL and TL shipments of general freight as well as LTL shipments of small packages, offer substantial advantages to larger firms.¹⁷ Thus, Spychalski found at least some segments of the industry to be in poor conformance with the competitive model.

Application: Competition, Oligopoly and the General Commodities Carrier

Both Spychalski and Wyckoff have focused upon the LTL carrier of general commodities as perhaps being in poor conformance with the competitive model.¹⁸ Relatively high fixed costs for terminal facilities and advantages of size in the form of density and scope of coverage have been cited.¹⁹ Should the Wyckoff and Spychalski perspectives be correct, one would expect general commodities carriers

eventually to engage in oligopoly pricing behavior, although this may be preceded by a period of predation wherein the aggressive price cutting may be difficult to distinguish from the price dynamics anticipated by the competitive model.

The eventual oligopoly behavior should be characterized by an awareness of oligopolistic interdependence on the part of the participants; by an acute awareness of the firms pricing in the context of other firms pricing. Efforts to discourage entry might be expected, as well as efforts to divide markets, possibly on a geographic basis. Powerful firms may be expected to exert price leadership, with the bulk of the firms following their pricing behavior within a short period of time. Common costing formulae, if only ostensibly for professional guidance, might gain broad acceptance, and bureau tariffs might be expected to be used as focal points. All of this should result in pricing which does not approximate costs as closely as would be required by the competitive model.

Complementary Theoretical Perspectives

While the comparison of the economic models of oligopoly and competition provide a primary theoretical perspective for the study, other perspectives are useful in developing a more complete picture of the motor carrier deregulation. As the industry transitions from a situation of strict regulation to one of greater market freedom, these perspectives may become relevant. In this section, selected theoretical perspectives from marketing, marketing strategy, and pricing will be reviewed.

The difficulties of approximating transportation industry pricing behavior with conventional price theory have been discussed by Harper.²⁰

In addition to the difficulties which are common to the analysis of all industries, such as the assumptions of rational decision making, availability of full information, profit maximization, and a single product or service, Harper cited several problems peculiar to transportation.²¹ These included the heterogeneity of the industry, the differences between market structures along specific routes, and the substantial complexity of the product/service line.²²

Heterogeneity

If Harper's criticisms are based upon heterogeneity and complexity, the use of a theoretical perspective which proceeds from heterogeneity, rather than homogeneity, might be warranted. Alderson's analytical perspective reflects this view:

An advantageous place to start for the analytical treatment of marketing is with the radical heterogeneity of markets. Heterogeneity is inherent on both the demand and supply sides. The homogeneity which the economist assumes for certain purposes is not an antecedent condition for marketing. Insofar as it is realized, it emerges out of the marketing process itself.²³

Alderson's assumption of heterogeneity as the basis for his perspective leads to several concepts useful in the analysis of the motor carrier problem. First among these is the concept of ecological niche. Differential advantage is implicit in heterogeneity, and the existence of differential advantage yields to the firm "a position in the marketplace known as 'ecological niche'."²⁴ Also useful is the identification of the fundamental purpose of marketing in the context of essential heterogeneity of demand and supply. This purpose is to "effect exchanges by matching segments of demand with segments of supply."²⁵ Finally, marketing itself is seen as "the exchange which takes place between consuming groups and supplying groups."²⁶ This view

provides a theoretical perspective for a more individualistic firm by firm understanding of the motor carrier industry, a marketing perspective.

Application to the Motor Carrier Industry Case

The heterogeneity of demand for transportation service is derived from the heterogeneity of firms' locations, heterogeneity of raw and component material supply and heterogeneity of firms' customer service requirements. Location and material supply are straightforward, while the differences in customer service between industries has been documented by LaLonde and Zinzer.²⁷ Even within an industry, distribution requirements may differ in accordance with the firm's marketing strategy, as discussed by Wagenheim.²⁸

Heterogeneity of supply is also apparent. Carriers are specialized as private or for hire, regulated or unregulated, common or contract, and within the common carrier group, specialized as to the carriage of some 17 different commodity groupings.²⁹ Carriers costs may differ substantially, as between union and non-union shops and carriers may elect to solicit different types of traffic within their specific commodity groups. Carriers are specialized as local, regional, or national and may elect to specialize in such ecological niches as overnight delivery of LTL traffic or large TL commitments.

Beyond this, the trucking firms differ as to their base and mode of operation and their balance of traffic. Two trucking firms bidding the identical service package into an account may find their costs of service to be very different. One may have few incremental costs, the result of using an empty backhaul to service the account. Another may have large incremental costs of service, the result of being able to find no backhaul to balance the new service.

Thus, we may expect motor carrier firms in a deregulated environment to find a careful matching process to be most adaptive. Price will be the nexus of the exchanges involved, but individual firms may avoid general industry pricing trends by virtue of finding individualistic ecological niches. A general trend toward more competitive pricing behavior would only have to be followed if market information were good enough to allow any increase in competition within the total industry to find the individual "niche" or point to point transportation market under consideration.

Portfolio Theory

A perspective from the area of corporate strategy may also serve to illuminate motor carrier pricing behavior. Boyd and Larreche have provided a consensus position concerning the definition of strategy.

Most writers on the subject agree that a firm's strategy is essentially an adaptive search process which is concerned with how a firm deploys its resources over time in responses to changes in its environments.³⁰

In this context, this study may be viewed as one in strategy, involving a change in the firm's legal and competitive environments. Portfolio theory is but one of the many perspectives in marketing strategy. Several versions are extant including those of Day,³¹ Hall,³² Shell,³³ and General Electric.³⁴ Criticism of the mechanistic use of this perspective has been voiced, as such use might cause the firm to be distracted from the essential question of sustainable competitive advantage.³⁵ But the portfolio perspectives remain available to corporate planners.

The details of these perspectives are unimportant to this research, but their central philosophy illustrates a perspective. Conglomerate management may elect to accept substandard returns in a division which it views as a long term investment.

Application to the Motor Carrier Industry Case

In the case of conglomerate investment in a common carrier of general commodities, the judgment on the part of top management might be that barriers to entry in the form of terminals for LTL service, adequate equipment for dense coverage of a regional or national network, and associated information processing might warrant treating the trucking firm as an investment. Low returns and lowered pricing may be accepted if the parent company feels that this will allow them to survive a shake out and recoup their investment later, perhaps through oligopolistic pricing behavior. This form of conglomerate based predatory pricing may be occurring within the ranks of regular route common carriers of general commodities.

Pricing Perspectives

Beyond the insights of economic price theory, several other, more specific pricing perspectives have been developed. Several of these have application to the motor carrier industry case.

Price Defined

Measurement of absolute price levels is likely to give little meaning outside of the immediate cost context. Adelman has provided definitions of the "product" and the "price" in distribution. Adelman believed that, on the whole, the best concept of wholesale and retail price is value added or gross margin.³⁶ Adelman felt that, in a distribution context, elements of monopoly would raise the margin above the competitive optimum, but that low entry requirements would generate countermovements whenever this excess builds up to some critical point.³⁷ Increased competition, therefore, is likely to be reflected in reduced gross margins, regardless of any inflationary trend in absolute price level.

Patterns of Corporate Pricing Behavior

Relaxation of the economist's homogeneity assumption may have to be accompanied by relaxation of the profit maximization assumption as well. Several perspectives illustrate pricing behavior which may deviate from profit maximization. Means considered the difficulty with which corporate prices began downward movements.³⁸ He decided that corporations must "administer prices." An administered price is set by fiat and held constant for a period of time and a series of transactions.³⁹ A response appeared in 1970 when Stigler and Kindahl published The Behavior of Industrial Prices.⁴⁰ Stigler and Kindahl closely examined price behavior in those industries which Means considered most characterized by administered pricing behavior.⁴¹ They observed that transaction prices rather than quoted prices were the relevant measures of exchange price,⁴² and demonstrated that prices in concentrated industries were not as inflexible as previously supposed.⁴³

Some authors have supported the idea that a large number of businesses price on a simple "cost plus" basis.⁴⁴ A 1958 Brookings study described the pricing policies of twenty of the largest U.S. firms. They observed five goals of pricing:

1. A target return on investment.
2. Stable prices and markups over cost.
3. A specified market share.
4. A competitive position.
5. Compete by taking advantage of product differences.⁴⁵

These authors took the position that many large, powerful firms seem not to be overwhelmingly controlled by the market, yet they do not dominate the market.⁴⁶

Lanzillotti took the position that firms start with a rate of return that they consider satisfactory and then set a price which will allow them to earn that return when their plant utilization was at some "standard" rate.⁴⁷ Weston felt that this position was an over-simplification. Pricing policies are not made apart from other business decisions, and firms are substantially "constrained" by the market mechanism according to Weston.⁴⁸

Perceived Price

That perceived price and actual price may differ is an important consumer phenomenon which is also relevant to industrial markets. Much of the pricing literature concerns itself with the subjective, perceptual nature of price. Lambert found relationships between perceptual differences and price selections.⁴⁹ Monroe reviewed the literature in the area of psychological pricing, price consciousness, and perceived price quantity relationships. He concluded that a number of psychological and other contextual factors may lead to a perception of price by the buyer that is different from the perception assumed by the seller.⁵⁰

Application to the Motor Carrier Industry Case

Several of these perspectives will be helpful in guiding research expectations. Adelman's argument that the use of gross margin "offers great advantages in simplicity and accuracy" and that it "mirrors all the forces of demand and cost that impinge upon the distributive operation"⁵¹ was accepted for use in this study. No attempt was made to ascertain prices and costs in terms of their dollar levels. Instead, motor carrier management was asked about operating ratios and about the level of their prices in relation to costs and to the bureau tariffs that would ordinarily apply to the traffic.

The discussion of administered prices and pricing goals other than profit maximization should serve to mitigate the use of the economists profit maximizing assumption when viewing the pricing behavior of motor carriers. Carrier behavior may be guided by strategic concerns, or may be constrained by irrational adherence to pricing rules of thumb.

Manipulation of the perception of price might also be expected. The subtle perceptual manipulations found in consumer marketing do not seem as probable as pricing behavior which utilizes an understanding of the interactions involved in multiple buyer influence. Some ways of presenting a price are more likely to be accepted by a traffic manager, others by a logistics or distribution manager, and so forth.

Issues in Regulatory Economics

This study also provides an opportunity to collect observations relevant to broader regulatory issues, which while reflected in the motor carrier debate, go well beyond it. An examination of motor carrier pricing behavior in the wake of a substantial deregulation proves the opportunity to compare patterns of behavior with those predicted by various theories of regulation, or positions on the effects of regulation.

Reschenthaler has provided an overview of several issues and positions in regulatory economics.⁵² A condensed version of his list of 18 items comprises Figure 3-1.

Reschenthaler also identifies a fairly unified set of positions on these issues as being derived from the "Chicago School" scholars. He uses Trebing's listing of the principles of the Chicago School group.⁵⁴

Figure 3-1

Some Issues in Regulatory Economics

(Reschenthaler)

1. Commission Independence (Legislation)

Regulatory commissions may be captured by the regulated industry; therefore acting to protect the regulated firms from the functioning of the market.

2. Commission Independence (Staff)

Workers may move back and forth between the commission and its regulated firms.

3. Capitalization of the Consumers Interest

Consumers are unlikely to be able to organize to protect their interests against those of better organized special interest groups.

4. The Adjudicatory Framework

As commissions use an adversarial system, it fails if all important interest groups are not represented.

5. Financing

Boards may be underfinanced as a result of insufficient political constituency.

6. The Protective Umbrella

Regulatory agencies may also "promote" the health of the regulated industry.

7. The Size of the Task

Some industries may be so large or complex as to make effective regulation impractical.

8. The Dimensions of the Product

Attempts on the part of a regulatory agency to prevent monopoly pricing behavior may be frustrated by reducing quality, service or the adoption of accounting procedures to hide profit.

9. Over Investment

A permitted rate of return exceeding the cost of capital will give the firm an incentive to over invest.

Figure 3-1 (Continued)

Some Issues in Regulatory Economics

(Reschenthaler)

10. Dynamic Efficiency

Technological change and productivity may be slower as regulation leaves little incentive to innovate.

11. Profit Focus

Regulation by allowable profit may discourage improvements in efficiency.

12. Political Pricing

Gaining of political support may be a criterion which supersedes economic efficiency.

13. Innovation in Pricing

The regulatory process may discourage innovative pricing.

14. The Deregulation Dilemma

The license to operate may assume a market value under a regulatory scenario. Deregulation may force the write-off of these assets.

15. The Perpetual Agency

The tendency for a regulatory group once established to perpetuate itself.

16. Political Accountability

Regulatory commissions may engage in essentially political resource allocation decisions without owing political responsibility.

17. Cross Subsidization

Economic regulation may result in two cross-subsidy problems:

A. Subsidizing some customers by overcharging others.

B. Use of same equipment to compete with non-regulated industries.

18. Costs and Benefits

The costs of administering regulatory programs may exceed their benefits.⁵³

Not all of Trebing's list would apply to motor carriers, so only those components which appear to apply are reproduced as Figure 3-2.

Figure 3-2

Some Chicago School Positions

(Trebing)

- A. Regulation of transport, broadcasting, natural gas and banking have been used in a restrictive and protective fashion in the United States
- B. Regulation can provide control over entry, restriction of availability of substitutes, and price stability; but potential costs to the firm in the form of time delays, loss of maneuverability, and the possibility of extraneous public interest considerations may arise. A firm's attitude toward regulation reflects its maximization of an objective function which includes these potential benefits and costs.
- C. Government planning and market control are inferior to a market unconstrained by government influence.
- D. Much regulation involves disguised taxation and subsidization.
- E. Any relationship between market concentration and market power is discounted as are all aspects of oligopolistic interdependence.
- F. The issue of cross subsidization is not a significant economic problem.
- G. Problems associated with imbalance in power between different classes or groups of customers is ignored or dismissed.
- H. The costs of regulation are to be controlled explicitly or implicitly with competitive market solutions or with a natural monopoly whose excess earnings are neutralized by competitive bidding or an excess profits tax.
- I. Commission regulation cannot be reformed.
- J. Government regulation and other exercises of government power result in economic distortions which are the sources of most economic problems.⁵⁵

Arrayed against this relatively unified Chicago School of thought is what Reschenthaler classifies as "a heterogeneous - in terms of ideology - group of legal, political science, and economic writers who foresee rejection of the major type of deregulation which the Chicagoans advocate for the economy."⁵⁶

The Research Focus in a Regulatory Context

In the context of these issues, this study undertakes a limited but important examination. While reflecting the competitive as opposed to the oligopolistic pricing behavioral assumptions, the primary research questions also address adjustments in the dimensions of the product (Figure 3-1, Item 8) as well as innovation in pricing (Figure 3-1, Item 13). Research question 4 has been operationalized to include "price/-service" innovation as well as pricing innovation more narrowly construed.⁵⁷ Such technological innovations as the acquisition of more efficient equipment have been included, so the issue of dynamic efficiency (Figure 3-1, Item 10) is also considered. The cross subsidy issue is reflected in research question 3 where cross subsidy is interpreted as subsidizing some customers by overcharging others (Figure 3-1, Item 17A). Posner has characterized this as a form of taxation.⁵⁸ Another result of forced cross subsidy may be the phenomenon of "cream skimming" or competitive entry in the markets where the common carrier was expected to make up his profit. Protection of common carriers by controlling such entry was a part of the rationale of the Act of 1935.⁵⁹ Research question 3 examines the state of cross subsidy in deregulated trucking and compares that with executives' reports of the previous state of cross subsidy behavior.

The study also focuses on the question of whether the firms' attitude toward deregulation reflects "its maximization of an objective

function" (Figure 3-2, Item B) which includes such benefits of regulation as entry and price control and such costs as time delay and loss of flexibility.⁶⁰ In this context, the conformance of the data with expectations derived from the Stigler theory will be examined.⁶¹

Stigler postulates that, "as a rule regulation is acquired by the industry and is designed and operated primarily for its benefit."⁶² This is in contrast with the view that regulation is for the benefit of the public, or is a political process which "defies rational explanation...."⁶³ In Stigler's view, industries seek to use the power of the state to obtain direct subsidy, control the entry of new rivals, to suppress substitutes and encourage complements, or to fix the level of price.⁶⁴ If the Stigler theory were correct, we would expect trucking firms to have opposed the deregulation of entry and price prior to the deregulation; we would expect that profitability will have declined since the deregulation and that the trucking executives remain as opposed to deregulation now as they had been prior to the motor carrier act. The research explores these relationships.

Kahn sees the association between regulation and restraint of competition as closely linked to two characteristics that the regulatory process exhibits in practice, protectionism and conservatism.⁶⁵ Protectionism reflects the issue cited above as the "protective umbrella" or the tendency for the regulatory commission to "promote" the regulated industry. This, in turn, may be a result of the kind of subtle influence that is derived from a lack of "legislative or staff independence." Conservatism reflects the regulatory values of predictability, continuity and planning, which may be threatened by the independent competitive maneuverings of private firms.⁶⁶

Application to the Motor Carrier Industry Case

The Motor Carrier Act of 1935 is characterized by Kahn as the "imposition of this comprehensive set of public utility-type controls on a highly dispersed and competitive industry."⁶⁷ Its initial motivation was seen not only in terms of the requirement of a high level of service, but in terms of protecting the railroads from motor carrier competition and protecting the motor carriers from one another.⁶⁸ Kahn does not believe that a deregulated trucking industry would be subject to destructive competition because of the high variable costs, low investment, and high mobility which characterize the firms.⁶⁹

In the light of Kahn's analysis, the motor carrier industry would be a logical place to view the applicability of the Stigler theory. Research expectations are straightforwardly derived. It would be expected that trucking industry executives had opposed the legislation and perhaps actively worked against it prior to its passage. It would be expected that the firm would be less profitable after the passage of the act, and it would be expected that trucking executives both currently oppose the act and support efforts to retard or roll back the deregulation process.

Research expectations may also be derived from other regulatory issues discussed. In the context of the innovative arguments, it would be expected that firms are now more innovative both in terms of pricing behaviors narrowly defined, and in terms of price/service combinations when regulation is removed (Research Question 4). It would be expected that cross subsidy would be eliminated by competitive entry (Research Question 3) and that oligopoly pricing behavior would have given way to more nearly competitive pricing behavior; resulting in price reductions and discounting (Research Question 2).

This in combination with a recognition of industry and shipper heterogeneity would result in the expectation of a market environment which placed a premium on the individualistic matching of heterogeneous supply with heterogeneous demand. This should result in more individualistic pricing behavior (Research Question 1). If Kahn's view of the applicability of the competitive model to the "trucking industry" in general does not apply to the regular route common carriers of general commodities, with their higher fixed costs, greater return to size,⁷⁰ and lower mobility, then some deviation from these expected results may eventually be expected for this carrier group.

Summary: Theoretical Analysis

A theoretical analysis of the problem has yielded several important perspectives. First, extensive entry and price control is more difficult to defend in situations where it can be argued that the industry is structured competitively than where the industry presents a situation of few sellers or oligopoly. Secondly, a move toward greater competitiveness in this industry situation is likely to be accompanied by price reductions, elimination of cross subsidy, and greater innovation. Third, recognition of essential heterogeneity of supply and demand brings with it the expectation of individualistic pricing behavior in a deregulated environment. Fourth, the regular route common carriers of general commodities comprise a group which shows the potential for deviation from the competitive model. Fifth, this deviation may take the form of oligopoly price behavior such as price leadership, rule of thumb, focal point, or limit pricing. Sixth, the bureau tariff structure provides a logical and convenient vehicle for these pricing behaviors. Seventh, pricing behavior can be expected to deviate from

profit maximization and utilize manuevers for perceptual effect. Eighth, conglomerate ownership of regular route common carriers of general commodities may view substandard returns in this business unit as being justified by the future possibility of successful oligopoly pricing behavior. And finally, the deregulation provides an opportunity to study attitudes and behaviors in the context of Stigler's view that regulation benefits the industry.

EMPIRICAL ANALYSIS

This section examines empirical evidence relevant to the study. Evidence supporting the idea that the deregulation would have competitive effects is examined first. This is followed by an examination of evidence suggesting that other than competitive effects might be obtained. Results are then presented which are relevant to the Stigler position concerning interest groups and motor carrier regulation. Finally, research concerning the state of the market matching process in the motor carrier industry is reviewed.

Evidence Suggesting Competitive Effects

The empirical evidence suggesting that the pricing effects of deregulation might be competitive in nature is of many varieties. There have been examinations of aggregate industry structure and costs, examinations of deregulated trucking and comparisons with the regulated sector, examinations of overseas experience, and initial observations of actual effects. Each of these classifications will be reviewed.

Industry Structure and Costs

Early studies provided evidence that the trucking industry, when viewed in the aggregate, demonstrated a structure in substantial

conformance with the requirements for competition. Meyer et. al. cited low levels of concentration.⁷¹ Early studies of economies of scale, as provided by Nelson⁷² and Roberts⁷³ supported the idea that the industry was competitively structured by demonstrating no economies of scale to be present. These early studies analyzed, through cross sectional accounting data, the cost structures of a sample of firms in the industry.⁷⁴

A recent review of the economies of scale argument and research is provided by Sugrue et. al.⁷⁵ The question of whether the no economy of scale research findings of the 1950's are, in fact, obsolete is still argued in 1982.⁷⁶ Sugrue et. al supported the idea that the early findings were still valid. Their research included a study of the relationships (linear regressions) between the independent variable of revenue and the dependent variables of expense per vehicle mile, expense per ton mile, operating ratio and several others.⁷⁷ The study group consisted of 531 Class I and II common carriers of general commodities. Sugrue et. al concluded that "this study ... finds no significant economies of scale in a major sector of the U.S. motor freight industry."⁷⁸

Examinations of Deregulated Trucking and Comparisons with Regulated Trucking

Moore agreed that there were no substantial economies of scale in trucking.⁷⁹ He also provided an estimate of the societal costs of regulation.⁸⁰ In order to do this, he required an estimate of rate level change upon deregulation. His estimate of the rate level change that would occur in the motor carrier industry was based upon the assumption that rates would fall 20% as they had in the deregulation of certain agricultural commodities. On this basis, Moore had estimated a

loss in the common carrier truck sector of between \$1.4 and \$1.9 billion.⁸¹

Lamkin's 1973 analysis of aggregate secondary data for exempt carriers was used to examine structure, conduct and performance in the agricultural (non-regulated) sector of U.S. trucking.⁸² Lamkin noted that the exempt sector in 1960 was composed of almost twice as many firms as those in the regulated sector.⁸³ In addition, these firms were of smaller size.⁸⁴ Lamkin compared concentration ratios, noting that among intrastate Kansas carriers, the four largest common carriers (10.8% of carriers reporting revenue) controlled 83.0% of the market.⁸⁵ In the agricultural exempt sector, only 15.7% of the farm to market carriage was controlled by the four largest firms; and in this sector, the four largest firms represented only 1.0% of the firms.⁸⁶ Lamkin then examined market conduct of the exempt sector. He found selling prices well below those in published tariffs.⁸⁷ Lamkin summarized his investigation as follows:

The available data indicate that shipping charges are lower under the exemption than they would be if the industry were regulated.⁸⁸

Miklius, Casavant, and Huang approached the question of the entry, exit, and survival rates of motor carriers in a deregulated trucking industry by comparing these rates in the exempt sector of motor carriage with similar rates for a large number of non-regulated industries.⁸⁹ Miklius et. al. sought answers to the question of whether or not excessive entry would lead to excessive price cutting (cutthroat or destructive competition) resulting in a large number of exits.⁹⁰ The analysis of data lead Miklius et. al. to conclude that "it does not appear that exempt motor carrier entry or exit rates are significantly higher than similar rates of other unregulated industries."⁹¹

Sloss attempted to predict the rate effects of a deregulation by examining rate behavior of trucking firms operating in differing provinces of Canada. The logic was that regulation differed sufficiently between the provinces so as to create an opportunity to study "regulating" vs. "non regulating" provinces.⁹²

Sloss accepted a definition of transportation price as rate per ton mile,⁹³ and structured his analysis to test the relationship of transport rates to selected operating costs of motor carriers in the various markets.⁹⁴ The central hypothesis was that in "regulating" provinces the rates received by intercity trucking firms exceeded those of firms providing services in "non regulating" provinces after considering differences in cost.⁹⁵ Sloss concluded that, after adjustment for costs, the rates in regulated provinces appeared higher.⁹⁶

Similar studies have followed the Sloss contribution, with Palmer⁹⁷ and McLachlin⁹⁸ building upon the work and coming to similar conclusions concerning the Canadian situation, although Sloss in later work did not duplicate his findings.⁹⁹

Allen et. al. attempted the prediction of rate results of deregulation through an examination of the unregulated intrastate trucking experience in New Jersey.¹⁰⁰ Rate behavior was studied using both phone and mail surveys of shippers and carriers together with an analysis of secondary data.¹⁰¹ Allen found that "lower intrastate rates for comparable commodities, distances and weights are a major conclusion of this study."¹⁰²

Several other important relationships are to be found among Allen's conclusions. Strictly intrastate (non-regulated) carriers were found to be healthier on an operating ratio basis (88.11) than I.C.C. certified

carriers operating in the intrastate New Jersey market (95.92).¹⁰³ Allen offered the ideas that non-union labor, more truckload work or the entry of more efficient carriers might account for this.¹⁰⁴ Allen also found that the majority of carriers were in favor of the deregulated New Jersey status quo,¹⁰⁵ as well as the I.C.C. status quo, despite the substantial differences between these two regulatory environments.¹⁰⁶ Allen offered the explanation that "this may reflect the phenomenon of status quoism, i.e. one is happy and secure when one has learned to play the game."¹⁰⁷ This perspective might provide a useful alternative to the Stigler perspective.

Examination of Overseas Experience

Some examinations of previous overseas experience also pointed toward satisfactory competitive effects. For example, Nelson conducted an empirical study of the effects of transport deregulation in Australia.¹⁰⁸ Nelson found that under free entry conditions and unregulated minimum rates:

1. Excessive competition did not prevail, except transitionally and when total demand temporarily falls off cyclically. Even under these circumstances, returns of carriers do not go to such low levels that facilities and service become inadequate and service of poor quality.
2. Truck services improve under competition.
3. Rural areas and markets do not lose the services and competitive rates that their traffic demands justify.
4. Road and rail modes developed integrated operations and services.
5. Rates are lower in relation to cost of service.¹⁰⁹

Nelson and Whitten's 1977 study of deregulation in Australia, Canada, France, Germany, Great Britain, Japan, and the common market lead to similar conclusions. Also summarized in chapter two above, the Nelson and Whitten study noted satisfactory competitive results of the British deregulation, drawing the conclusion that an industrial economy can have stable and profitable motor goods carriers and adequate and efficient road freight service without restrictive entry and rate controls.¹¹⁰

Observed Effects of MCA 1980 in Contemporary Literature

Preliminary results of the deregulation of 1980 have found their way into the literature and appear to confirm an initial move toward more competitive behavior, but this must be evaluated in the context of the recessionary economy of 1980-1982.

Can the price effects of recession be separated from the price effects of deregulation? Temple, Barker, and Sloane observed that there was no evidence to suggest widespread rate discounts during the 1970 and 1974-75 recessions,¹¹¹ while a 1982 FTC study found discounting of both LTL and TL traffic during 1981 to be "rampant."¹¹²

There has also been some evidence of entry. During the first year under the motor carrier act, almost 2,500 new firms entered the industry, primarily to handle truckload traffic, 30,000 applications for extended operating authority (five times the normal number) were submitted, and 95.4 percent were approved. During this time approximately 50 trucking firms were given authority to serve 48 states and the large LTL carriers aggressively expanded into each other's territory.¹¹³

Two studies of the effects of MCA 1980 have been contributed by Corsi, Tuck, and Gardner. One focused upon minority owned motor

carriers.¹¹⁴ The results of this survey research indicated that rate cutting was a reality, although a surprisingly large number responded to the effect that the rate provisions of the act had as yet no effect upon their business.¹¹⁵ Corsi et. al. focused a second survey on owner operators.¹¹⁶ Large numbers (47.3%) of owner operators reported reductions in rates. Corsi et. al. solicited opinions on the results of MCA 1980 and found that, with respect to the provisions designed to create a more competitive environment, owner operators were "overwhelmingly negative"¹¹⁷ although much of this attitude might be attributed to the economic downturn.

In 1981, Harper conducted a survey of motor carriers and shippers regarding the consequences of the 1980 act.¹¹⁸ Harper found support for the hypothesis that the I.C.C. had created a situation where the market, rather than the regulatory system, was determining such things as entry, rates, and quality of service.¹¹⁹ Harper also found support for hypotheses to the effect that motor carriers were placing more emphasis upon marketing, cost control, efficiency, planning, and innovation while shippers were placing greater emphasis on negotiating skill, new rate service ideas, and transportation, or logistics management.¹²⁰ Harper sought but did not find adequate support for a hypothesis to the effect that the deregulation had resulted in poorer service and higher rates for certain undesirable types of traffic.¹²¹ Harper characterized his study as preliminary in nature because of the "relatively short time which had elapsed since the onset of liberalized policies"¹²² and because one "cannot separate the effects of regulatory change from the effects of the poor economy on shippers and carriers."¹²³

The Interstate Commerce Commission has also generated studies which present some evidence of competitive effects. In a recent staff report,

post deregulation activities of the motor carrier industry were highlighted.¹²⁴ Truckers were found to be filing an increased number of new rates, discounting, and offering innovative pricing schemes.¹²⁵ However, this activity was set against the background of general rate increases of between 1.5 and 6.2 percent on TL shipments and 6.2 and 10 percent on LTL shipments as adjusted by the rate bureaus in April, 1982.¹²⁶ Applications for operating authority were up since the motor carrier act, with a resulting growth in the absolute number of carriers in each carrier size category.¹²⁷ Growth extended to general commodity carriers, with 271 nationwide general commodity applications having been received under the act as of May 21, 1982.¹²⁸ Evidence also existed of increased investment in terminal facilities and route extensions.¹²⁹

In a parallel G.A.O. study of the effects of the 1980 act upon the household goods moving industry, several examples of price discounts, price innovation, and service innovation were found.¹³⁰

Summary: Evidence of Competitive Effects

Much empirical evidence exists to support the idea that the results of the deregulation will be competitive. The aggregate structure of the industry appears to be competitive, experience with deregulated trucking and comparisons with regulated trucking appear to support the idea that regulation imposes higher rates, overseas experience with motor carrier deregulation has been generally satisfactory, and some observations of initial effects appear to be in line with the expectations of the competitive model.

Evidence Suggesting Other Than Competitive Effects

Substantial empirical evidence has also been offered to support the idea that the effects of a deregulation may not be competitive, or at

least not competitive in all segments of the industry or in the long run. This evidence may be classified as observations which call into question competitive assumptions that may have been made, observations demonstrating a potential for higher rates, observations of the overseas experience suggesting a potential for increased concentration in some segments, and preliminary observations of the actual effects of deregulation. These are reviewed in turn.

Problems with Competitive Assumptions

Some problems have been found with competitive assumptions. In a review of previous work, Nupp took the position that the empirical question of structure had not really been resolved in this industry.¹³¹ Noting that regulatory design must be conditioned by the structures of markets and supply systems of the industries being regulated, Nupp stated that "economic research has as yet reached no satisfactory conclusion concerning the structure of the market or its supplier."¹³²

Dicer's review of previous studies concerning economies of scale lead him to several critical perspectives concerning the application of the approach.¹³³ Dicer identified a substantial problem with this analysis as the service homogeneity assumption.¹³⁴ Comparison of costs between large and small firms is only valid if those costs are attributable to the production of comparable products. Dicer wondered whether common carriage was comparable to contract carriage, or whether common carriage was comparable within its own classification.¹³⁵ Dicer suggested that lumping firms of different types together would be misleading,¹³⁶ and suggested that there were forces leading to economies of scale in the industry:

1. Indivisible factors of production such as those used for coordination, information, communication and modern rate determination, billing and scheduling.
2. Unique relationships between carriers and shippers, with large shippers preferring to deal with carriers which can fit into their patterns of operations (wide market coverage, etc.).¹³⁷

He also identified forces leading to diseconomies of scale.¹³⁸ Problems involved with growth such as effective management practices, capital availability, labor problems, and improper technology were cited.¹³⁹ Dicer concluded:

...that the application of economic theory concerning economies of scale and optimum size in the specific area of the motor carrier industry is not the simple matter that it appears to be at first... A few fundamental conclusions can be drawn: (1) any study dealing with the motor carrier industry must face the problem of heterogeneity and treat the "industry" as a group of sub-industries; (2) the relevant cost curves are of a complex nature, and for the determination of optimum size, extreme care must be observed that an absolute minimum is observed rather than a relative minimum on the curve; and (3) any type of analysis must consider the dynamic character of the industry for policy to be effective.¹⁴⁰

Even using a conventional definition of economies of scale, the results do not appear to have stabilized. For example, in 1977, Koenker conducted a study of operating and financial data for a sample of 25 interstate common carriers of general freight operating in five mid-western states.¹⁴¹ A cost function was estimated for three distance and weight categories where the output was measured in millions of ton miles per year.¹⁴² The average costs per ton mile were found to be at their minimum in the 6-8 million ton mile per annum size range, which is smaller than most firms in the U.S. trucking industry.¹⁴³ This result would suggest increasing economies of scale up to this relatively small size, followed by decreasing economies of scale.

Rakowski summarized the contradictory economies of scale findings in 1977.¹⁴⁴ Roberts,¹⁴⁵ Nelson,¹⁴⁶ and Meyer¹⁴⁷ had supported the constant returns to scale position, but Patton¹⁴⁸ had indicated efficiency differences between sizes. The findings of Ladenson and Stoga¹⁴⁹ and those of Emery¹⁵⁰ also indicated that there were scale economies in the industry. Rakowski cited Dicer (summarized above) as having given the best analysis of the methodological problems involved in analyzing the essentially heterogeneous trucking industry.¹⁵¹

Rakowski's own 1977 analysis of secondary data for 32 trucking firms¹⁵² indicated that when a simple least squares regression was applied to the plots of 1) revenue vs. operating income, 2) assets vs. operating income, and 3) net worth vs. operating income, where the firms considered ranged from \$10 million to \$600 million in revenue, the smallest and the largest firms fell above the regression line, while the mid-sized firms fell below it.¹⁵³ Rakowski concluded that "the analysis of economies of scale in trucking has no simple answers. This paper has found that the performance of various sized trucking firms seems to result in a discontinuous function."¹⁵⁴

In a later work, Rakowski chose a larger sample of Class I and Class II carriers conforming to instruction 27 (at least 75% of revenue from intercity operations) which also reported at least 98% of their revenue from intercity operations.¹⁵⁵ This resulted in a study of 371 firms. The results of this expanded study indicated "definite cost differences and economies of scale in trucking"¹⁵⁶ but not such that one may generalize across trucking as a homogeneous activity.¹⁵⁷ Within subgroups, Rakowski's conclusions were:

1. The short haul segment of the motor carrier universe, which is dominated by smaller firms, shows increasing profitability and declining costs.
2. The long haul segment, which is heavily dominated by the giant motor carriers, shows economies in profit but not in cost.
3. In the middle areas of trucking there are no apparent trends in either cost or profit level.¹⁵⁸

Rakowski hypothesized that the data produced "additional evidence"¹⁵⁹ for a thread of thought presented in the literature by Dicer¹⁶⁰ and Wyckoff¹⁶¹ such that there may be a number of critical phases as a firm grows in size.¹⁶²

The research conducted by Maze provides a basis to question the applicability of the information assumption of the competitive model.¹⁶³ Maze undertook an analysis of secondary data and a mail survey of trucking firms, drivers, and inspection stations in the unregulated Florida environment. Maze summarized one important finding as follows:

Those large carriers that survive and flourish in the Florida market possess the information to "skim" high return loads. Remaining loads are carried by information poor carriers, especially owner operators.¹⁶⁴

Perhaps information in the deregulated environment will be inadequate to ensure competitive effects in each ecological niche.

In summary, there is substantial evidence to support the idea that the competitive model may not apply, owing to deviations from the model found in the industry itself. The output of the industry may not be sufficiently homogeneous to allow comparison of costs, the economies of scale arguments have not stabilized, and the information assumptions in the model do not seem to hold.

The Potential for Higher Rates

Some empirical work has been directed at the possibility that rates may be higher in an unregulated environment. Maister¹⁶⁵ undertook a criticism of the research track begun by Sloss.¹⁶⁶ Maister had criticized this research track on the grounds of the imprecise treatment of regulation that Sloss had utilized.¹⁶⁷ In Maister's early work, he had been unable to replicate the results of Sloss, Palmer, and McLachlin.¹⁶⁸

In Maister's more recent work, he was able to replicate the results.¹⁶⁹ Maister considered these findings unstable and drew the following conclusions:

- The major explanation for this instability of results is, of course, the problem of model specification. The model used in this paper (and in all previous research on this topic) is a very rough approximation of a cost model...
- Such a procedure may be criticized on at least three major grounds. First, the cost model omits many important variables...(mix of contract and common carriage, service levels, geographic conditions, traffic balance).
- The second major weakness of this research tradition is the failure to take into account demand conditions in each of the jurisdictions under investigation ("explaining price by constructing a supply equation").
- The third major weakness of the approach is the difficulty of accurately capturing the realities of what is termed "regulation."¹⁷⁰

Beyond criticism of the methodology, Maister felt he could draw some conclusions about the effects of regulation on price:

It would now appear that there is some evidence to support the conclusion that, for some commodities, regulation in Canada has had a perceptible influence on rate levels, while for others this influence is not detectable.¹⁷¹

Thus, Maister diluted the conclusions of the research track begun by Sloss considerably. Chow was to go further. Beyond diluting the

argument that regulation was associated with higher prices, Chow was to find an association of regulation with lower prices.

Chow found the variety of regulatory structures among states in the United States to be an opportunity to study the price effects of motor carrier deregulation.¹⁷² In general, the states themselves had made attempts to review their own regulation policies. Chow reviewed the state studies finding that the Sloss study and the Allen et. al. New Jersey study (both above) had provided the empirical basis for many of them.¹⁷³ He felt that a good comparison would be between rates for comparable services in several states, with states reflecting different regulatory conditions.¹⁷⁴ Following this logic, Chow performed a regression study using rate as the dependent variable and distance, fuel tax, weight limits, license fees, wage rates, dry bulk fertilizer consumption (the commodity under study), seasonality of that consumption and dummy variables for inflation and regulation. His results indicated an association between regulation and lower rates. Chow concluded:

No single policy direction such as "less regulation" or "more regulation" may be appropriate. The best policy for each segment of trucking and for the economic conditions in different transport markets may differ substantially.¹⁷⁵

The analysis of the relationship between Canadian provincial regulation or U.S. state regulation and the level of motor carrier rates was now at best confusing. Sloss, Palmer, and McLachlan had pointed in the direction of higher rates associated with regulation. Maister had not been able to consistently replicate their results, and Chow had found at least one formulation of the problem which pointed in the other direction.

Overseas Experience

While the analysis of overseas experience was generally favorable toward deregulation, certain less optimistic perspectives may also be derived from the studies. For example, Nelson's analysis of transport deregulation in Australia includes the observation that concentration has increased among multimodal freight forwarders.¹⁷⁶ LeClerc's discussion of freight competition observes that the Australian "deregulation has ended with a large number of small truckers, but with only a few very large intercity operators or freight forwarders who dominate the industry."¹⁷⁷ The potential for concentration, as discussed by Wyckoff,¹⁷⁸ may be coming to fruition in Australia.

Observed Effects of M.C.A. 1980 in Contemporary Literature

Not all of the preliminary observations of the effects of the U.S. deregulation point toward conformance with the competitive model. The recent I.C.C. study, discussed above, while identifying many competitive behaviors on the part of trucking firms also identifies other trends.¹⁷⁹ Some carriers have placed advertisements in trade journals directed at owners and C.E.O.S. of other motor carriers. These advertisements have suggested that the carriers "get smart and recognize that (through low rate schemes) you are killing yourself, the industry, your company, and your competitors."¹⁸⁰ The rate bureaus continue to function and to push through substantial rate increases.¹⁸¹ Few of the applications for nationwide general commodity authority have been received from new carriers,¹⁸² and substantial acquisition and consolidation behavior has been documented within the general commodity group.¹⁸³ In this context, it is possible that competitive pricing behavior on the part of regular route common carriers of general commodities may be an interim phase.

Summary: Other Than Competitive Effects

In summary, there is some evidence to support the argument that the results of deregulation will not be in accordance with the competitive model in all segments of the trucking industry. This evidence includes the difficulty of measuring market structure given the nature of transportation markets and the resulting questions concerning real structure on a market by market basis. It also includes contradictory evidence concerning the economies of scale assumption, the heterogeneity of industry output, the weakness of the perfect information assumption, and confusing results concerning the relationship of rates to the level of state or province regulation. Beyond weaknesses in the competitive assumptions (or market imperfections), certain structural patterns in overseas deregulation and certain behavioral patterns in the U.S. deregulation point to a potential for oligopolistic pricing behavior among regular route common carriers of general commodities. The Australian experience includes concentration among large intercity operators and the American experience includes some evidence of attempts to make competitors aware of oligopolistic interdependence, continuation of the bureau tariff structure, perhaps as a "focal point" or as a component of a "rule of thumb" formula, and some merger activity.

Evidence: Interest Groups and Regulation in Transportation

In the context of broad regulatory issues, a primary focus of this study is the Stigler perspective. In the motor carrier industry context, this perspective would expect that motor carrier management and aligned interest groups would have opposed the deregulation based upon their understanding of their own economic interest. A considerable body of evidence exists concerning the positions taken by interest groups on

the issue of motor carrier regulatory reform. This section considers Stigler's work with the motor carrier industry, work which establishes the political positions of different groups with regard to motor carrier deregulation, and work which analyses the political process involved in the establishment, retention or modification of motor carrier regulation.

Stigler

Stigler used the motor carrier industry as an example of an industry which had acquired two of the four possible favorable governmental policies. The list of four included: direct subsidy, entry control, retardation of substitutes, and price controls. The motor carrier industry had achieved entry and price control. Stigler contrasted the declining numbers of licensed carriers in operation between 1946 and 1966 with the growing numbers of cumulative applications to operate during the same period, and noted the effect of price control upon rates of return in the industry.¹⁸⁴

The early evolution of motor carrier regulation provided Stigler with a quantitative illustration. Hypothesizing that the railroads would try to influence the emerging state regulation of trucking in the late 20s and 30s, Stigler believed that the pattern of truck weight limits would "emerge in response to the economic interests of the concerned parties." Thus he expected that:

1. Heavy trucks would be allowed in states with a substantial number of trucks on farms.
2. The longer the average railroad haul the less the railroads would oppose trucks (truck is a stronger competitor in short hauls).

3. The public would be concerned by the potential damage to the highway system and thus, the better the highway system the heavier the trucks.¹⁸⁵

Stigler performed regressions in support of this analysis using the weight limits on trucks as the dependent variable, and the number of trucks on farms per 1,000 persons in the agricultural labor force, the average length of railroad freight haul in miles, and the percent of state highways with "high" type surface as explanatory variables.¹⁸⁶ The three explanatory variables were statistically significant and worked in the expected directions.¹⁸⁷

Positions of Groups

Much of the research which established positions of groups prior to the deregulation may be viewed as supportive of the Stigler perspective. Harper and Johnson's 1974 study reviewed several of the established positions. The American Trucking Association was clearly against any relaxation of entry control or rate regulation.¹⁸⁸ The Department of Transportation was very much in favor of liberalized regulation, and the I.C.C. was opposed.¹⁸⁹

The views of the shipper were considered by Harper in 1974. His earlier research had found that traffic managers believed the results of regulation to be satisfactory,¹⁹⁰ while previous research by Nelson had found that shipper top management was strongly against regulation, at the same time that traffic managers "showed little enthusiasm for a reduction in regulation."¹⁹¹

Harper's 1974 study evaluated the opinions of two groups of shipper executives; transportation and non transportation. His conclusions included the observations that transportation executives were beginning

to favor reduced regulation and that executives of large firms were more likely to favor deregulation than executives of small firms.¹⁹²

In a 1976 study, Davis et. al. compared perceptions of transportation regulation and deregulation issues held by members of two different professional groups, the National Council of Physical Distribution Management (NCPDM) and the American Society of Traffic and Transportation (AST&T).¹⁹³ Davis et. al. evaluated the differences in these groups as deriving from an "inventory and customer service perspective" (NCPDM) versus a "traffic and transportation perspective" (AST&T).¹⁹⁴ Substantial differences in the view of deregulation were found. NCPDM respondents generally favored some deregulation, while AST&T members generally did not.¹⁹⁵

Constantin et. al. conducted a mail survey of rail carriers, motor carriers, and shippers in order to compare their responses on regulatory issues.¹⁹⁶ Sending questionnaires to members of Delta Nu Alpha and the AST&T, Constantin et. al. divided responses according to the employment of the respondent as rail carrier, motor carrier, or shipper. All three groups disagreed with the statement that the regulatory process should be repealed and agreed that the then current (1977) system should be improved rather than "having deregulation."¹⁹⁷ All three groups also agreed that deregulation would impair service to small towns.¹⁹⁸

Jerman et. al. identified groups according to whether they were affiliated with "pro" (extended regulation) positions or "anti" (less regulation) positions.¹⁹⁹ This classification is shown in Figure 3-3.²⁰⁰ They also summarized the findings of earlier survey research. Among the findings summarized were:

1. Strong carrier support for collective pricing.
2. Satisfaction of traffic managers with the current (1977) system.²⁰¹

These authors found both shippers and carriers agreeing with the idea that entry controls should be retained, when the question was phrased as "allowing anyone to enter the transportation business at will without the responsibilities and obligations now imposed upon common carriers."²⁰²

Burck contributed to the understanding of positions on deregulations by publishing an interview with Bennett C. Whitlock, then president of the A.T.A., and James C. Miller III, then resident scholar and co-director of the Center for the Study of Government Regulation at the American Enterprise Institute.²⁰³ Whitlock's position was that regulation had brought stability and reasonable rates without discrimination among shippers, regions, or communities.²⁰⁴ Miller believed that reform of trucking regulation would improve output, increase productivity, and have a moderating effect on the cost of living.²⁰⁵

Stock's mail survey of Class I and II common carriers (1979) reflected motor carrier beliefs that the government should administer equipment safety, market entry and exit, transport of hazardous materials, carrier rights of way, and merger or acquisition activity.²⁰⁶ Most deregulation proposals were opposed by the carriers, and rate bureaus were defended as bringing stability to the rate structure.²⁰⁷ Many carriers took the position that "rate chaos" would result if rate bureaus were eliminated.²⁰⁸

The Political Process

Ulen undertook a historical examination of the early evolution of the Interstate Commerce Commission.²⁰⁹ In line with the Stigler perspective, Ulen identified three principle early demanders of federal railroad regulation. These were:

1. The farmers in the upper midwest.
2. Merchants and farmers in the east.
3. The railroads themselves (as the rail network became more dense and as competition thwarted attempts to collude on prices).²¹⁰

Figure 3-3 VARIOUS VIEWPOINTS ON THE EXTENT TO WHICH REGULATION IS DESIRABLE (From Jerman et. al.)	
PRO	ANTI
Or Extended Regulation	Or Significantly Less Regulation
1. Interstate Commerce Commission	1. Last Two Presidential Administrations (1977)
2. American Trucking Association	2. Department of Transportation
3. International Brotherhood of Teamsters	3. Railroads
4. National Industrial Traffic League	4. Group of Economists
5. Water Transport Association	5. Ralph Nader
6. Farm Groups	6. Other Consumer and Environmental Advocates

Ulen's analysis suggests that the early I.C.C. was ineffectual and that its existence was not as strong an explanatory factor in the success and failure of rail cartels as was the aggregate demand for transportation implicit in the business conditions of the periods examined.²¹¹ Ulen concluded that:

The history of federal railroad regulation between 1887 and 1920 cannot be fully comprehended using either the public interest theory or the economic theory of regulation.²¹²

Ulen felt that none of the identified interest groups expressed a demand for later alterations to the act, extending the powers of the I.C.C. to the point achieved by 1920, and that "the only group which may have had sustained interest in the events from 1903 on was the I.C.C. itself."²¹³

Stalon's case description of trucking regulation in Illinois supported a view of an industry in control of its regulation.²¹⁴ He reported his findings based upon his empirical observations as a commissioner of the Illinois Commerce Commission (I.L.C.C.).²¹⁵ From this perspective, the effects of the I.L.C.C. regulation of the trucking industry appeared to be:

1. To legitimize the industry's collective ratemaking.
2. To generate an excess capacity in the industry (the law prevents an efficient peak-off peak pricing system so the industry responds by developing excess capacity).
3. To limit via rate and certification procedures one "very important dimension of competition, namely Schumpeterian 'creative destruction' competition" (not price rivalry, but new forms of service and new organizations...stimulating efficiency and technological progress).²¹⁶

Lieb's study of the attempt to relax motor carrier regulation in Massachusetts provides insight into the dynamics of the influence process.²¹⁷ Lieb analyzed the interaction of shipper and carrier interests which caused the bill's defeat.²¹⁸ In the Massachusetts case, strong opposition on the part of the motor carriers, together with apprehension among shippers as to the effects of regulatory change, provided sufficient political momentum to stifle the deregulation legislation.²¹⁹

Summary: Interest Groups and Regulation

This transportation industry evidence does provide some support for the Stigler perspective. Certainly Stigler's own work,²²⁰ and the consistent motor carrier position as reflected in the work of Harper and Johnson,²²¹ Constantin et. al.,²²² Jerman et. al.,²²³ Burck,²²⁴ Stock,²²⁵ Stalon,²²⁶ and Lieb²²⁷ are supportive of the Stigler framework. But the Stigler framework comes short of explaining other observations. Why, for example, do the views of the NCPDM group differ from those of the AST&T group,²²⁸ why did rail carriers occasionally side with motor carriers in opposing deregulation when they retain substantial monopoly power,²²⁹ why did the I.C.C. seem to take on an interest of its own after 1903,²³⁰ and why did Allen's respondents²³¹ (discussed in a previous section) favor both regulation and deregulation when each comprised the status quo in differing geographic environments?

It would seem defensible to say, in this context, that the Stigler perspective makes a substantial contribution to the explanation of observations. But, it may be incomplete. "Rational" economic self interest may be mitigated by other factors.

The Market Matching Process in the Motor Carrier Industry

Recognition of the essential heterogeneity of the demand and supply characteristics of the industry brings with it the expectation that carriers will find a matching process to be adaptive in the deregulated environment. Many normative statements have been made concerning the application of a marketing perspective to the motor carrier industry. These would include contributions by Constantin et. al.,²³² Potter and Wang,²³³ Schuster,²³⁴ Jerman et. al.,²³⁵ Rose and Zientara,²³⁶ Bauer,²³⁷ Mossman and Maiers,²³⁸ and A. T. Kearney.²³⁹ Some of these adopt a

perspective compatible with Alderson's theoretical position, that of marketing as "matching."²⁴⁰ This group includes Constantin et. al. who suggested that carriers adopt what they termed the "4 ms of market planning"; 1) measure market needs, 2) meeting market needs with carrier strengths, 3) "matching" market needs and carrier strengths, and 4) marketing to target market segments.²⁴¹ Potter and Wang also saw the basic marketing functions in terms of a "matching" process. Firms are required to specify organizational objectives, analyze the external environment, and program marketing activities.²⁴² This programming is seen to consist of 1) seeking customers, 2) "matching" their wants and desires with organizational capabilities, 3) designing programs to effectuate the "match", and 4) consummating the "match" by delivering the service.²⁴³

Beyond straightforward adoption of Alderson's marketing as matching construction, several compatible normative views have been expressed. This group would include arguments for segmentation typified by those of Schuster,²⁴⁴ and Rose and Zientara,²⁴⁵ and by Mossman and Maiers' expectation of more "creative individually priced service"²⁴⁶ in the deregulated environment.

Evidence: The Market Matching Process

Empirical results would indicate that the state of the market matching process as practiced by motor carriers prior to the deregulation was not good. Even in the context of an extremely complex rate structure, there was evidence of price/service mismatch. The survey research of Jerman et. al. indicated that the responses of motor carriers and purchasing traffic managers were substantially different when they were asked to rate the importance of 26 motor carrier selec-

tion variables.²⁴⁷ Similarly, Robicheaux et. al. asked shippers to estimate service levels which were "reasonable to expect" in motor common carrier markets versus service levels actually experienced.²⁴⁸ Satisfaction was inferred by subtracting each reported reasonable service level from each reported actual service level.²⁴⁹ Importantly, it was found that there were substantial groups of shippers who were either oversatisfied or dissatisfied with motor common carrier performance.²⁵⁰ Reallocation of motor carrier service effort was recommended.²⁵¹

Given this, it might be argued that the regulatory structure was placing constraints upon the matching process. Perhaps lack of competition had caused motor carrier management to be insensitive to the need for careful matching. Perhaps the specific operational and rate constraints had prevented even the most market oriented management from adjusting their offering to precisely meet shipper requirements.

The Study in the Context of the Literature

In this context, the study examines pricing behavior following the lessening of legal constraints on both entry and pricing. The study examines pricing behavior in a segment of the industry which has been identified as possibly in poor conformance with the competitive model. The research questions reflect the competitive behavioral assumptions in the context of a recognition of essential heterogeneity, and the research investigates heterogeneous pricing behavior through taxonomy development. Finally, the study examines conformity of the political positions and behaviors of industry executives with the expectations of the Stigler theory.

The research is conducted in the context of conflicting empirical evidence concerning the appropriateness of the competitive model for

description of the results of a deregulation of this industry segment, and in the context of empirical evidence which is not entirely explained by the Stigler model. The research views pricing in a marketing as well as an economic context, and is conducted in the third year following the deregulation; utilizing the first opportunity to begin the separation of the results of deregulation from the results of economic recession.

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CHAPTER IV
ANALYTICAL FRAMEWORK AND RESEARCH DESIGN

Introduction

The general research questions treated by the study were: to determine the pricing behaviors of Class I and Class II regular route common carriers of general commodities; to determine whether those behaviors constituted a change since deregulation; and to determine whether it was possible to develop a taxonomy of those pricing behaviors. Four specific research questions were adopted which reflected the assumption that pricing was becoming more competitive in the context of essential heterogeneity, and the data were examined for conformance with the expectations of the Stigler theory of economic regulation.

Achievement of these research goals should provide insights into whether or not a carrier group, whose conformance with the competitive model had been questioned, is now behaving more in accordance with that model than it had prior to deregulation. The taxonomy development provides a detailed view of heterogeneous pricing behavior within the group. At the same time, the observation of pricing after a shift in regulatory environment provides the opportunity to observe changes in profitability, stated political positions and reported political behavior in the context of Stigler's expectations. The study is conducted in the context of some evidence of competitive entry, and in the context of the economic recovery of Fall, 1983.

Research Framework

As outlined briefly in chapter one, the research was conducted in five phases. First, a review of the literature was undertaken in order to identify the important issues or arguments surrounding motor carrier

deregulation and to identify specific research questions for the study. This resulted in the identification of the historical observations, debate issues, theoretical perspectives, and empirical evidence reviewed in chapters two and three, as well as the adoption of specific research questions one through four. The second phase of the study was comprised of a reevaluation of the literature. This was undertaken in order to identify specific observations or predictions which might be translated into questionnaire items to support a specific research question. These resulting items, together with open-ended questions, were then incorporated in an interview guide which was used in the exploratory interviews, the third component of the research and the first field component.

The exploratory interviews were conducted using a convenience sample of carrier management, industry observers and transportation/physical distribution management. The interviews were undertaken during June, 1983, and varied in format from a five hour one-on-one personal interview to a two hour telephone interview. In all cases, the interview guide was followed to the maximum extent allowed by the participants' time, interest, and knowledge. Ten such interviews were completed. The results of these exploratory interviews included: a narrowing and focusing of the research questions; a translation of the research questions into industry terms and activities; identification of pricing behaviors which had not been anticipated in the literature; and identification of potential classifications for a pricing taxonomy.

The exploratory interviews were followed by a mail survey and follow-up (phase four) and data analysis (phase five). These two phases are now discussed in some detail.

Mail Survey: Instrument and Pretesting

The survey instrument used in the research contained forty-five questions, some of which utilized subcategories requiring responses. A total of ninety-two responses were required in order to complete the questionnaire. The instrument was developed by forming questions concerning pricing behavior which: 1) were supportive of one of the specific research questions one through four, 2) provided the basis for a taxonomy development, or 3) examined relationships important to the Stigler theory. Inspiration for a specific question was derived from either the literature or the exploratory interviews. Following initial development of the questionnaire, the questions were restructured for efficiency and logical consistency and were presented to members of the dissertation committee for comment and adjustment.

The questionnaire was then pretested using a judgment sample of carrier top management. Five presidents, three vice presidents, and one manager of sales and marketing representing seven different regular route common carriers of general commodities participated. During this pretest, the questionnaire was personally administered, and the time required to complete the instrument was recorded. Executive suggestions concerning the wording of specific questions were considered and, in some cases, resulted in adjustments to the instrument. In general, the executives were cordial and interested in the study. Twenty minutes had been requested for the interview, but company presidents sometimes gave as much as two and one-half hours to the pretest and discussion.

A second pretest was then mailed to a random sample of ten carrier presidents derived from the American Trucking Association's listing of regular route common carriers of general commodities. Three usable responses were eventually received as a result of this mailing.

Following minor adjustments as a result of the pretest, the questionnaire was produced as a computer readable brochure and was mailed together with a cover letter and a stamped, self-addressed envelope. The questionnaire comprises Appendix A of this report, and the cover letter comprises Appendix B.

Sample and Sampling Method

The questionnaire was mailed to a census of 732 regular route common carriers of general commodities. The census listing was developed using the American Trucking Association's carrier file list accessed on July 22, 1983. This file list is used by the American Trucking Association in developing the Executive and Ownership Report Class I and II Motor Carriers of Property. Study of the ownership report itself indicated that clerical errors had been made in its compilation. The American Trucking Association acknowledged the errors and allowed direct access to the carrier file in order to generate a more nearly error free list. All carriers listed as regular route common carriers of general commodities were included in the survey.

Data Collection

The questionnaires were mailed to the president of each firm on November 7, 1983. Each questionnaire was accompanied by an individually addressed business style cover letter which introduced the study, solicited help, and promised a summary of results upon request (see Appendix B). A stamped, self-addressed envelope was also enclosed. On November 28, 1983, a reminder letter was mailed. The reminder letter expressed appreciation to those who had already returned the questionnaire and requested help from those who had not. The letter included the researcher's home telephone and address and suggested that those who

had misplaced the original questionnaire might write or call for another (see Appendix C). This second mailing resulted in several letters and telephone calls which requested that a new questionnaire be sent. These requests were generally cared for within a twenty-four hour period.

On December 31, 1983, data collection was considered to be complete. By that date, the mailings had resulted in 204 responses (27.9%) of one kind or another from trucking executives. Four executives (.5%) had written to explain why it was their decision not to respond to the survey. Another five (.6%) had written to explain that their firm had gone out of business and some explained this in terms of pricing behaviors. Ten blank questionnaires were returned. In all, 185 (25.3%) completed or partially completed questionnaires were returned, some executives opting to avoid answering certain questions. As a partially completed questionnaire provided useful responses to many questions, these questionnaires were used. Non deliverables accounted for 68 (9.3%) of the original mailing. The response rates recalculated as percentages of the effective sample (the sample originally selected minus non-deliverables) appear together with other response data as figure 4-1. Low response rates are a problem with any mail survey.¹ These rates are considered acceptable, as returns of 40% or better may be considered to be exceptional, and returns of five to ten percent may be considered common in mail surveys.²

Data Analysis and the Purpose of the Research

The overall purpose of the research as stated in Chapter One was to address the following general questions:

1. What is the current (fall, 1983) pricing behavior of Class I and Class II regular route common carriers of general commodities?

Figure 4-1

Mailings, Responses, and Response Rates

Original List of Regular route Common Carriers of General Commodities.....	742 names		
Pre-test Group.....	10 names		3 responses October
First Mailing.....	732 names		November 7
Non Deliverables.....	68 names		
Effective Sample.....	664 names		
Second Mailing.....	732 names		November 28
Responses, Useful Questionnaires [Respondents Avoiding Some Questions].....	185 Items		By December 31
Responses, Informational Letters Other Than Questions...	9 Items		By December 31
Blank Questionnaires Returned..	10 Items		By December 31
Total Responses.....	204 Items		By December 31
Total Responses [Includes Information Letters]	27.9% As % of Total Mailing	30.7% As % of Effective Sample (Total Mailing -Non Deliverables)	
Useful Questionnaires	25.3% As % of Total Mailing	27.9% As % of Effective Sample	

2. How has this behavior changed since deregulation?
3. Is it possible to develop a taxonomy (classification) of such pricing behavior?

A series of research questions was developed to achieve the stated purpose. The following section relates the data analysis involved with each research question to the purpose of the study.

The statement of Question 1A was, "To what extent is carrier pricing behavior characterized by the use of contracts vs. tariffs?" This research question addresses the purpose of describing one major aspect of current pricing behavior of the carrier group. The question recognizes the heterogeneity arguments in the theoretical and applied literature and reflects the expectation that in a deregulated environment, pricing will be individualized. The specific data analyses in support of Research Question 1A are treated below under the heading, "Data Analysis: Research Question 1A."

The statement of Question 1B was, "Does carrier top management see this as constituting a change since deregulation?" This research question addresses the purpose of describing change in this specific aspect of carrier pricing behavior since deregulation. It reflects the expectation that change will be in the direction of more individualized pricing. For both Research Question 1A and 1B, the research examines both contracts per se and independent tariff making behavior which often serves the individualizing function of contracting. The specific data analyses in support of Research Question 1B are treated below under the heading, "Data Analysis: Research Question 1B."

The statement of Question 2A was, "To what extent is carrier pricing behavior characterized by extensive discounting?" This research question addresses the purpose of describing a second major aspect of the current pricing behavior of the carrier group. The question reflects the argument that the carriers in this previously profitable industry will react competitively to a deregulation and will engage in market entry and price discounting behavior upon the lessening of legal constraint. This question is particularly important for this carrier

group. The regular route common carriers of general commodities have been identified as having relatively high barriers to entry. It has been argued that they might not react to a deregulation with competitive behavior. The research examines both discounting interpreted as specific discounts and discounting interpreted as price reductions. The specific data analyses in support of Research Question 2A are treated below under the heading, "Data Analysis: Research Question 2A."

The statement of Question 2B was, "Does carrier top management see this as constituting a change since deregulation?" This question addresses the purpose of describing change in an aspect of carrier pricing behavior since the deregulation. It reflects the competitive expectation that discounting will have increased. This expectation is derived from the high profitability of the industry prior to deregulation, from the lessening of constraints upon entry and pricing, and from the arguments that the industry is structured competitively. The data analyses in support of Research Question 2B are described below under the heading, "Data Analysis: Research Question 2B."

The statement of Question 3A was, "To what extent is carrier pricing behavior characterized by cross subsidies?" This research question addresses the purpose of describing a third major aspect of current pricing behavior within the carrier group. It reflects the arguments surrounding the welfare goals of the earlier tariff structure. The competitive expectation would be that cross subsidy could not be maintained. Any shipments carried at rates so substantially above costs as to allow cross subsidization of other shipments would logically be taken by competitors. Thus, any previous cross subsidy of rural or

small shipments can be expected to disappear with a deregulation if the effects of the deregulation are competitive. The data analyses in support of Research Question 3A are described below under the heading, "Data Analysis: Research Question 3A."

The statement of Question 3B was, "Does carrier management see this as constituting a change since deregulation?" This question addresses the purpose of describing change in this aspect of carrier pricing behavior since the deregulation. The competitive expectation would be that cross subsidy could not be sustained. Therefore, change is expected in the direction of the elimination of cross subsidy. Specific data analyses are described below under the heading, "Data Analysis: Research Question 3B."

The statement of Question 4A was, "To what extent is carrier pricing behavior characterized by innovation? (innovative price/service combinations)." This question addresses the purpose of describing a fourth major aspect of current carrier pricing behavior. It reflects the arguments concerning the relationship of market structure to innovative propensity, and the perspective that regulation has inhibited innovation in this industry. The data analyses are described under the heading, "Data Analysis Research Question 4A."

The statement of Question 4B was, "Does carrier top management see this as constituting a change since deregulation?" This question addresses the purpose of describing change in a fourth aspect of pricing behavior since the deregulation. It addresses the theoretical and applied arguments concerning the relationship of competition to innovation. The expectation would be that increased competition and increased freedom would result in increased innovation in any situation

short of extremely rigorous competition. The specific data analysis in support of this perspective are presented below under the heading, "Data Analysis Research Question 4B."

The taxonomy development procedures address the stated research purpose of determining whether it is possible to develop a taxonomy or classification of pricing behavior within this carrier group. Taxonomy development represents a first step in the scientific investigation of any phenomenon. In this case, it is also a useful device for the investigation of arguments concerning the heterogeneity of market behavior. Specific data analyses in support of taxonomy development are discussed below under the heading, "Data Analysis: Taxonomy Development."

An additional goal of the research was to view the results in the context of the Stigler theory of economic regulation. This theoretical perspective would hold in essence that the regulation had benefited the industry, protecting it from competition. Competitive findings in the major research questions would support this perspective, but other specific questions were asked. Findings that the firms were consistently opposed to the deregulation, and findings to the effect that firms had lost profitability were sought in support of the Stigler framework. The data analysis procedures are described below under the heading, "Data Analysis: The Stigler Perspective."

The data analysis procedures undertaken are now outlined in detail. For each specific research question, the analytical framework is further specified by identifying the source of the data on the questionnaire (included as appendix A), the treatment of the data as ratio, interval, ordinal, or nominal, the goal of statistical inference, and the statis-

tical test or procedure used. The taxonomy development is approached using extensive cross tabulation. These cross tabulations and associated statistical procedures are also outlined in this section. The Stigler perspective is approached using a series of questionnaire items. The logic of these is set forth below, together with the goals of statistical inference, the treatment of the data, and the statistical tests used.

Data Analysis: Research Question 1A

Research question 1A was phrased as "to what extent is carrier pricing behavior characterized by the use of contracts vs. tariffs?" The data for this analysis are derived from questionnaire item 35. Executives respond to this item by dividing 100% of their revenues into four specified categories plus one open-ended category. Responses in the open-ended category may then be allocated to one of the first four specified groups.

Data are summarized through a display depicting the number of carriers obtaining differing proportions of their revenue from the rate categories described (figure 4-2). This summary provides tabulations within category and allows identification of the modal category. The goal of statistical inference is to determine whether it is probable that the sample distribution was derived from a population having a null distribution with equal proportions of contract vs. tariff revenue as categorized above. To this end, the original frequency distributions as outlined in figure 4-2 are consolidated and compared. The data in the revenue categories have an ordinal property and the Kolmogorov-Smirnov Goodness of Fit Test is used to compare the frequency distributions.

Figure 4-2
Frequency of Carriers
In Revenue Categories

Rate Type	% of Revenue				
	0-20	21 - 40	41 - 60	61 - 80	81 - 100
(A) Contracts					
(B) Special One or Few					
(C) Independent Large #s					
(D) Bureau Tariffs					
(E) Other					

Two such procedures are undertaken. The first procedure compares contracts legally defined (Rate Type A in figure 4-2) to a consolidation of all other categories (B-D where E may be assigned to another category). The second procedure compares contracts defined in terms of economic function (Types A and B) to a consolidation of other categories.

These data analysis procedures allow statements to be made concerning the extent of carrier use of contracts, special tariffs, independent tariff schedules and bureau tariffs. They also allow statements to be made concerning extent of the use of contracts versus tariffs.

Data Analysis: Research Question 1B

Research question 1B was phrased: "Does carrier management see this (1A) as constituting a change since deregulation?" Data for this analysis are derived from the multiple choice component of question 35. Executives are asked to decide whether the percentage of revenue that they have just estimated is more, the same, or less than prior to deregulation. These responses are treated as nominal data and are summarized by tabulation within category, modal category, or graphic display. The goal of statistical inference is to determine whether it is probable that the sample response distribution was derived from a population distribution of equal proportions, and the χ^2 test will be used for this purpose. Each rate category (contracts, etc.) will be examined individually. A statement may then be made as to whether executives see the revenue proportions reported in research question 1A as constituting a change in each rate category.

Data Analysis: Research Question 2A

Research question 2A was phrased: "To what extent is carrier pricing behavior characterized by extensive discounting?" This research question is approached in several different ways. To begin with, discounting may be interpreted as the offering of specific discounts, or as price cutting. Secondly, price cutting may be viewed in terms of deviation from bureau tariffs or in terms of the relationship of revenues to costs. Each of these perspectives is investigated.

Discounting Interpreted as Specific Discounts

The data for this analysis are derived from question 36, items A through N. Executives are asked to respond in the context of each named discount (A through N) as to whether they have started the activity

since deregulation, are doing more, the same, less, have stopped the activity since deregulation, or have never engaged in the activity. Executive responses to these items are treated as nominal scale data and are summarized by tabulation within category, modal category, or graphic display. For each named discount, respondents are categorized as engaging in or as not engaging in the discount. The goal of statistical inference is to determine whether it is probable that the sample response distribution (frequencies in cells) was derived from a population of equal proportions (engaging vs. not engaging). The χ^2 test is used. A statement may then be made as to the extent to which carrier pricing behavior is characterized by extensive discounting, where this is seen in terms of the frequency of carriers engaging in specific named discounts.

Pricing Cutting: Deviation From Bureau Tariffs

The data for this analysis are derived using questions 20, 21, 22, and 35. The first three questions are used to identify groups for which each type of rate considered (contracts, special tariffs, items, or schedules) are "always" or "usually" lower than bureau tariffs. These groups are displayed in figure 4-3. For each group so identified, the proportion of respondents is tabulated, and for each of these groups, figure 4-2 is reconstructed. The goal of statistical inference is to determine whether each of these groups, taken individually, differs from the population as a whole in their use of these rate categories. The comparison is made in the format of figure 4-2 and a series of Kolmogorov Smirnov Two Sample Tests are used.

These data analyses allow statements to be made concerning the extent of the identified group's use of these categories in comparison with that of the group as a whole.

Figure 4-3
 Identification of Groups Using Rate
 Categories As Price Cutting Mechanisms

	Always Lower Than Bureau	Usually Lower Than Bureau
(A) Contracts	Group A	Group B
(B) Special Tariffs or Items	Group C	Group D
(C) Independent Schedules	Group E	Group F

Price Cutting: Relationship of Revenue to Costs

Data for this analysis are derived from questions 23 and 24. Each question is analyzed separately, but the analytical procedures are identical. Question 23 is used to determine, for the carrier responding, what % of traffic as measured by \$ revenue is accounted for by situations where rates are "extremely close to costs." Question 24 identifies the same percentage for the traffic which is "actually losing money." The frequency of executive selection of percentage categories is treated as nominal data and is summarized by tabulation within category, modal category, or graphic display. The goal of statistical inference is to determine whether it is probable that the sample distribution was derived from a population having the null distribution of equal proportions. The χ^2 test is used. A statement may then be made concerning the frequency of carriers experiencing price-cost combinations such that given percentages of their revenue fall into the break even (question 23) or losing (Question 24) category.

Data Analysis: Research Question 2B

Research question 2B was phrased: "Does top management see this (extent of discounting 2A) as constituting a change since deregulation?" The data analysis to determine whether change is reported is also divided according to whether discounting is interpreted as specific discounts or as price cutting. Price cutting is again treated in terms of deviation from bureau tariffs and in terms of the relationship of revenues to costs.

2B: Discounting as Specific Discounts

The data for this analysis are derived from question 36. In this case, columns 1 and 2 are consolidated to form a grouping such that change amounts to "more" use of the discount. Columns 3 and 6 are consolidated to form a grouping such that there is "no change" reported, and columns 4 and 5 are consolidated into a grouping reporting that change amounted to "less" use of the discount. These data are treated as nominal data and summarized by tabulation within category, modal category, or graphic display. The goal of statistical inference is to determine whether it is probable that the sample response distribution was derived from a population distribution of equal proportions. The χ^2 One Sample Test is used. A statement may then be made as to whether executives report a change for each specific discount considered.

2B Discounting as Price Cutting: Deviation from Bureau Tariffs

Data for this analysis are derived from questions 20, 21, 22, and 35. The first three questions are again used to identify several groups for which contracts, special tariffs, items, and schedules are "always" or "usually" a lower rate than a bureau tariff. These groups have been

identified in figure 4-3. For each group, data are derived from the multiple choice component of question 35. These estimates of change are treated as nominal data and are summarized by tabulation with category, modal category, or graphic display. The goal of statistical inference is to determine whether it is probable that the sample response distribution was derived from a population distribution of equal proportions. The χ^2 Test is used and each group is tested individually. A statement may then be made as to whether the groups using contracts, special tariffs, items, and schedules to cut price report the extent of their use of these rate mechanisms to constitute a change.

2B Discounting as Price Cutting: Relationship of Revenues to Costs

Data for this analysis are derived from question 28. Question 28 requires that carriers select whether prices since deregulation are "closer to our costs" or "no closer to our costs." These responses are treated as nominal dichotomous data and are summarized by tabulation within category, modal category, or graphic display. The goal of statistical inference is to determine whether it is probable that the sample result was derived from a population with the null distribution of equal proportions (50:50). The χ^2 Test with continuity correction will be used, allowing a statement to be made as to whether executives report a change.

2B Change Where Price Cutting is Seen as Either Specific Discounts or Price Reduction

Question 26 is used to determine whether the group sees their prices as being lower, about the same, or higher than a year ago. The data are treated as nominal and are summarized by tabulation within category, modal category, or graphic display. The goal of statistical inference is to determine whether it is probable that the sample

response distribution was derived from a population distribution of equal proportions. The χ^2 Test is used, allowing a statement to be made as to whether executives see their prices as lower, about the same, or higher than one year ago.

Data Analysis: Research Question 3A

Research question 3A was phrased: "To what extent is carrier pricing behavior characterized by the use of cross subsidies?" Cross subsidy exists when some shipments are carried at a loss while others are carried at a profit, the profitable shipments thus "cross subsidizing" the unprofitable shipments. The extent of cross subsidy is approached using question 24, which asks that executives estimate the percentage of their traffic, as measured by \$ revenue, that they are actually losing money on. The resulting data are nominal and are summarized by tabulation with category, modal category, or graphic display. The goal of statistical inference is to determine whether it is probable that the observed distribution was derived from a population distribution of equal proportions in the revenue categories utilized. A χ^2 test is used. Statements may then be made concerning the current extent of cross subsidy as measured by the proportion of carriers involved in the cross subsidization of shipments amounting to different percentages of their revenues.

Data Analysis: Research Question 3B

Research question 3B was phrased: "Does carrier management see this (extent 3A) as constituting a change since deregulation?" The data for this analysis are derived from question 25. Executives are asked to estimate whether the extent of cross subsidy (their response to question 24) is more than, the same as, or less than before deregulation. The resulting data are treated as nominal and are summarized by tabulation

within category, modal category, or graphic display. The goal of statistical inference is to determine whether it is probable that the sample distribution was derived from a population distribution of equal proportions. The χ^2 test is used, allowing a statement as to whether executives report a change.

Several questions are designed to complement research questions 3A and 3B by examining the "nature" of cross subsidy and change in nature of cross subsidy as opposed to "extent" of cross subsidy. These questions are summarized in figure 4-4 below.

The questions summarized in figure 4-4 yield nominal dichotomous data and are summarized by tabulation within category, modal category, or graphic display. The goal of statistical inference is to determine whether it is probable that the observed sample proportion is derived from a population with the null proportion of 50:50. The χ^2 test with continuity correction is used and allows a series of conclusions to be made concerning carrier agreement with the individual statements.

Data Analysis: Research Question 4A

Research Question 4A was phrased: "To what extent is carrier pricing behavior characterized by innovation (innovative price-service combinations)?" Data for this analysis are derived from Question 37 items A-Z. Executives are asked to respond in the context of each named innovation (A through Z) as to whether they have started the activity since deregulation, are doing more, the same, less, have stopped the activity since deregulation, or have never engaged in the activity. For each named innovation, respondents are then categorized as participating in the innovation or as not participating. Executive responses to these items are treated as nominal scale data and are summarized by tabulation within category, modal category, or graphic display. The goal of

Figure 4-4

Questions Regarding the Nature of Cross Subsidy

- Question 11 Do carriers agree that they were forced to carry small LTL, rural service, etc. at a loss prior to deregulation?
- Question 12 Do carriers agree that items which they lost on prior to deregulation are still losing?
- Question 13 Do carriers agree that increased competition has made it difficult to make up a loss on one shipment by getting increased rates on another?
- Question 14 Do carriers agree that there has been a change in the shipments they lose money on and make money on?
- Question 17 Do carriers agree that powerful shippers are now causing
& some of their shipments to be carried at a loss (Q-17)
18 or very nearly so (Q-18)?
- Question 19 Do carriers agree that a trucking firm has to have a balance of business from "other" shippers so as to be able to afford to do business with more powerful shippers?

statistical inference is to determine for each innovation, whether it is probable that the sample response distribution (frequencies in cells) was derived from a population of equal proportions (participating vs. not participating). The χ^2 test is used for this purpose. This allows a statement to be made concerning the extent to which the pricing behavior of this carrier group is characterized by each price service innovation, where "extent" is seen in terms of the number of carriers engaging in specific named innovations.

Data Analysis: Research Question 4B

Research question 4B was phrased: "Does carrier top management see this (extent,4A) as constituting a change since deregulation?" The data are derived from question 37 items A through Z. For this analysis, columns 1 and 2 are consolidated (change=more), columns 3 and 6 are

consolidated (no change), and columns 4 and 5 are consolidated (change=less). The resulting data, frequencies in cells, are treated as nominal scale data and are summarized by tabulation within category, modal category, or graphic display. The goal of statistical inference is to determine whether it is probable that the sample response distribution was derived from a population distribution of equal proportions. The χ^2 test is used, allowing a statement as to whether top management reports a change in the use of specific innovations since deregulation.

Data Analysis: Taxonomy Development

The purpose of data analysis for taxonomy development is to determine whether pricing "types" can be identified and characterized within this motor carrier group. Extensive cross tabulation of data is undertaken, using questions which differentiate between candidate pricing types as determined in the exploratory research. The question group to be used this way is identified in figure 4-5. These questions will be used to cross tabulate all other responses.

Beyond these price specific taxonomy questions other cross tabulations will be undertaken to facilitate taxonomy development. These include the following:

1. Responses to change items in the multiple choice component of Question 35 will be cross tabulated by all other responses to see if there are relationships between these changes and other characteristics of the firm.
2. Responses to use of specific discounts in question 36 will be cross tabulated by the dichotomous classification used in research question 2A (most revenue from contracts vs. most revenue from tariffs) in order to examine similarities between tariff behavior and discounting behavior.

Figure 4-5

Pricing Taxonomy Questions

Question	Identifies Candidate Type
8	Predator if true
10	Price leader if true
6	Cherry picker or shipment targeter if true
2	S.B.U. (strategic business unit) if true
19	Cream skimmer if true
20, 21,22	Premium vendor if responding rarely or never lower to all 3
29	Resistor if responds most
30	Price aggressor if responds true

3. The groups identified as using contracts, special tariffs, items and schedules which are "always" or "usually" lower than bureau tariffs (questions 20, 21, and 22 under research question 2A) are compared with respondents not falling into these groups along the axes of size and profitability.

Appropriate statistical tests are applied to determine whether these candidate classifications differ along the other dimensions specified (comparing 2 sets of responses from 2 independent groups). In general, T/F responses and multiple choice items utilize χ^2 tests, unless the multiple choice item has an ordinal property. In that case, the Kolmogorov-Smirnov 2 Group Test is used. Executive estimates of operating ratios, revenue and percentages would require the independent group t test for means, a procedure for the comparison of proportions or the χ^2 test for responses which are categorized. Following this

analysis, a statement may be made as to whether the research has identified pricing behavior groups which differ along any of the axes examined.

Data Analysis: The Stigler Perspective

The goal of the final data analysis is to determine whether the data gathered conform with the idea that regulation is sought by a group of firms for their own protection. This idea would be most strongly supported by the data pattern presented in figure 4-6.

Within this group, questions 7, 15, and 33 yield nominal dichotomous data. These are summarized using tabulation within category, modal category, or graphic display. The goal of statistical inference is to determine whether the sample result is likely to have been derived from a population with the null proportion of 50:50. The χ^2 test with continuity correction is used for this inference. Questions 31 and 32 yield ordinal data and are also summarized by tabulation within category, modal category, or graphic display. Here the goal of statistical inference is to determine whether the sample result is likely to have been derived from a population having the null distribution of equal proportions, and the Kolmogorov-Smirnov Goodness of Fit Test is used. Finally, a comparison of question 31 and 32 is undertaken, where the goal of statistical inference is to determine whether it is probable that the two sample distributions are derived from the same population distribution. A Kolmogorov-Smirnov test is also used here. Following these procedures, a statement can be made as to whether the data support the Stigler perspective.

Data Processing

The data were processed in the following manner. Incoming questionnaires were inspected for usefulness and minor adjustments were made

Figure 4-6	
Data Pattern Supporting	
The Stigler Perspective	
Q-7	Before deregulation supported efforts to stop it (T)
Q-15	Now support efforts to roll back or slow dereg (T)
Q-31	(strongly against) deregulation before
Q-32	(strongly against) deregulation now
Q-33	More profitable (before deregulation)
	No difference between 31 and 32
	(No change in the direction of adjustment to the new status quo)

to make the questionnaires ready for optical scanning. These adjustments included numbering the two pages of the questionnaire with a respondent number to allow identification of individual responses when the pages became separated, marking over respondents' answers with a number 2 pencil when respondents ignored the request that they use a soft lead No. 2 pencil, and repairing with tape any questionnaire which had been stapled or otherwise mutilated.

When the questionnaires were ready for optical scanning, they were taken to Michigan State University for reading, conversion to a tape for storage, and to allow the creation of an SPSS (statistical package for the social sciences)³ data file. The SPSS program was created at Aquinas College where a second data file was created.

The data file eventually used to develop the analyses presented in Chapter Six was the Aquinas College data file. The Michigan State data file was used to develop frequency runs to cross check the accuracy of the Aquinas data. The data manipulations were performed on the Aquinas

data file using the CDC computer at Michigan State University. This was accomplished by using a computer network system consisting of computers at Aquinas College, the University of Michigan, and Michigan State University.

Footnotes

¹ David J. Luck, Hugh G. Wales, Donald A. Taylor and Ronald S. Rubin, Marketing Research, 6th ed. (Englewood Cliffs, N.J.: Prentice Hall, 1982), p. 115.

² Walter B. Wentz, Marketing Research: Management and Methods (New York: Harper and Row, 1972), p. 83.

¹ William R. Klecka, Norman H. Nie, and C. Hadlai Hull, Statistical Package for the Social Sciences Primer (New York: McGraw Hill, 1975).

CHAPTER V
SUMMARY OF MAJOR FINDINGS

Introduction

This chapter provides a summary of the findings. These are presented in the context of each research question or perspective. This is then followed by a set of conclusions which may be derived from the findings. The next chapter provides supporting statistical detail while the implications of the findings comprise Chapter Seven, the last chapter of this report.

To What Extent is Carrier Pricing Behavior Characterized By the Use of Contracts Vs. Tariffs?

Substantial numbers of carriers were found to be deriving large percentages of their revenues from tariffs. Comparison of carrier use of contracts vs. tariffs allowed the following summary statement to be made:

1. As measured by the percentage of each firm's revenue accounted for, and regardless of whether special tariffs or special items aimed at one or a few shippers are considered to function as contracts, regular route common carriers of general commodities are now making greater use of tariffs than of contracts.

Does Carrier Management See This (Extent of the Use of Tariffs vs. Contracts) as Constituting a Change Since Deregulation?

Each rate category used in this study was considered separately. Carriers reported increases in the use of special tariffs or special items aimed at one or a few shippers and increases in their use of independently published tariff schedules which were aimed at a large number of shippers. They were split as to whether contracts constituted more or less (revenue as a percentage) than prior to deregulation and a

large number (57%) of the carriers reported making less use of bureau tariffs. These findings were summarized as follows:

1. The majority of the carrier group reported that their contract activity was greater than or equal to that prior to deregulation.
2. Carrier group behavior with respect to whether they are making more or the same use of contracts does not differ significantly from the null hypothesis of equal proportions.
3. Since deregulation, the majority of regular route common carriers of general commodities are making greater use of special tariffs or special items which are aimed at one or a few shippers.
4. Since deregulation, the majority of regular route common carriers of general commodities are making greater use of independently published tariff schedules aimed at a large number of shippers.
5. When asked whether the percentage of revenue accounted for by bureau tariffs was more, the same, or less than before deregulation, the largest single group of regular route common carriers of general commodities reports making less use of bureau tariffs. But, this group is not significantly larger than the combination of the groups which are making either the same use or more use of bureau tariffs. (Bureau tariffs here do not include independent actions which result in a special tariff, item, or schedule of independent tariffs.)

To What Extent is Carrier Pricing Behavior Characterized By Extensive Discounting?

Discounting was examined in terms of the use of specific named discounts, and in terms of price cutting. Price cutting, in turn, was examined in terms of deviation from bureau tariffs and in terms of the relationship of revenues to costs. The following statements were made as a result of these analyses:

Specific Discounts

1. The majority of regular route common carriers of general commodities are engaging in:
 - a. Aggregate discounts
 - b. Across the board percentage discounts
 - c. Discounts for transport to and from certain areas or along certain routes
 - d. Individually negotiated discounts
 - e. Discounts calculated as percentages off of bureau tariffs
2. The majority of regular route common carriers of general commodities are not engaging in:
 - a. Discounts for late delivery based on the day of delivery
 - b. Discounts for time of day of delivery and/or pickup
 - c. Rebates or refunds after a shipper has purchased a certain amount
 - d. Discounts calculated as a percentage of an independent tariff
3. Carrier behavior with respect to the following discounts does not differ substantially from the null hypothesis of equal proportions (half engaging, half not):
 - a. Discounts for multiple LTL shipments measured by tonnage within a time period
 - b. Discounts based on total shipments measured by tonnage within a time period
 - c. Discounts based on total shipments measured by dollar revenue within a time period
 - d. Discounts for customer transport to and from the terminal
 - e. Discounts for continuous movement, combined moves, and/or backhaul

Deviation from Bureau Tariffs

1. Substantial numbers of carriers are utilizing contracts, special tariffs or items, and independently published tariff schedules to offer rates which are either always or usually lower than the bureau tariffs that would ordinarily apply to the traffic. (These frequencies are detailed in Figure 6-9.)
2. Carriers using these rate categories for this purpose are not making any more or any less use of these categories than the carrier group as a whole.
3. The majority of carriers use contracts to offer a rate which is "always" or "usually" lower than the bureau tariff that would ordinarily apply to the traffic.
4. The majority of carriers use special tariffs or special items to offer a rate which is "always" or "usually" lower than the bureau tariff that would ordinarily apply to the traffic.
5. The majority of carriers use schedules of independent tariffs to offer a rate which is "always" or "usually" lower than the bureau tariff that would ordinarily apply to the traffic.
6. The majority of carriers are offering discounts calculated as a percentage off a bureau tariff.

Relationship of Revenues to Costs

1. The majority of regular route common carriers of general commodities report their rates to be extremely close to their costs for traffic amounting to 50% or more of their revenue.
2. The majority of regular route common carriers of general commodities report actually losing money on traffic amounting to less than 25% of revenue.

Does Top Management See This (Extent of Discounting) as Constituting a Change Since Deregulation?

Change in discounting behavior was examined in the same way that extent of discounting had been. Specific discounts, deviation from bureau tariffs, and the revenue cost relationship were examined. One question asked about change in the absolute level of price since last year. The results of these analyses were summarized as follows:

Specific Discounts

1. The majority of regular route common carriers of general commodities report no change in their use of the following discounts since deregulation:
 - a. Multiple LTL shipments measured by tonnage
 - b. Total shipments measured by tonnage
 - c. Total shipments measured by dollar revenue
 - d. Day of delivery
 - e. Time of day of delivery
 - f. Customer transport to and from the terminal
 - g. Continuous movement, combined moves, and/or backhaul
 - h. Rebates or refunds after a shipper has purchased a certain amount
 - i. Discounts calculated as a percent of an independent tariff
2. Of those reporting no change (use of the same amount, or never having used the discount), the modal category was in all cases "never" having made use of the discount.
3. The majority of regular route common carriers of general commodities report change in their use of the following discounts since deregulation:

- a. Tendering a minimum number of LTL shipments to be shipped at one time
 - b. Across the board percentage discounts
 - c. Individually negotiated discounts
 - d. Discounts calculated as a percentage off a bureau tariff
4. Of those reporting change (more use or less use), the modal category was in all cases making "more" use of the discount.
 5. Carrier behavior does not differ from the null hypothesis of equal proportions (half reporting change, half not) with respect to transport to and from certain areas and along certain routes.

Deviation from Bureau Tariffs

1. The groups using contracts as a vehicle to cut price do not differ substantially from the group as a whole with respect to change in the use of contracts since deregulation.
2. The groups using special tariffs and special items to cut price do not differ substantially from the group as a whole with respect to change in the use of special tariffs and special items since deregulation.
3. The groups using schedules of independent tariffs as vehicles to cut price do not differ substantially from the group as a whole with respect to change in the use of schedules of independent tariffs since deregulation.

Relationship of Revenues to Costs

1. Since deregulation the majority of regular route common carriers of general commodities have experienced changes in their revenue-cost relationships such that prices are now closer to costs.

Change in Price Level

1. Among regular route common carriers of general commodities, the group reporting lower prices since one year ago constitutes the largest single group, but it is not significantly larger than the combination of the groups reporting prices to be either about the same or higher than one year ago.

To What Extent is Carrier Pricing Behavior Characterized By the Use of Cross Subsidies?

The study examined both extent and nature of cross subsidy. Extent was operationalized by accepting the definition that cross subsidy exists when some shipments are carried at a loss while others are carried at a profit, the profitable shipments thus making funds available so as to allow the carriage of unprofitable shipments. Thus, executive estimates of the percentage of traffic they were actually losing on provided a measure of the "extent" of cross subsidy. The following summary statements were derived:

1. Carriers vary considerably as to the percentage of traffic as measured by dollar revenue which they report as actually losing money.
2. Where cross subsidy is measured as the percentage of traffic that is losing money and must therefore be cross subsidized by traffic which is making money, the majority of carriers are engaging in some cross subsidy.

Does Carrier Management See This (Extent of Cross Subsidy) as Constituting a Change Since Deregulation?

The following statement summarizes the findings with respect to change in the extent of cross subsidy:

1. Where cross subsidy is measured as the percentage of traffic which is losing money and must, therefore, be cross subsidized by traffic which is making money, the majority of carriers report an increase in this percentage since deregulation.

Supplementary Findings: Nature of Cross Subsidy

As the extent of cross subsidy as measured in this study might be expected to increase as a function of general or across the board price declines, and as many of the arguments surrounding the deregulation centered upon the nature, rather than the extent of cross subsidy, several findings were derived concerning the nature and change in the nature of cross subsidy:

1. The majority of carriers agree that they were forced to carry some shipments (such as small LTL, rural service, etc.) at a loss prior to deregulation.
2. The majority of carriers agree that they still lose on those shipments which they lost on prior to deregulation.
3. The majority of carriers agree that increased competition has made it difficult to make up a loss on one shipment by getting increased rates on another.
4. The majority of carriers agree that the shipments they lose money on and the shipments they make money on have changed since deregulation.
5. The majority of carriers agree that powerful shippers are now causing some of their shipments to be carried at a loss.
6. The majority of carriers agree that powerful shippers are now negotiating the prices on their traffic down closer to the carriers costs than other shippers have been able to do.

7. The majority of carriers agree that a trucking firm now has to have a balance of business from "other" shippers in order to be able to afford to do business with more powerful shippers.

To What Extent Has Carrier Pricing Behavior Been Characterized by Innovation (Innovative Price-Service Combinations)?

1. The majority of regular route common carriers of general commodities were found to be engaging in the following innovations ($\alpha = .05$):
- a. Developing detailed knowledge of competition and their rates/-services
 - b. Using road drivers to make "peddle" deliveries
 - c. Using non-union drivers
 - d. Buying larger trailers or trailer combinations
 - e. Pricing after a complete market analysis including 1) study of customer needs, 2) study of competition, and 3) study of costs
 - f. Taking the lead in suggesting price/service innovation to customers
 - g. Offering overnight delivery
 - h. Offering service at night and on weekends
 - i. Adding service to new geographic areas
 - j. Freight all kinds (F.A.K.) pricing
2. The majority of regular route common carriers of general commodities are not engaging in the following innovations ($\alpha = .05$):
- a. Allowing marketing people to have final pricing authority
 - b. Using computer models to look at marketing/operational options
 - c. Allowing sales people to have pricing authority
 - d. Formula pricing (any specific shipment can be billed to an account using that account's formula)

- e. In-depth logistical analysis of a shipper's distribution system (at carrier expense)
 - f. Vending logistical analysis to a shipper (at his expense)
 - g. Using air freight connections
3. Carrier behavior with respect to the following innovations does not differ significantly from the null hypothesis of equal proportions (half engaging, half not) ($\alpha = .05$):
- a. Using detailed shipment reports provided by the shipper to cost out service to that shipper
 - b. Hiring people with logistics backgrounds for sales work
 - c. Using non-union terminal workers
 - d. Using special commodity divisions
 - e. Zip code pricing
 - f. Use of trip leases with owner operators
 - g. Cutting service back in some geographic areas
 - h. Using piggyback (TOFC) for line haul
 - i. Shipping containerized freight

Does Carrier Management See This (Extent of Innovation) as Constituting a Change Since Deregulation?

1. The majority of regular route common carriers of general commodities report no change in their use of the following "innovative" behaviors since deregulation ($\alpha = .05$):
- a. Using detailed shipment reports (provided by the shipper) to cost out service to that shipper
 - b. Hiring people with logistical backgrounds for sales work
 - c. Allowing marketing people to have final pricing authority
 - d. Using computer models to look at marketing/operational options
 - e. Allowing sales people to have pricing authority

- f. Using non-union drivers
 - g. Using non-union terminal workers
 - h. Using special commodity divisions
 - i. Use of trip leases with owner operators
 - j. Formula pricing (any specific shipment can be billed to an account using that account's formula)
 - k. In-depth logistical analysis of a shipper's distribution system at carrier expense
 - l. Vending logistical analysis (at shipper expense)
 - m. Offering overnight delivery
 - n. Offering service at night and on weekends
 - o. Cutting service back in some geographic areas
 - p. Using piggyback (T.O.F.C.) for line haul
 - q. Using air freight connections
 - r. Shipping containerized freight
2. Reports of no change included reports of engaging in the same amount and reports of never having engaged in the activity. With the exception of items m. and n., overnight delivery and service at night and on weekends, the modal category in each case of no change was never having made use of the innovation.
3. The majority of regular route common carriers of general commodities report change in their use of the following innovations since deregulation ($\alpha = .05$):
- a. Developing detailed knowledge of competitors and their rates and services
 - b. Pricing after a complete market analysis, including 1) study of customer needs, 2) study of competition, and 3) study of our costs

- c. Adding service to new geographic areas
- 4. Of those reporting change (more use or less use), the modal category was in all cases making "more" use of the innovation.
- 5. Carrier behavior with respect to change in the use of the following innovations does not differ significantly from the null hypothesis of equal proportions (half reporting change, half not).
 - a. Road drivers making peddle deliveries
 - b. Buying larger trailers/combinations
 - c. Zip code pricing
 - d. Taking the lead in suggesting innovation
 - e. Freight all kinds (F.A.K.) pricing

Taxonomy Development

A clean and complete taxonomy was not developed as clean mutually exclusive pricing types were not found. The following major findings emerged.

1. Carrier pricing behavior is substantially heterogeneous.
2. While mutually exclusive categories have not been found, categories have been found such that members of certain categories are unlikely to fall into certain of the other identified categories.
3. A pattern of price-cost behavior has been associated with each category which differentiates members of that category from non-members.

The Stigler Perspective

The following findings were obtained:

1. The majority of carriers reported that they had supported efforts to stop the deregulation prior to its passage.
2. The majority of carriers reported that they now support efforts to roll back or slow the advance of deregulation.

3. The majority of carriers were against the deregulation prior to its passage.
4. The majority of carriers are still against the deregulation now.
5. The majority of carriers report that their firm was more profitable before the deregulation.
6. The distribution of carriers for and against the deregulation does not differ significantly when the pre-deregulation situation (Item 3 above) and the post-deregulation situation (Item 4 above) are compared.
7. The distribution of carriers supporting vs. not supporting political efforts against the deregulation does differ significantly when the pre-deregulation situation (Item 1 above) and the post-deregulation situation are compared. There is less support for such political activity in the post-deregulation period.

Conclusions

The following conclusions may be derived from the major findings summarized in this chapter and detailed in the following chapter. First, this carrier group is not abandoning tariff style rate-making in favor of contracts, rather it prefers to individualize rate-making through the publication of special tariffs or special items aimed at one or a few shippers. The group is also moving toward the use of independently published tariff schedules aimed at a large number of shippers. Bureau tariffs which do not fall into one of these categories still account for a major portion of some carriers revenue, and remain an important pricing focal point, as much discounting is accomplished by calculating the discount as a percentage off of a bureau tariff.

Many special tariffs, items and discounts are individually negotiated and aggregate discounts and discounts for transport to and

from certain areas and along certain routes are popular. When contracts, special tariffs and items, or independently published tariff schedules are introduced to the marketplace, they generally represent rates which are lower than the bureau tariffs that would ordinarily apply to the traffic. No carriers were found that were systematically able to vend a substantial portion of their traffic at rates above the bureau tariff structure. Discounting is extensive, with the majority of carriers reporting rates extremely close to costs for 50% or more of their revenue. The carrier group does not appear to be in real danger, however, as the majority of carriers are actually losing money on traffic which amounts to less than 25% of its revenue, and only 25 (14.5%) of the 185 carriers responding to the survey reported 1983 year to date operating ratios of over 100% (these data appear as Figure 5-1). This is in spite of the deregulation having its predicted effect of changing the carriers revenue cost relationships so as to bring prices closer to costs.

Figure 5-1

Carrier Operating Ratios

Q. 42 Approximately what is your 1983 year to date operating ratio?

Under 90%	90-100%	Over 100%
23	124	25
(13.4%)	(72.1%)	(14.5%)

χ^2 not calculated on open ended questions.

The changed environment provided by the administrative deregulation and the motor carrier act of 1980 does not appear to have been sufficient to have completely removed the previous cross subsidy of such

traffic as rural service and small LTL shipments, but cross subsidization has been made more difficult by increased competition for the more profitable shipments. While not entirely removing the old cross subsidy, the act seems to have provided an environment wherein a new form of cross subsidy may be developing. Carriers report that powerful shippers are able to negotiate rates on their traffic down closer to the carriers costs than other shippers have been able to do, that powerful shippers are now causing some of their shipments to be carried at a loss and that, in order to be able to afford to do business with powerful shippers, a trucking firm has to have a balance of business from other shippers in order to make up the profit.

The group as a whole has not become substantially more innovative since the deregulation. Although the majority reported participating in several of what have been seen as major carrier industry innovations, few of these behaviors constituted a change since deregulation for the majority of reporting carriers. The innovations which were reported as change by the majority of carriers appear to be important. They were:

1. Developing detailed knowledge of competitors and their rates and services
2. Pricing after a complete market analysis, including 1) study of customer needs, 2) study of competition, and 3) study of our costs
3. Adding service to new geographic areas

The first two appear important because they may be seen as incorporating the essence of the marketing as "matching" approach. The third is important because it demonstrates a mode of market entry through which competition may be increased in individual transportation markets without the creation of entirely new carriers. This survey was not able

to document substantial entry by new carriers. Only two (1.1%) of the respondent firms reported that their trucking firm was new and did not exist prior to the deregulation (Figure 5-2).

Figure 5-2

New Firms Since Deregulation as Reported by Carrier Management

Q. 1 Our trucking firm is new, it did not exist prior to deregulation

T	F
2	180
(1.1%)	(98.9%)

χ^2 with continuity correction = 172.12

Significant at .05 1 Df

The attempt to develop a pricing taxonomy provided useful insights into the substantially heterogeneous pricing behavior of the carrier group. Mutually exclusive categories were not found, but useful pricing behavior patterns were found, some of which were associated with greater or lesser profitability.

The study also found substantial support for the perspective which holds that regulation is often sought by a regulated industry for its own protection, a perspective formalized by George Stigler. The carriers report that they supported efforts to stop the deregulation both before and after its passage. They were before and remain opposed to the deregulation and report that they were more profitable before the deregulation. One mitigating observation may be that there has been some small shift of political support away from the anti-deregulation efforts. This might be interpreted as signifying carrier acknowledgment that they have lost this particular battle.

Detailed Analysis of Data and Implications

A detailed analysis of data leading to these findings is presented in Chapter Six. The implications of the major findings of this study, as summarized in this chapter and as detailed in Chapter Six, together with the implications of selected minor findings of the study, comprise the final chapter of this report.

CHAPTER VI
DETAILED ANALYSIS OF DATA AND RESULTS

Introduction

This chapter presents the detailed results of the data analysis procedures which were described in Chapter Four. These results have been summarized in Chapter Five. The data are presented in the context of specific research questions or perspectives, and are presented in the same order as they appeared in the previous chapter.

Analysis of Data and Result: Research Question 1A

Research Question 1A was phrased: "To what extent is carrier pricing behavior characterized by the use of contracts vs. tariffs?" Pertinent data are displayed in Figure 6-1, a display depicting the number of carriers obtaining differing proportions of their revenue from the rate categories described.

The frequency distributions depicted in Figure 6-1 were consolidated and compared using the Kolmogorov-Smirnov Goodness of Fit Test.

Figure 6-1					
Frequency of Carriers in Revenue Categories					
Rate Type	% of Revenue				
	0-20	21-40	41-60	61-80	81-100
(A) Contracts	151	7	4	1	2
(B) Special One or Few	85	47	22	7	4
(C) Independent Large #s	101	30	16	7	11
(D) Bureau Tariffs	52	30	34	28	21

Responses in Rate Type E (other) are described in Appendix D

In the first such procedure, contracts legally defined (Rate Type A) were compared with a consolidation of all other categories (B-D). Category E (other) was not included in this procedure. The data thus consolidated appear as Figure 6-2.

Figure 6-2					
Contracts Legally Defined					
Compared to Tariffs Legally Defined					
Rate Category E Not Allocated					
	0-20	21-40	41-60	61-80	81-100
Contracts (A)	151 (91.5%)	7 (4.2%)	4 (2.4%)	1 (.6%)	2 (1.2%)
Tariffs (B, C, D)	1 (.6%)	2 (1.2%)	9 (5.5%)	16 (9.7%)	137 (83.0%)

A one group KS Goodness of Fit Test was used to compare the observed contract distribution to a hypothesized distribution equivalent to the tariff distribution. (Calculated value of $D=.939$, critical value of D ($\alpha = .05$ 2 tailed test) = .106

In the second such procedure, contracts defined in terms of economic function (rate types A and B) were compared to a consolidation of the other tariff categories (C and D). The data consolidated in this way appear as Figure 6-3.

Responses falling into rate Category E (other) were then evaluated. A summary of this evaluation comprises Appendix D. Due to the large number of carriers reporting no revenue in this category and due to the lack of a distinct pattern in the responses of those reporting revenue in the category, Category E was dropped from further consideration in the study.

Figure 6-3
Contracts Economically Defined
Compared to Tariffs
Rate Category E Not Allocated

	0-20	21-40	41-60	61-80	81-100
Contracts (A & B)	72 (43.6%)	49 (29.6%)	24 (14.5%)	11 (6.7%)	9 (5.4%)
Tariffs (C & D)	13 (7.8%)	15 (9.1%)	34 (20.6%)	51 (30.9%)	52 (31.5%)

A one group KS Goodness of Fit Test was used to compare the observed contract distribution to a hypothesized distribution equivalent to the tariff distribution. (Calculated value of D = .563, critical value of D ($\alpha = .05$ 2 tailed test) = .106

Summary: Extent of Use, Contracts Vs. Tariffs

The foregoing data analyses allowed the following summary statement to be made concerning the extent to which this carrier group's pricing behavior is characterized by the use of contracts vs. tariffs.

1. As measured by the percentage of each firm's revenue accounted for, and regardless of whether special tariffs or special items aimed at one or a few shippers are considered to function as contracts, regular route common carriers of general commodities are now making greater use of tariffs than of contracts.

Analysis of Data and Result Research Question 1B

Research Question 1B was phrased: "Does carrier management see this (1A) as constituting a change since deregulation?" This question was treated for each individual rate category.

Contracts

Few respondents felt that their use of contracts was less than it had been prior to deregulation, but the response was split as to whether the amount of contract use was more than before deregulation or the same as before deregulation. These results are displayed in Figure 6-4.

Figure 6-4		
Contracts as Change		
This is more than before deregulation	This is about the same as before deregulation	This is less than before deregulation
38	41	2
(46.9%)	(50.6%)	(2.5%)
Value of $\chi^2 = 34.89$ significant at .05 2 Df		
Value of χ^2 comparing 79 with 2 = 71.3, also significant		
Value of χ^2 comparing 38 with 41 = .05, NS at .05 2 Df		

This response pattern is consistent with the observation that this carrier group had been allowed to begin contracting activities after April 6, 1978 (I.C.C. Exparte 55 Sub 27), and should also be viewed in the context that 101 carriers or 61.6% of those responding to Question 35A reported contract revenue of zero. The extent to which carrier contracting activity represents change since deregulation was summarized as follows:

1. The majority of regular route common carriers of general commodities report their contract activity to be greater than or equal to that prior to deregulation.
2. Carrier group behavior with respect to whether contract activity is more than before deregulation or about the same as before deregulation

lation does not differ significantly from the null hypothesis of equal proportions.

Special Tariffs Or Special Items Which Are Aimed At One Or A Few Shippers

While regular route common carriers of general commodities have not moved strongly in the direction of contracts per se, they have made a substantial change in the direction of greater use of individualized tariffs. This behavior serves some of the functions of contracting, in that these tariffs may be individualized for a shipper. These data appear as Figure 6-5.

Figure 6-5		
Change: Special Tariffs or Special Items Aimed at One or a Few Shippers		
This is more than before deregulation	This is about the same as before deregulation	This is less than before deregulation
120	27	4
(79.5%)	(17.9%)	(2.6%)
Value of $\chi^2 = 149.90$ significant at .05 2 Df		
Value of χ^2 comparing 120 with 31 = 51.28, also significant		

This result was summarized by the following statement:

1. The majority of regular route common carriers of general commodities report their use of special tariffs or special items aimed at one or a few shippers to be more than before deregulation.

Independently Published Tariff Schedules

Carriers may also opt to publish their own schedules of tariffs aimed at a large number of shippers. Carrier executives were asked whether the percentage of revenue which they derived from such sched-

ules, not to include any special items aimed at one or a few shippers, constituted a change since deregulation. As they had with the special tariffs or items aimed at one or a few shippers, carrier executives report a substantial change in the direction of a greater use of this tariff device. Data supporting this perspective appear as Figure 6-6.

Figure 6-6		
Change: Independently Published Tariff Schedules Aimed At A Large Number of Shippers		
This is more than before deregulation	This is about the same as before deregulation	This is less than before deregulation
102	33	4
(73.4%)	(23.7%)	(2.9%)
Value of $\chi^2 = 109.4$ significant at .05 2 Df		
Value of χ^2 comparing 102 with 37 = 29.47 also significant		

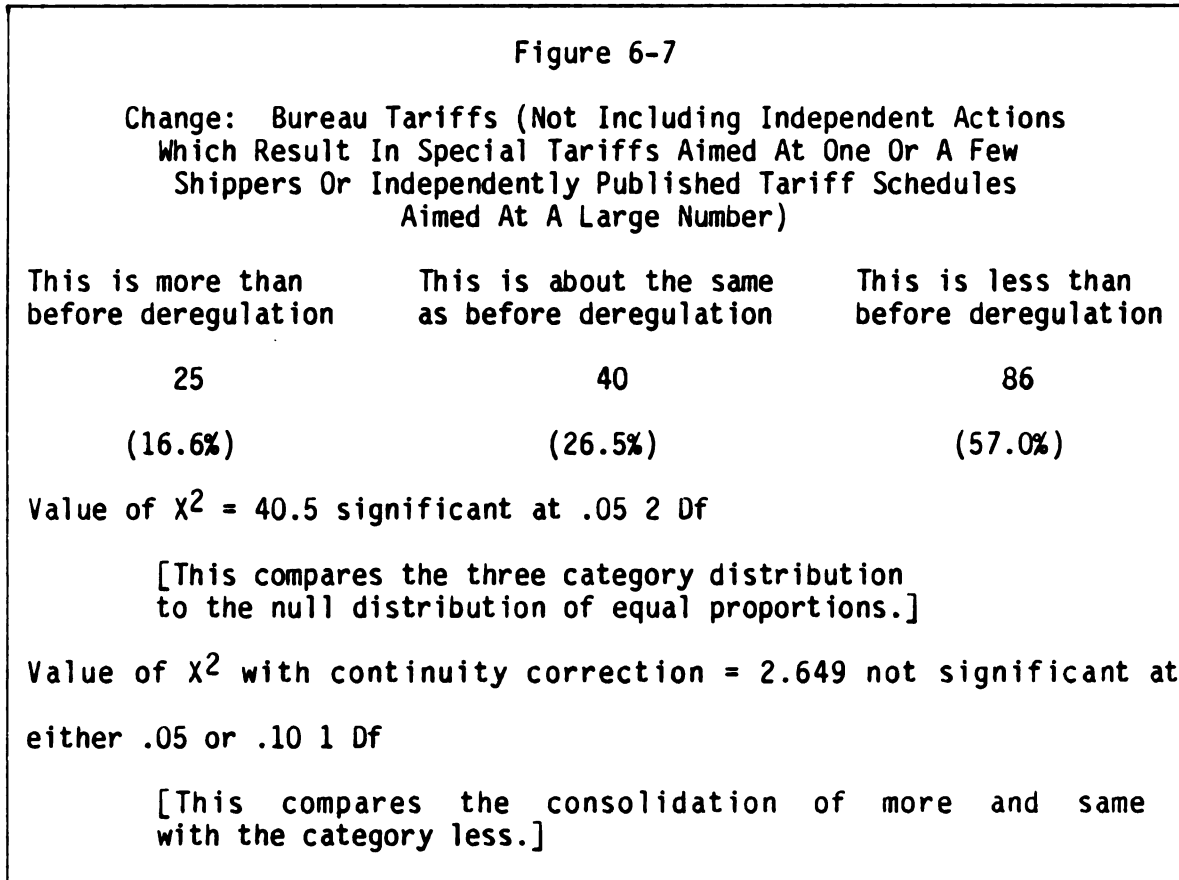
This result was summarized as follows:

1. The majority of regular route common carriers of general commodities report their use of independently published tariff schedules aimed at a large number of shippers to be more than before deregulation.

Bureau Tariffs

Bureau tariffs may be adjusted on an individual basis through independent actions to accomplish the functional results of either the special tariff or item, or the independently published tariff schedule. Question 35D was worded so as to capture the use of bureau tariffs which had not been adjusted in this way. In this context, the largest number of carrier executives report less use of the bureau tariffs, but the minorities reporting the same use or more use are so substantial that, when combined, they are not a statistically significantly smaller group

than the group reporting less use. Figure 6-7 illustrates this situation.



The results were summarized as follows:

1. When asked whether the percentage of revenue accounted for by bureau tariffs was more, the same, or less than before deregulation, the largest single group of regular route common carriers of general commodities reports their use of bureau tariffs to be less than before deregulation.
2. Carrier behavior with respect to whether they report their use of bureau tariffs to be 1) less than before deregulation or 2) either more or the same as before deregulation does not differ significantly from the null hypothesis of equal proportions.

Analysis of Data and Result, Research Question 2A

Research Question 2A was phrased: "To what extent is carrier pricing behavior characterized by extensive discounting?" The research question was approached in several ways. Discounting was interpreted both as the offering of specific discounts and as price cutting. Price cutting, in turn, was examined in terms of deviation from bureau tariffs, and in terms of the relationship of revenues to costs. The results of these analyses are presented in turn.

Discounting Interpreted as Specific Discounts

In order to examine whether or not carriers were engaging in any of several specific discounting behaviors identified in the literature and in the exploratory interviews, responses to Question 36, Items A through N were used to categorize each respondent as engaging or not engaging in each named discount. The χ^2 Test, with continuity correction, was then used to compare the observed distribution with the null distribution of 50:50. The results of these procedures are summarized in Figure 6-8. These results allowed the summary statements in the previous chapter to be made concerning specific discounts. These statements (statements 1 a-e, 2 a-d, and 3 a-e) are not reproduced here.

Price Cutting: Deviation From Bureau Tariffs

The next data analysis sought to identify groups using contracts, special tariffs, items or schedules as vehicles to cut price, and to determine whether their use of these rate categories differed from that of the group as a whole. These groups are displayed in Figure 6-9. For each group so identified, the proportion of respondents in each rate category (contracts, etc.) was tabulated, and a figure was constructed to allow the comparison of their use of the rate category to that of the group as a whole. The Kolmogorov-Smirnov 2 Sample Test was used.

Figure 6-8

Carriers Engaging in Specific Named Discounts

DISCOUNT	# ENGAGING	# NOT ENGAGING	VALUE OF X ²	AND	S/NS AT .05 1 DF
A. Tendering a minimum # of LTL shipments to be shipped at one time (aggregated discount)	112	60	15.122		S
B. Multiple LTL shipments measured by tonnage within a time period	79	93	.983		NS
C. Total shipments measured by tonnage within a time period	72	98	3.676		NS
D. Total shipments measured by dollar revenue within a time period	79	91	.712		NS
E. Day of delivery (discount if late)	13	156	119.314		S
F. Time of day of delivery and/or pickup	21	144	90.206		S
G. Customer transport to and from the terminal	81	85	.054		NS
H. Continuous movement, combined moves and/or backhaul	90	76	1.018		NS

Figure 6-8 (Continued)

Carriers Engaging in Specific Named Discounts

DISCOUNT	# ENGAGING	# NOT ENGAGING	VALUE OF X ²	AND	S/NS AT .05 1 Df
I. Across the board % discounts	130	42	44.006		S
J. Transport to and from certain areas or along certain routes	99	67	5.789		S
K. Rebates (or refunds) after a shipper has purchased a certain amount	67	103	7.206		S
L. Almost anything that makes sense (it's negotiable)	133	36	54.533		S
M. Discounts calculated as a % off a bureau tariff	135	38	53.272		S
N. Discounts calculated as a % of an independent tariff	63	110	12.231		S

Figure 6-9		
Identification of Groups Using Rate Categories As Price Cutting Mechanisms		
	Always Lower Than Bureau	Usually Lower Than Bureau
A) Contracts	Group A 67 Carriers	Group B 78 Carriers
B) Special Tariffs or Items	Group C 88 Carriers	Group D 75 Carriers
C) Independent Schedules	Group E 82 Carriers	Group F 68 Carriers

Examination of Group A

The group for which contracts are always lower than bureau tariffs was comprised of 67 carriers, or 36.2% of the carriers responding to that question. Fifty-nine of these carriers provided useful responses to the question of revenue percentage. Group A's use of contracts when compared with that of the group as a whole, is depicted in Figure 6-10.

Examination of Group B

The group for which contracts are "usually" lower than bureau tariffs was comprised of 78 carriers or 42.2% of the carriers responding to that question. Seventy-one of these carriers provided useful responses to the question of revenue percentage. Group B's use of contracts when compared with that of the group as a whole is depicted in Figure 6-11.

Examination of Group C

The group for which special tariffs or items are "always" lower than bureau tariffs was comprised of 88 carriers or 47.6% of the

Figure 6-10					
% of Revenue From Contracts					
	0-20	21-40	41-60	61-80	81-100
Group A Contracts Always Lower Than Bureau	53 (89.8%)	4 (6.8%)	2 (3.4%)	0 (0)	0 (0)
Carrier Group As A Whole	151 (91.5%)	7 (4.2%)	4 (2.4%)	1 (.6%)	2 (1.2%)

The Kolmogorov-Smirnov 2 Group 2 Tailed Test was applied.
 Calculated value of D = .019, critical value of D = .206
 The two groups do not differ significantly ($\alpha = .05$)

carriers responding to that question. Eighty-three of these carriers provided useful responses to the question of revenue percentage. Group C's use of special tariffs or items when compared with that of the group as a whole is depicted in Figure 6-12.

Examination of Group D

The group for which special tariffs or items are "usually" lower than bureau tariffs was comprised of 75 carriers or 40.5% of the carriers responding to that question. Sixty-three of these carriers provided useful responses to the question of revenue percentage. Group D's use of special tariffs or items, when compared with that of the group as a whole, is depicted in Figure 6-13.

Examination of Group E

The group for which schedules of independent tariffs aimed at a large number of shippers are "always" lower than bureau tariffs was comprised of 82 carriers or 44.6% of the carriers responding to that

question. Seventy-five of these carriers provided useful responses to the question of revenue percentage. Group E's use of schedules of independent tariffs when compared with the group as a whole is depicted in Figure 6-14.

Figure 6-11					
% of Revenue From Contracts					
	0-20	21-40	41-60	61-80	81-100
Group B Contracts Usually Lower Than Bureau	65 (91.5%)	2 (2.8%)	2 (2.8%)	1 (1.4%)	1 (1.4%)
Carrier Group As A Whole	151 (91.5%)	7 (4.2%)	4 (2.4%)	1 (.6%)	2 (1.2%)

The Kolmogorov-Smirnov 2 Group 2 Tailed Test was applied.
Calculated value of D = .014, critical value of D = .193.
The two groups do not differ significantly ($\alpha = .05$)

Figure 6-12					
% of Revenue From Special Tariffs and Items					
	0-20	21-40	41-60	61-80	81-100
Group C Special Tariffs of items Always Lower	42 (50.6%)	24 (28.9%)	10 (12.0%)	4 (4.8%)	3 (3.6%)
Carrier Group As A Whole	85 (51.5%)	47 (28.5%)	22 (13.3%)	7 (4.2%)	4 (2.4%)

The Kolmogorov-Smirnov 2 Group 2 Tailed Test was applied.
Calculated value of D = .018, critical value of D = .183.
The two groups do not differ significantly ($\alpha = .05$)

Figure 6-13					
% of Revenue From Special Tariffs and Items					
	0-20	21-40	41-60	61-80	81-100
Group D Special Tariffs on items "Usually" Lower	30 (47.6%)	21 (33.3%)	9 (14.3%)	3 (4.8%)	0 (.0%)
Carrier Group As A Whole	85 (51.5%)	47 (28.5%)	22 (13.3%)	7 (4.2%)	4 (2.4%)

The Kolmogorov-Smirnov 2 Group 2 Tailed Test was applied.
 Calculated value of D = .015, critical value of D = .193.
 The two groups did not differ significantly ($\alpha = .05$).

Examination of Group F

The group for which schedules of independent tariffs aimed at a large number of shippers are "usually" lower than bureau tariffs was comprised of 68 carriers or 37% of the group responding to that question. Sixty of these carriers provided useful responses to the question of revenue percentage. Group F's use of schedules of independent tariffs, when compared with the group as a whole, is depicted in Figure 6-15.

Summary: Price Cutting, Deviation From Bureau Tariffs

This section describes the specific sources of the summary statements used in Chapter five under the heading "Deviation From Bureau Tariffs." Evaluation of the frequencies and tests for goodness of fit, which were undertaken in the foregoing section, allowed the following summary statements to be made:

Figure 6-14

% of Revenue From Schedules of Independent Tariffs

	0-20	21-40	41-60	61-80	81-100
Group E Schedule of Independent Tariffs Are "Always" Lower	47 (62.6%)	14 (18.7%)	8 (10.7%)	4 (5.3%)	2 (2.7%)
Carrier Group As A Whole	101 (61.2%)	30 (18.2%)	16 (9.7%)	7 (4.2%)	11 (6.7%)

The Kolmogorov-Smirnov 2 Group 2 Tailed Test was applied.
 Calculated value of D = .040, critical value of D = .189.
 The two groups do not differ significantly ($\alpha = .05$).

Figure 6-15

% of Revenue From Schedules of Independent Tariffs

	0-20	21-40	41-60	61-80	81-100
Group F Schedule of Independent Tariffs Are "Usually" Lower	31 (51.7%)	14 (23.3%)	6 (10.0%)	3 (5.0%)	6 (10.0%)
Carrier Group As A Whole	101 (61.2%)	30 (18.2%)	16 (9.7%)	7 (4.2%)	11 (6.7%)

The Kolmogorov-Smirnov 2 Group 2 Tailed Test was applied.
 Calculated value of D = .095, critical value of D = .205.
 The two groups do not differ significantly ($\alpha = .05$).

1. Substantial numbers of carriers are utilizing contracts, special tariffs or items, and independently published tariff schedules to offer rates which are either always or usually lower than the bureau tariff than would ordinarily apply to the traffic.

2. Carriers using these rate categories for this purpose are not making any more or any less use of these categories than the carrier group as a whole.

Evaluation of carrier responses to Questions 20, 21, and 22 (presented in Figure 6-16) allowed the following statements to be made:

1. The majority of carriers use contracts to offer a rate which is "always" or "usually" lower than the bureau tariff that would ordinarily apply to the traffic.
2. The majority of carriers use special tariffs or special items to offer a rate which is "always" or "usually" lower than the bureau tariff that would ordinarily apply to the traffic.
3. The majority of carriers use schedules of independent tariffs to offer a rate which is "always" or "usually" lower than the bureau tariff that would ordinarily apply to the traffic.

Evaluation of carrier response to Item M in Figure 6-8 (above) allowed the following statement to be made:

1. The majority of carriers are offering discounts calculated as a percentage off a bureau tariff.

Price Cutting, Relationship of Revenues to Costs

The question of discounting as price cutting was also approached by examining the price-cost relationship. Question 23 examined price-cost relationships by asking carriers to estimate the percentage of their traffic as measured by dollar revenues, for which rates were now "extremely close" to costs. The frequency with which carriers reported in each revenue category comprise Figure 6-17.

Figure 6-16

Deviation From Bureau Tariffs

Q. 20 Compared to the bureau tariff that would ordinarily apply to the traffic, contracts we negotiate are:

Always At A Lower Rate	Usually At A Lower Rate	Rarely At A Lower Rate	Never At A Lower Rate	We Do Not Do This
67	78	7	2	31
(36.2%)	(42.2%)	(3.8%)	(1.1%)	(16.8%)

Value of $\chi^2 = 128.16$ significant at .05 with 4 Df

Value of χ^2 comparing 145 to 40 = 58.46 also significant

Q. 21 Compared to the bureau tariff that would ordinarily apply to the traffic, special tariffs or special items which we aim at one or a few shippers are:

Always At A Lower Rate	Usually At A Lower Rate	Rarely At A Lower Rate	Never At A Lower Rate	We Do Not Do This
88	75	9	4	9
(47.6%)	(40.5%)	(4.9%)	(2.2%)	(4.9%)

Value of $\chi^2 = 181.14$ significant at .05 with 4 Df

Value of χ^2 comparing 163 to 22 = 105.95 also significant

Q. 22 Compared to the bureau tariff that would ordinarily apply to the traffic, schedules of independent tariffs which we aim at a large number of shippers are:

Always At A Lower Rate	Usually At A Lower Rate	Rarely At A Lower Rate	Never At A Lower Rate	We Do Not Do This
82	68	8	3	23
(44.6%)	(37.0%)	(4.3%)	(1.6%)	(12.5%)

Value of $\chi^2 = 140.73$ significant at .05 with 4 Df

Value of χ^2 comparing 150 to 34 = 71.88 also significant

Figure 6-17

Carriers in Revenue Categories: % Of Traffic Measured By \$ Revenue Which Is "Extremely Close" To Costs						
Revenue %	None	1-24	25-49	50-74	75-99	All
No. of Carriers	1	25	32	44	61	20
and Value of χ^2	$\chi^2 = 69.69$ significant at .05 with 5 Df					
Proportion of Carriers	.5%	13.7%	17.5%	24.0%	33.3%	10.9%

Several statements might be made as a result of the examination of this table. For example, consolidation of the categories below 50% of revenue yields a total of 58 carriers, while consolidation of the categories above 50% of revenue yields 125. A comparison of these two numbers with the null distribution of 50:50 using the χ^2 Test with continuity correction yields a significant ($\alpha = .05$, 1 Df) value for χ^2 of 22.8. This result allowed the following summary statement to be made:

1. The majority of regular route common carriers of general commodities report their rates to be extremely close to their costs for traffic amounting to 50% or more of their revenue.

The number of carriers reporting themselves to be "actually losing" money on traffic is also summarized by frequencies within revenue percentage categories. These frequencies, together with a value of χ^2 , and the proportion of carriers in each category, comprise Figure 6-18.

Several comparisons might also be drawn from this table. For example, consolidation of the categories below 25% of revenue yields 106

Figure 6-18						
Carriers In Revenue Categories: % of Traffic Measured By \$ Revenue On Which The Carriers Are Actually Losing Money						
Revenue %	None	1-24	25-49	50-74	75-99	All
No. of Carriers and Value of χ^2	10	96	40	22	10	1
	$\chi^2 = 206.6$ significant at .05 with 5 Df					
Proportion of Carriers	5.6%	53.6%	22.3%	12.3%	5.6%	.6%

carriers, while consolidation of the categories above 25% of revenue yields 73. Comparison of these two figures with the null proportion of 50:50 using the χ^2 Test with continuity correction yields a significant ($\alpha = .05$, 1 Df) value for χ^2 of 5.72. This allowed the following summary statement:

1. The majority of regular route common carriers of general commodities report actually losing money on traffic amounting to less than 25% of revenue.

Analysis of Data and Result; Research Question 2B

Research Question 2B was phrased: "Does top management see this (extent of discounting 2A) as constituting a change since deregulation?" The data analysis to determine whether change is reported is also divided according to whether discounting is interpreted as specific discounts or as price cutting. Price cutting is again treated in terms of deviation from bureau tariffs and in terms of the relationship of revenues to costs.

2B: Change: Discounting as Specific Discounts

Figure 6-19 presents carrier responses to Question 36 which concerned specific discounts. In this figure, responses have been consolidated to form groups for which change amounts to "more" use of the discount, "less" use of the discount, or for which "no change" is reported. Values for χ^2 are also presented where χ^2 has been used to compare the distribution in these categories to the null hypothesis of equal proportions. Figure 6-20 presents carrier responses to the same question; where the results in Figure 6-19 have been consolidated into "change" vs. "no change" categories. Here, the χ^2 values presented are the result of the calculation of χ^2 with continuity correction.

An examination of the relationships depicted in Figures 6-19 and 6-20 allowed the summary statements found in Chapter Five to be made concerning change in the use of specific discounts. Statements 1 a-i, 2, 3 a-d, 4, and 5 are not reproduced here.

2B: Change; Discounting As Price Cutting: Deviation From Bureau Tariffs

This analysis examines each group using a particular type of tariff as a vehicle to offer rates below those of bureau tariffs. The groups analysed are the same as the groups used in the analysis concerning research Question 2A. They are depicted again in Figure 6-21.

Each of these groups is now examined individually to determine whether the group's use of the rate category in question constitutes a change since deregulation.

Examination of Groups A-F

Groups A-F are examined in Figure 6-22. Each group's response to the question of whether their use of contracts, special tariffs or items, or schedules of independent tariffs is more than before deregulation

Figure 6-19

Carriers Reporting Change With Respect To Specific Named Discounts

DISCOUNT	1 & 2 CARRIERS REPORTING MORE USE	3 & 6 CARRIERS REPORTING NO CHANGE	4 & 5 CARRIERS REPORTING LESS USE	VALUE OF X ²	S/NS AT .05 2 Df
A. Tendering a minimum # of LTL shipments to be shipped at one time	91	69	12	57.99	S
B. Multiple LTL shipments measured by tonnage within a time period	65	103	4	87.01	S
C. Total shipments measured by tonnage within a time period	59	107	4	93.75	S
D. Total shipments measured by dollar revenue within a time period	68	101	1	91.636	S
E. Day of delivery, discount if late	9	158	2	275.66	S
F. Time of day of delivery and/or pickup	10	154	1	268.04	S
G. Customer transport to and from the terminal	40	125	6	131.82	S

Figure 6-19 (Continued)

Carriers Reporting Change With Respect To Specific Named Discounts

DISCOUNT	1 & 2 CARRIERS REPORTING MORE USE	3 & 6 CARRIERS REPORTING NO CHANGE	4 & 5 CARRIERS REPORTING LESS USE	VALUE OF X ²	S/NS AT .05 2 Df
H. Continuous movement, combined moves and/or backhaul	55	101	10	74.83	S
I. Across the board % discounts	128	42	2	144.61	S
J. Transport to and from certain areas or along certain routes	66	95	5	76.28	S
K. Rebates (or refunds) after a shipper has purchased a certain amount	65	104	1	95.45	S
L. Almost anything that makes sense (it's negotiable)	121	48	0	131.80	S
M. Discounts calculated as a % off a bureau tariff	131	41	1	153.76	S
N. Discounts calculated at a % of an independent tariff	61	111	1	105.20	S

Figure 6-20

Carriers Reporting Change With Respect To Specific Named Discounts

DISCOUNT	CARRIERS REPORTING CHANGE	CARRIERS REPORTING NO CHANGE	VALUE OF χ^2 WITH CONTINUITY CORRECTION	S/NS AT .05 1 Df
A. Tendering a minimum # of LTL shipments to be shipped at one time	103	69	6.33	S
B. Multiple LTL shipments measured by tonnage within a time period	69	103	6.33	S
C. Total shipments measured by tonnage within a time period	63	107	10.88	S
D. Total shipments measured by dollar revenue within a time period	69	101	5.65	S
E. Day of delivery, discount if late	11	158	126.13	S
F. Time of day of delivery and/or pickup	11	154	122.21	S
G. Customer transport to and from the terminal	46	125	35.58	S
H. Continuous movement, combined moves and/or backhaul	65	101	7.38	S

Figure 6-20 (Continued)

Carriers Reporting Change With Respect To Specific Named Discounts

DISCOUNT	CARRIERS REPORTING CHANGE	CARRIERS REPORTING NO CHANGE	VALUE OF χ^2 WITH CONTINUITY CORRECTION	S/NS AT .05 1 Df
I. Across the board % discounts	130	42	44.01	S
J. Transport to and from certain areas or along certain routes	71	95	3.19	NS
K. Rebates (or refunds) after a shipper has purchased a certain amount	66	104	8.05	S
L. Almost anything that makes sense (it's negotiable)	121	48	30.67	S
M. Discounts calculated as a % off a bureau tariff	132	41	46.82	S
N. Discounts calculated as a % of an independent tariff	62	111	13.32	S

lation, about the same as before deregulation, or less than before deregulation is depicted in the figure.

Figure 6-21

Identification Of Groups Using Rate Categories
As Price Cutting Mechanisms

	Always Lower Than Bureau	Usually Lower Than Bureau
A) Contracts	Group A	Group B
B) Special Tariffs or Items	Group C	Group D
C) Independent Schedules	Group E	Group F

Figure 6-22

Rate Categories As Change

1. Contracts as change: Group A (contracts always lower)

Contracts are:

More Than Before Deregulation	About The Same	Less Than Before Deregulation
18 (60%)	11 (36.6%)	1 (3.3%)

Value of $\chi^2 = 14.6$ significant at .05 2 DF

2. Contracts as change: Group B (contracts usually lower)

Contracts are:

More Than Before Deregulation	About The Same	Less Than Before Deregulation
17 (43.6%)	21 (53.8%)	1 (2.6%)

Value of $\chi^2 = 17.2$ significant at .05 2 Df

Figure 6-22 (Continued)

Rate Categories As Change

3. Special tariffs or special items as change: Group C (these always lower)

Special tariffs or special items are:

More Than Before Deregulation	About The Same	Less Than Before Deregulation
69 (84.1%)	11 (13.4%)	2 (2.4%)

Value of $\chi^2 = 96.8$ significant at .05 2 Df

4. Special tariffs or special items as change: Group D (these usually lower)

Special tariffs or special items are:

More Than Before Deregulation	About The Same	Less Than Before Deregulation
47 (81.0%)	10 (17.2%)	1 (1.7%)

Value of $\chi^2 = 61.5$ significant at .05 2 Df

5. Schedules of independent tariffs as change: Group E (these always lower)

Schedules of independent tariffs are:

More Than Before Deregulation	About The Same	Less Than Before Deregulation
56 (77.8%)	15 (20.8%)	1 (1.4%)

Value of $\chi^2 = 68.08$ significant at .05 2 Df

6. Schedules of independent tariffs as change: Group F (these usually lower)

Schedules of independent tariffs are:

More Than Before Deregulation	About The Same	Less Than Before Deregulation
42 (77.8%)	10 (18.5%)	2 (3.7%)

Value of $\chi^2 = 49.8$ significant at .05 2 Df

The response distribution of each subgroup was then compared with the response distribution of the group as a whole, using the X^2 Test to test the observed distribution for the subgroup (f_o) against the null hypothesis of distribution proportions equal to those of the group as a whole (f_e). Proportions were recast as frequencies. The results appear as Figure 6-23.

Summary of Change: Discounting as Price Cutting; Deviation from Bureau Tariffs

The following summary statements were derived from the results depicted in Figures 6-22 and 6-23:

1. The groups using contracts as a vehicle to cut price do not differ substantially from the group as a whole with respect to change in the use of contracts since deregulation.
2. The groups using special tariffs and special items as vehicles to cut price do not differ substantially from the group as a whole with respect to change in the use of special tariffs and special items since deregulation.
3. The groups using schedules of independent tariffs as vehicles to cut price do not differ substantially from the group as a whole with respect to change in the use of schedules of independent tariffs since deregulation.

Change in the use of these rate categories by the group as a whole has been treated above under research Question 1B (see Figures 6-4, 5, and 6).

2B Change; Discounting as Price Cutting: Relationship of Revenues to Costs

This analysis was designed to determine whether or not carrier management believes prices since deregulation are "closer to our costs"

Figure 6-23

Rate Categories As Change:

Subgroups Compared To The Group As A Whole

Distribution of the group as a whole: Contracts as change

More Than Before	About The Same	Less Than Before
46.9%	50.6%	2.5%

Distribution of Group A contracts always lower

18 (60.0%)	11 (36.6%)	1 (3.3%)
------------	------------	----------

Value of χ^2 comparing Group A to the group as whole = 2.332, NS at .05, 2 DfDistribution of Group B contracts usually lower

17 (43.6%)	21 (53.8%)	1 (2.6%)
------------	------------	----------

Value of χ^2 comparing Group B to the group as a whole = .173, NS at .05, 2 DfDistribution of the group as a whole: Special tariffs or special items as change

More Than Before	About The Same	Less Than Before
79.5%	17.9%	2.6%

Distribution of Group C special tariffs or special items always lower

69 (84.1%)	11 (13.4%)	2 (2.4%)
------------	------------	----------

Value of χ^2 comparing Group C to the group as whole = 1.151, NS at .05, 2 DfDistribution of Group D special tariffs or special items usually lower

47 (81.0%)	10 (17.2%)	1 (1.7%)
------------	------------	----------

Value of χ^2 comparing Group D to the group as a whole = .202, NS at .05, 2 Df

Figure 6-23 (Continued)

Rate Categories As Change:

Subgroups Compared To The Group As A Whole

Distribution of the group as a whole: Schedules of independent tariffs as change

More Than Before	About The Same	Less Than Before
73.4%	23.7%	2.9%

Distribution of Group E schedules of independent tariffs always lower

56 (77.8%)	15 (20.8%)	1 (1.4%)
------------	------------	----------

Value of χ^2 comparing Group E to the group as whole = 1.00 NS at .05, 2 Df

Distribution of Group F schedules of independent tariffs usually lower

42 (77.8%)	10 (18.5%)	2 (3.7%)
------------	------------	----------

Value of χ^2 comparing Group F to the group as a whole = .873, NS at .05, 2 Df

or "no closer to our costs." Carrier executives responses to this question are depicted together with the results of a χ^2 Test in Figure 6-24. The χ^2 Test with continuity correction was used.

Figure 6-24

Change In The Relationship Of Prices To Costs

Since deregulation, our prices are:

Closer To Our Costs	No Closer To Our Costs
155	25
(86.1%)	(13.9%)

Value of χ^2 with continuity correction = 92.45 significant at .05
1 Df

Summary of Change; Discounting as Price Cutting: Relationship of Revenues to Costs

The following summary statement was derived from these data:

1. Since deregulation, the majority of regular route common carriers of general commodities have experienced changes in their revenue-cost relationships such that prices are now closer to costs.

2B: Change in Price Level; Where Price Cutting is Seen as Either Specific Discounts or Price Reduction

This data analysis was designed to determine whether the group sees their prices as being lower, about the same, or higher than one year ago. The results are depicted in Figure 6-25.

Figure 6-25		
Price Level Compared With One Year Ago		
As compared with one year ago, our prices are:		
Less (Lower)	About The Same	More (Higher)
105	58	21
(57.1%)	(31.5%)	(11.4%)
Value of $\chi^2 = 57.79$ significant at .05 2Df		
Value of χ^2 with continuity correction comparing the category "less" to a consolidation of the other two		
$\chi^2 = 3.396$ not significant at .05 1 Df		

Summary

The following statement may be used to summarize this result:

1. Among regular route common carriers of general commodities, the group reporting lower prices since one year ago is the largest single group, but it is not significantly larger than the combination of the groups reporting prices to be either about the same or higher than one year ago.

Data Analysis and Result: Research Question 3A

Research Question 3A was phrased: "To what extent is carrier pricing behavior characterized by the use of cross subsidies?" Cross subsidy exists when some shipments are carried at a loss while others are carried at a profit, the profitable shipments thus "cross subsidizing" the unprofitable shipments. The extent of cross subsidy was approached by asking executives to estimate the percentage of traffic, as measured by \$ revenue, that they are actually losing money on. A χ^2 Test was then used to determine whether it was probable that the observed distribution was derived from a population distribution of equal proportions in the revenue categories provided. The results of this procedure appear as Figure 6-26.

Summary: Extent of Cross Subsidy

Examination of the relationships in Figure 6-26 allowed the following summary statements to be made concerning the extent of cross subsidy:

1. Carriers vary considerably as to the percentage of traffic, as measured by \$ revenue, which they report as actually losing money.
2. Where cross subsidy is measured as the percentage of traffic which is losing money and must therefore be cross subsidized by traffic which is making money, the majority of carriers are engaging in some cross subsidy

Data Analysis and Result, Research Question 3B

Research Question 3B was phrased: "Does carrier management see this (extent 3A) as constituting a change since deregulation?" The approach to this question was to ask executives whether the extent of cross subsidy (their response to the question concerning the percent of

Figure 6-26

Extent Of Cross Subsidy

As measured by \$ revenue, the % of our traffic that we are actually losing money on is approximately:

None	1-24%	25-49%	50-74%	75-99%	All of It
10	96	40	22	10	1
(5.6%)	(53.6%)	(22.3%)	(12.3%)	(5.6%)	(.6%)

Value of $\chi^2 = 206.51$ significant at .05 5 Df

Value of χ^2 with continuity correction comparing 168 "cross subsidizing" to 11 "not cross subsidizing" = 135.95 also significant.

traffic they were actually losing on) is more than, the same as, or less than before deregulation. The χ^2 Test was then used. The results of this procedure appear as Figure 6-27.

Figure 6-27

Extent Of Cross Subsidy As Change

This % of our traffic that we are actually losing money on (number 24 above) is:

More Than Before Deregulation	The Same As Before Deregulation	Less Than Before Deregulation
142	20	13
(81.1%)	(11.4%)	(7.4%)

Value of $\chi^2 = 180.42$, significant at .05 2 Df

Value of χ^2 with continuity correction comparing the first category to the second two combined = 66.65 significant at .05 1 Df

Summary: Change in the Extent of Cross Subsidy

The following summary statement was made:

1. Where cross subsidy is measured as the percentage of traffic which is losing money and must, therefore, be cross subsidized by traffic which is making money, the majority of carriers report an increase in this percentage since deregulation.

Nature of Cross Subsidy and Change in the Nature of Cross Subsidy

As "extent" of cross subsidy as measured in this study might be expected to increase as a function of general or across the board price declines, several questions included in the study examined the "nature" as opposed to the "extent" of cross subsidy. The intent of each of these questions, the question, responses, and the calculated value of χ^2 for each appear as Figure 6-28.

Study of the results in Figure 6-28 allowed the summary statements presented in Chapter Five to be made concerning the nature of cross subsidy and change in the nature of cross subsidy. Statements 1-7 are not reproduced here.

Data Analysis and Result: Research Question 4A

Research Question 4A was phrased: "To what extent has carrier pricing behavior been characterized by innovation (innovative price-service combinations)?" Data for this analysis are derived from Question 37, Items A-Z. For the purpose of this analysis, respondents were categorized as participating or not participating in the innovation. To accomplish this, respondents who had started, are doing more, the same amount, or less were categorized as "participating" in the innovation. Respondents who have stopped using or never have used the innovation were categorized as "not participating." The χ^2 Test with continuity correction was used. The results of these procedures are displayed as Figure 6-29.

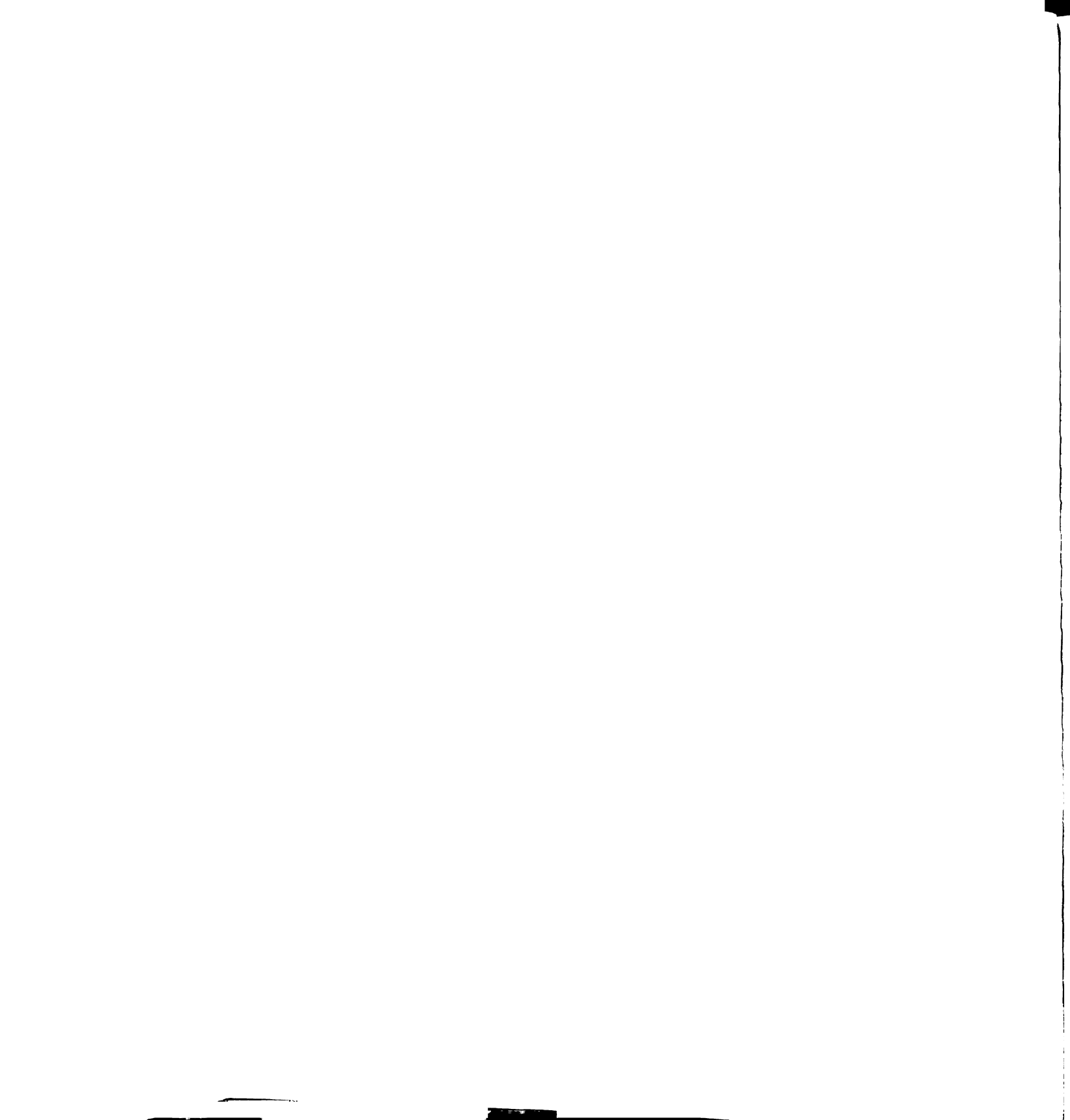


Figure 6-28

Nature Of Cross Subsidy And Change
In Nature Of Cross Subsidy

QUESTION 11

Intent Do carriers agree that they were forced to carry small LTL, rural service, etc. at a loss prior to deregulation?

Wording Before deregulation, the tariff structure caused us to carry some shipments (small LTL, rural service, etc.) at a loss.

Response True 126 (68.5%) False 58 (31.5%)

Value of χ^2 24.40 significant at .05 1 Df

QUESTION 12

Intent Do carriers agree that items which they lost on prior to deregulation are still losing?

Wording Since deregulation, we still lose on those shipments which we carried at a loss before deregulation.

Response True 130 (72.6%) False 49 (27.4%)

Value of χ^2 35.75 significant at .05 1 Df

QUESTION 13

Intent Do carriers agree that increased competition has made it difficult to make up a loss on one shipment by getting increased rates on another?

Wording Since deregulation, it is harder to make up a loss on one shipment by getting increased rates on another because of increased competition.

Response True 172 (94.0%) False 11 (6.0%)

Value of χ^2 139.89 significant at .05 1 Df

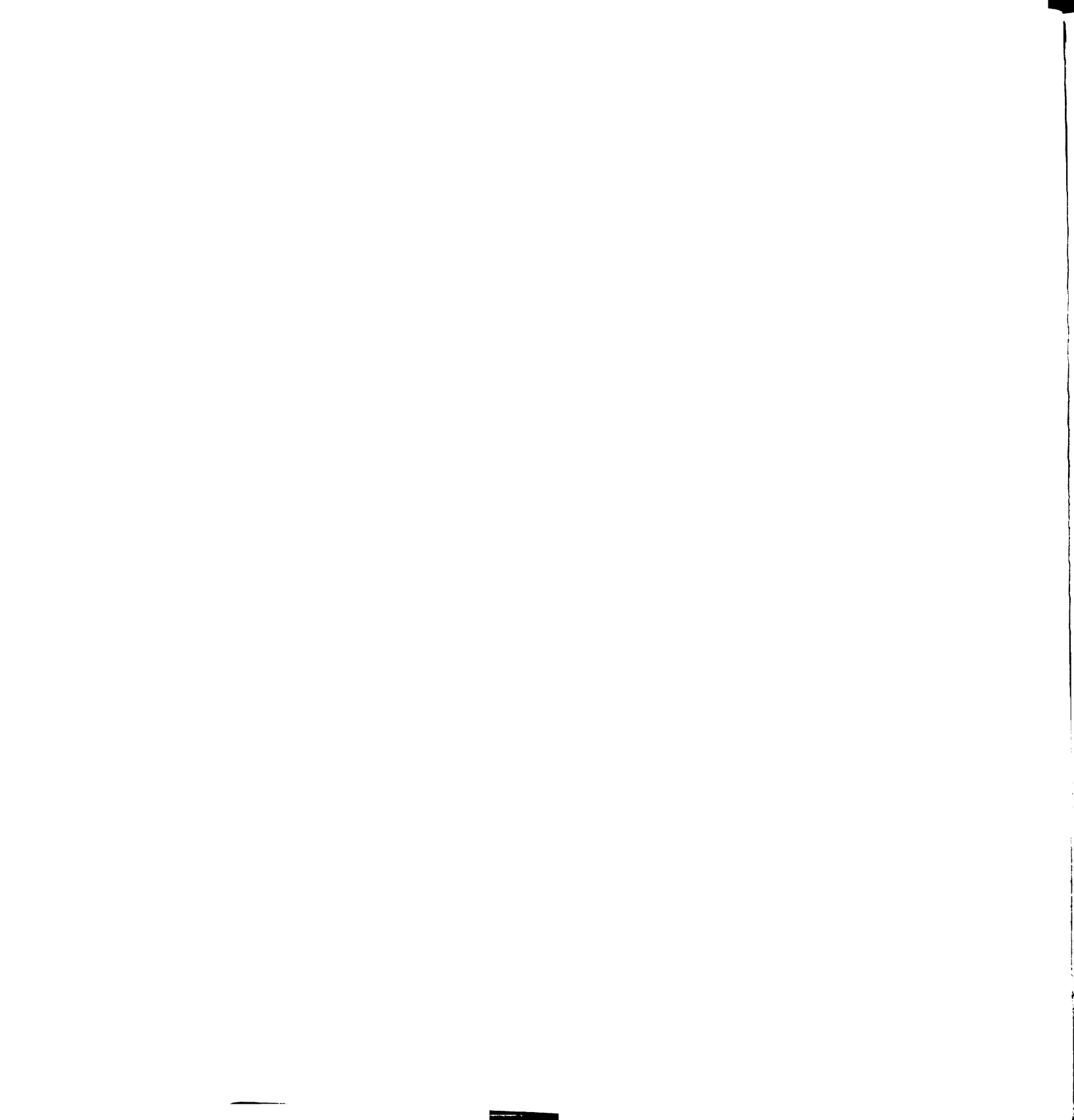


Figure 6-28 (Continued)

Nature Of Cross Subsidy And Change
In Nature Of Cross Subsidy

QUESTION 14

<u>Intent</u>	Do carriers agree that there has been a change in the shipments they lose money on and make money on?
<u>Wording</u>	The shipments we lose money on and the shipments we make money on have changed since deregulation.
<u>Response</u>	True 119 (65.0%) False 64 (35.0%)
<u>Value of χ^2</u>	15.93 significant at .05 1 Df

QUESTIONS 17 AND 18

<u>Intent</u>	Do carriers agree that powerful shippers are now causing some of their shipments to be carried at a loss (Q-17) or very nearly so (Q-18)?
<u>Wording (17)</u>	Since deregulation powerful shippers have sometimes forced us to carry some shipments at a loss.
<u>Response (17)</u>	True 147 (79.5%) False 38 (20.5%)
<u>Value of χ^2</u>	63.05 significant at .05 1 Df
<u>Wording (18)</u>	Since deregulation powerful shippers have negotiated the prices on their traffic much closer to our costs than other shippers have.
<u>Response (18)</u>	True 173 (93.5%) False 12 (6.5%)
<u>Value of χ^2</u>	138.38 significant at .05 1 Df

QUESTION 19

<u>Intent</u>	Do carriers agree that a trucking firm has to have a balance of business from "other" shippers so as to be able to afford to do business with more powerful shippers?
<u>Wording</u>	Since deregulation, to be able to afford to do business with powerful shippers, a trucking firm has to have a balance of other shippers to make up the profit.
<u>Response</u>	True 149 (81.9%) False 33 (18.1%)
<u>Value of χ^2</u>	72.66 significant at .05 1 Df

The data summarized in Figure 6-29 allowed the statements which appear in Chapter Five to be made concerning the extent of carrier use of specific innovations. Statements 1 a-j, 2 a-g. and 3 a-i are not reproduced here.

Data analysis and Result: Research Question 4B

Research Question 4B was phrased: "Does carrier top management see this (extent of innovation, 4A) as constituting a change since deregulation?" Data for this analysis were taken from the same question set utilized by Research Question 4A. For this analysis, columns 1 and 2 (started and doing more) are consolidated, forming a group for which change amounted to "more" use of the innovation. Similarly, columns 3 and 6 (doing the same amount or never having used the innovation) were consolidated, forming a group for which there was "no change." Finally, columns 4 and 5 (less or stopped) were consolidated forming a group for which change amounted to "less" use of the innovation. Figure 6-30 and 6-31 display these data together with the results of the χ^2 Test.

From an examination of Figures 6-30 and 6-31, the summary statements presented in Chapter Five may be made. Statements 1 a-r, 2, 3 a-c, 4, and 5 a-e concerning innovations and change are not reproduced here.

Data Analysis and Result; Taxonomy Development

The purpose of the data analysis for taxonomy development was to determine whether pricing "types" could be identified and characterized within this motor carrier group. Candidate pricing types were developed in the exploratory interviews, and each pricing type was explored in the data analysis by using the question which identified the candidate "type" to cross tabulate all other responses. In this section of the

Figure 6-29

Carriers Engaging in Specific Named Innovations

INNOVATION	# ENGAGING	# NOT ENGAGING	VALUE OF χ^2	AND	S/NS AT .05 1 Df
A. Using detailed shipment reports provided by the shipper to cost out service to that shipper	99	79	2.03		NS
B. Hiring people with logistical backgrounds for sales work	81	95	.96		NS
C. Allowing our marketing people to have final pricing authority	66	108	9.66		S
D. Using computer models to look at marketing/operational options	70	106	6.96		S
E. Developing detailed knowledge of our competitors and their rates/services	147	27	81.39		S
F. Allowing our sales people to have pricing authority	68	109	9.04		S
G. Using road drivers to make "peddle" deliveries	142	30	71.63		S
H. Using non-union drivers	103	72	5.14		S
I. Using non-union terminal workers	87	89	.01		NS

Figure 6-29 (Continued)

Carriers Engaging in Specific Named Innovations

INNOVATION	# ENGAGING	# NOT ENGAGING	VALUE OF χ^2	AND	S/NS AT .05 1 Uf
J. Using special commodity divisions	93	83	.46		NS
K. Buying larger trailers or trailer combinations	147	28	79.57		S
L. Pricing after complete market analysis including 1) study of customer needs, 2) study of competition, and 3) study of our costs	151	25	88.78		S
M. Zip code pricing (prices quoted between zips)	96	79	1.46		NS
N. Use of trip leases with owner operators	102	75	3.82		NS
O. Formula pricing (any specific shipment can be billed to an account using that account's formula)	53	122	26.42		S
P. In-depth logistical analysis of a shipper's distribution system (at our expense)	68	110	9.44		S

Figure 6-29 (Continued)

Carriers Engaging in Specific Named Innovations

INNOVATION	# ENGAGING	# NOT ENGAGING	VALUE OF χ^2	AND	S/NS AT .05 1 Df
Q. Vending logistical analysis to a shipper (at his expense)	23	152	93.62		S
R. "Taking the Lead" in suggesting price/service innovation to customers	143	34	65.90		S
S. Offering overnight delivery	171	4	157.46		S
T. Offering service at night and on weekends	150	27	84.09		S
U. Adding service to new geographic areas	166	11	133.99		S
V. Cutting service back in some geographic areas	98	77	2.29		NS
W. Freight all kinds (F.A.K.) pricing	145	32	70.87		S
X. Using piggyback (TOFC) for line haul	80	97	1.45		NS
Y. Using air freight connections	68	109	9.04		S
Z. Shipping containerized freight	89	88	0.00		NS

Figure 6-30

Carriers Reporting Change With Respect To Specific Named Innovations

INNOVATION (Full Name Figure 6-29)	CARRIERS REPORTING MORE USE	CARRIERS REPORTING NO CHANGE	CARRIERS REPORTING LESS USE	X ²	S/NS AT .05 2 Df
A. Detailed shipment reports	72	105	1	95.2	S
B. Hiring logistics backgrounds	46	129	1	143.74	S
C. Marketing people price	49	124	1	132.52	S
D. Computer models	62	114	0	111.05	S
E. Knowledge of competitors	103	66	5	84.45	S
F. Sales people price	49	125	3	128.68	S
G. Road drivers "peddle"	76	94	2	82.93	S
H. Non-union drivers	48	124	3	128.24	S
I. Non-union terminal workers	34	139	3	173.20	S
J. Using special commodity divisions	61	107	8	83.67	S
K. Larger trailers/combinations	83	89	3	79.04	S
L. Pricing after market analysis	110	66	0	104.50	S
M. Zip code pricing	96	78	1	87.30	S



Figure 6-30 (Continued)

Carriers Reporting Change With Respect To Specific Named Innovations

INNOVATION (Full Name Figure 6-29)	CARRIERS REPORTING MORE USE	CARRIERS REPORTING NO CHANGE	CARRIERS REPORTING LESS USE	X ²	S/NS AT .05 2 Df
N. Trip leases with owner operators	63	105	9	78.51	S
O. Formula pricing	41	131	3	148.16	S
P. Logistics analysis (carrier exp.)	42	134	2	154.43	S
Q. Vending logistics analysis	11	162	2	277.04	S
R. Taking the lead suggesting innovation	94	82	1	86.75	S
S. Offering overnight delivery	62	108	5	91.28	S
T. Service at night/weekends	47	126	4	129.80	S
U. Service to new geographic areas	130	43	4	141.05	S
V. Cutting service to geographic area	55	109	11	82.61	S
W. F.A.K. pricing	100	75	2	87.90	S
X. TOFC for line haul	41	129	7	134.37	S
Y. Air freight connections	14	158	5	249.86	S
Z. Containerized freight	24	145	8	190.20	S

Figure 6-31

Carriers Reporting Change With Respect To Specific Named Innovations

INNOVATION Full Name Figure 6-29	CARRIERS REPORTING CHANGE	CARRIERS REPORTING NO CHANGE	VALUE OF X ² WITH CONTINUITY CORRECTION	S/NS AT .05 1 Df
A. Detailed shipment reports	73	105	5.40	S
B. Hiring logistics backgrounds	47	129	37.28	S
C. Marketing people price	50	124	30.63	S
D. Computer models	62	114	14.78	S
E. Knowledge of competitors	108	66	9.66	S
F. Sales people price	52	125	29.29	S
G. Road drivers "peddle"	78	94	1.31	NS
H. Non-union drivers	51	124	29.62	S
I. Non-union terminal workers	37	139	57.96	S
J. Using special commodity divisions	69	107	7.78	S
K. Larger trailers/combinations	86	89	.02	NS
L. Pricing after market analysis	110	66	10.51	S
M. Zip code pricing	97	78	1.85	NS

Figure 6-31 (Continued)

INNOVATION Full Name Figure 6-29	Carriers Reporting Change With Respect To Specific Named Innovations			VALUE OF X ² WITH CONTINUITY CORRECTION	S/NS AT .05 1 Df
	CARRIERS REPORTING CHANGE	CARRIERS REPORTING NO CHANGE			
N. Trip leases with owner operators	72	105	5.79	S	
O. Formula pricing	44	131	42.26	S	
P. Logistics analysis (carrier exp.)	44	134	44.5	S	
Q. Vending logistics analysis	13	162	125.17	S	
R. Taking the lead suggesting innovation	95	82	.81	NS	
S. Offering overnight delivery	67	108	9.14	S	
T. Service at night/weekends	51	126	30.94	S	
U. Service to new geographic areas	134	43	45.76	S	
V. Cutting service to geographic areas	66	109	10.08	S	
W. F.A.K. pricing	102	75	3.82	NS	
X. TOFC for line haul	48	129	36.16	S	
Y. Air freight connections	19	158	107.59	S	
Z. Containerized freight	32	145	70.87	S	

report, the results of the investigation of each candidate type are presented.

Predators

The initial research expectations concerning predators conformed to a conventional economic definition of the term. Predators were seen as firms which had the resources to operate at break-even or a small loss during the initial period of deregulation and did so because of their confidence in their own ability to survive the "shake out" period and become profitable after that. Question 8 was used to identify this candidate type. Question 8 divided the respondent group into two groups of nearly equal size as depicted in Figure 6-32. The results of the cross tabulations which uncovered statistically significant differences between predators and non-predators are summarized below.

Figure 6-32

Identification of Predators and Non-Predators

8. Since deregulation, we have operated at a break-even or a small loss because we are confident we will survive the shakeout and make our profit after that.

True	False
89	95
(48.4%)	(51.6%)

Value of χ^2 .14 NS at .05 1 Df.

The cross tabulations are the statistically significant ($\alpha = .05$) results of cross tabulating Question 8 by all other questions in the survey. Thus the candidate type or pricing behavior pattern is defined by Question 8 and members of the group are characterized by the ways in which they differ from non members. Since questions defining other

candidate types or behavioral patterns were included in the cross tabulation, an understanding of whether or not carriers engage in one pattern to the exclusion of others may be derived. Similarities between members and non-members may be assumed for those questionnaire items not discussed.

Summary: The Candidate Pricing Type "Predator"

Examination of the characteristics of the candidate type "predator" resulted in the picture of an unwilling or ill-equipped predator at best. "Predators" did not believe that their costs were lower than those of competitors; in fact, the situation was the opposite. "Predators" were more likely than non-predators to report that powerful shippers had sometimes forced them to carry some shipments at a loss, and predators were less likely to report that they "walk away" from a shipper "most of the time" when he demanded rates which were close to their cost. They were, therefore, less likely to report themselves as being the candidate type "resister." The impact of this combination of cost situation and pricing philosophy was predictable. Predators were more likely than non-predators to report the higher percentages of their traffic as being carried at rates "extremely close to costs" or "actually losing money." Predators were more likely to report that the percentage of traffic that they were actually losing money on was greater than before deregulation, more likely to report that their prices were lower than they were last year, and more likely to report their prices to be closer to their costs since deregulation. Predators were more likely to report that their firm was more profitable before deregulation, more likely to report 1983 year to date operating ratios of over 100%, and more likely to report having started to cut back service to some geographic areas.

A type of pricing behavior does appear as a result of these relationships but predator is too aggressive a term for it. These firms are unwilling predators, unable to successfully resist the power of big shippers and crippled by a cost disadvantage. They are more nearly "victims" than "predators." Those who survive will have been unwilling predators at best. To some extent supportive of the Stigler perspective, the group in this economic situation was more likely to have been against the deregulation and more likely to have supported efforts to stop it prior to its institution.

Price Leaders

Price leaders were initially expected to be a group of carriers which attempted to price above market in the hope that other suppliers would follow. Thus a conventional definition of price leadership was used. The candidate pricing type price leader was examined in the same fashion as the predator type. In this case, identification of the candidate type was made using Question 10. This question divided the respondents into two sizable groups, although the price leader group was distinctly the smaller. This division is depicted in Figure 6-33.

Figure 6-33

Identification Of Price Leaders

10. Since deregulation we have tried to lead the price up

True	False
65	117
(35.7%)	(64.3%)

Value of $\chi^2 = 14.29$

Question 10 was cross-tabulated by all other questions in the survey. Statistically significant differences between price leaders and non-price leaders are summarized below. The logic employed is parallel to that described for the candidate type "pedator."

Summary: The Candidate Pricing Type, "Price Leader"

Question 10 failed to differentiate reporting carriers on many axes; few statistically significant differences were found. Those reporting that they have tried to lead price up were more likely to respond that they initiated price competition or cut price first only "rarely." They were more likely to have started, less likely to have used more, more likely to have used the same amount, and less likely to have never used F.A.K. or freight all kinds pricing. This group is also more likely to now support efforts to roll back or slow deregulation.

Cherry Picker or Shipment Targeter

The exploratory interviews uncovered the idea that some carriers may simply enter an account in order to target only certain desirable shipments within that account's traffic mix. These carriers would avoid carrying the unprofitable shipments within the traffic mix. This behavior defined the type of carrier referred to in the trade as a cherry picker or a shipment targeter. An extreme case of this behavior would be typified by their refusal to carry unprofitable shipments even if grouped with other shipments as a part of a profitable "overall package." Question 6 identified this extreme case of the cherry picker or shipment targeter. Few carriers fell into this category as depicted in Figure 6-34.

Question 6 was cross-tabbed by all other questions in the survey. Statistically significant differences between shipment targeters and

Figure 6-34

Identification Of Shipment Targeters

6. We carry or (would carry) shipments at a loss if they were a part of a profitable overall package for a customer.

True	False (shipment targeter)
161	21
(88.5%)	(11.5%)

χ^2 with continuity correction = 106.16 S at .05 1 Df.

non-shipment targeters are summarized below. The logic employed is parallel to that described above for previous types.

Summary: The Candidate Pricing Type Shipment Targeter

The narrower, more shipment oriented focus of the candidate type shipment targeter is evident in that he is less likely to agree that the tariff structure caused him to carry some shipments (small LTL, rural service, etc.) at a loss prior to deregulation and less likely to agree that he is still losing on those shipments which he lost on before the deregulation. This type is also less likely to agree that it is harder to make up the loss on one shipment by getting increased rates on another because of increased competition since the deregulation.

Shipment targeters are more likely to report that their rates are extremely close to their costs on 24% or less of their traffic and less likely to report that rates are extremely close to costs for 25% or more of their traffic. Similarly, they are more likely to report actually losing money on 24% or less of their traffic and less likely to report actually losing on 25% or more of their traffic. This group is less likely to report that they initiate price competition often or once in

awhile and more likely to report that they initiate it rarely. This differentiates them from the candidate type "price aggressor."

Shipment targeters are also more likely to report making more or the same use of the bureau tariff structure and less likely to report making less use of it. They are less likely to report increased use of special tariffs or items or schedules of independent tariffs, and are less likely to report that their prices are lower than last year.

Despite this favorable economic pattern, cross-tabulation of the response to Question 6 (shipment targeter) by operating ratio, classified as over 100%, 90-100%, or less than 90% did not yield a statistically significant result.

Strategic Business Units or S.B.U.s

The portfolio perspectives discussed in the literature review gave rise to the idea that the pricing behavior of those firms which were owned by other firms might systematically differ from the pricing behavior of other carriers. This was because it could be expected that trucking firms which were able to draw on the greater resource base of a parent company would be in a position to sustain the costs of more aggressive (lower) pricing for a longer period of time and because the parent firm might see those losses as a reasonable long-term investment. The research adopted a definition of a strategic business unit as a trucking firm which was owned by another firm. Question 2 was used to identify strategic business units, and asked whether the respondent's trucking firm was owned by another firm. This procedure identified only 32 strategic business units as depicted in Figure 6-35.

Question 2 was cross-tabulated by all other questions in the survey. Statistically significant differences between S.B.U.s and

Figure 6-35

Identification of S.B.U.s

2. Our trucking firm is owned by another firm

True	False
32	147
(17.95)	(82.1%)

χ^2 with continuity correction = 72.60 significant at .05 1 Df

non-S.B.U.s are summarized below. The logic employed is parallel to that described above for previous types.

Summary: The Candidate Pricing Type S.B.U.

The candidate type S.B.U. emerges as a larger both in terms of dollar revenue and geographic coverage and a somewhat more sophisticated and innovative firm than the non-S.B.U. S.B.U.s are more likely to report that they are a medium (\$100 million - \$500 million) or large (\$500+ million) sized firm, and less likely to report that they are small (under \$100 million). They are more likely to report that they are national or regional carriers and less likely to report that they are local carriers.

S.B.U.s appear more innovative and sophisticated than non-S.B.U.s along several axes. They are more likely to report themselves as having started to use or having begun to make more use of detailed shipment reports to cost out service, computer modeling, detailed knowledge of competitors, and special commodity divisions. They are also more likely to have started using formula pricing.

S.B.U.s appear more likely to have increased their use of some forms of innovative rate-making. They are more likely to have increased

their use of contracts and changed their use of schedules of independent tariffs, and they are more likely than non-S.B.U.s to have started the use of several specific named discounts.

Despite this profile, S.B.U.s do not differ significantly in profitability or along many of the other specific axes of pricing behavior examined in the survey.

Cream Skimmers

During the exploratory interviews, the hypothesis was developed that some shipments were more profitable than others due to the shipper's lack of power to negotiate the price down. A trucking firm which was aware of such shipments and, therefore, was able to target them when they were available was given the candidate name "cream skimmer." Cream skimmers were thus defined as carriers which targeted the shipments of "other than powerful" shippers. Question 19 was used to identify such a group. This is depicted in Figure 6-36.

Question 19 was cross-tabulated by all other questions in the survey. Statistically significant differences between cream skimmers and non-cream skimmers are summarized below. the logic employed is parallel to that described above for other types.

Figure 6-36

Identification Of Cream Skimmers

19. Since deregulation to be able to afford to do business with powerful shippers, a trucking firm has to have a balance of other shippers to make up the profit.

True	False
149	33
(81.9%)	(18.1%)

χ^2 with continuity correction = 72.66 significant at .05 1 Df

Summary: The Candidate Pricing Type Cream Skimmer

Examination of the questions which differentiate cream skimmers from non-cream skimmers indicates that what has been identified by Question 19 is not a group which is currently and successfully involved in cream skimming, or targeting particularly profitable shipments to cross subsidize any losses incurred by doing business with powerful shippers. Instead, what has been found is a group which is painfully aware of the desirability of being able to engage in this type of activity. This group, "would be cream skimmers," are more likely to report that they are still losing on shipments which they lost on prior to deregulation, more likely to agree that powerful shippers have sometimes forced them to carry traffic at a loss, and more likely to report rates extremely close to costs or actual losses on large percentages of their traffic. This group is also more likely to report that the percentage of traffic that they are losing on is more than before deregulation, more likely to report that their prices are lower than a year ago, and more likely to report that they were more profitable before deregulation. Politically, this group is more likely to now be supporting efforts to roll back or slow deregulation, more likely to report themselves as now strongly against deregulation, and less likely to report themselves as now strongly for deregulation. The group is also less likely to report that it "walks away" from a shipper "most of the time" when he demands rates extremely close to costs, that is, this group is less likely to report itself within the candidate classification of "resister."

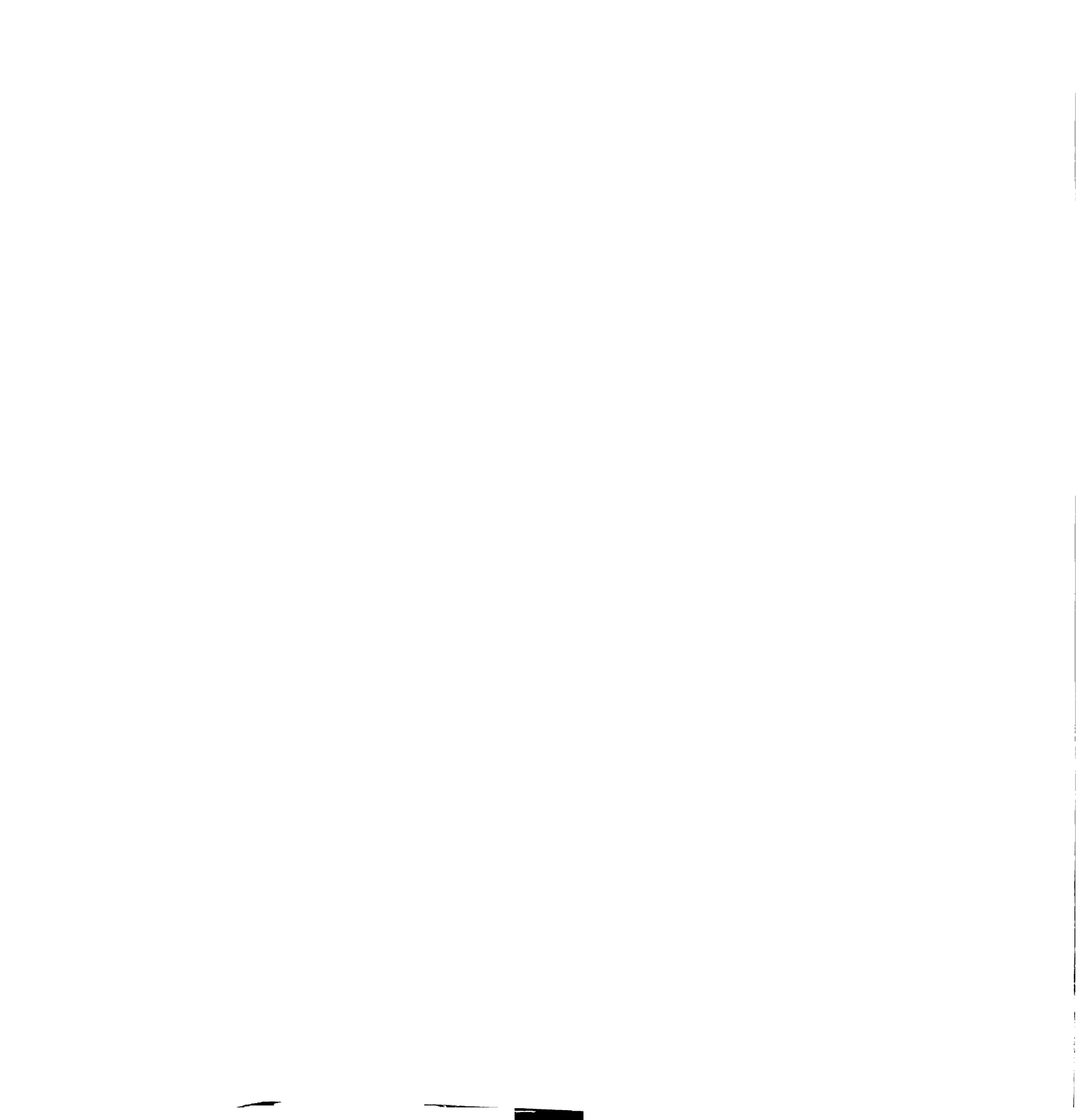
Premium Vendors

The research also investigated the idea that a group of carriers might exist which was consistently able to vend their services at rates

above the levels represented by the bureau tariff structure. This candidate type was referred to as the "premium vendor" and was identified by the pattern of responses to Questions 20, 21, and 22. These questions asked about the pricing level of contracts, special tariffs or items, and schedules of independent tariffs when compared to the bureau tariff that would ordinarily apply to the traffic. Respondents indicating in the case of all three questions that the rate would "rarely" or "never" be lower than the bureau tariff were categorized as premium vendors. Premium vendors were thus defined as carriers which "rarely" or "never" offered rates which were lower than bureau tariffs. Only four respondents fell into this category. Inspection of the characteristics of these four respondents indicated that, in one case, the respondent, in fact, currently made no use of these rate categories, and, in a second case, made use of them only to the extent of drawing 5% of his revenue from them. The other two respondents had specialized as 100% truckload carriers. It appears that the premium vendor does not exist as either a substantial pricing type or as a behavioral pattern among regular route common carriers of general commodities.

Resisters

It was also considered possible that a group of carriers might exist which systematically resisted efforts on the part of shippers to drive prices down. Identification of this group was accomplished using Question 29. This question asked whether the respondent carrier "walked away" from a shipper when he demanded rates which were extremely close to costs. Respondents could choose to answer "most of the time," "about one-half of the time," or "rarely." Those choosing to mark "most of the time" were classified as resisters. Thus, resisters were defined as



carriers who, in most instances, "walked away" from a shipper when he demanded rates which were extremely close to costs. Figure 6-37 depicts the response pattern to Question 29.

Figure 6-37			
Identification Of Resisters			
29. We "walk away" from a shipper when he demands rates which are extremely close to our costs.			
	Most of the Time	About 1/2 of the Time	Rarely
	58	61	62
	(32.0%)	(33.7%)	(34.3%)
Value of $\chi^2 = .14$			
NS at .05 2 Df			

Question 29 was cross-tabulated by all other questions in the survey. Statistically significant differences between resisters and non-resister groups are summarized in Appendix F. The logic employed is parallel to that described above for previous types. The detailed findings presented in Appendix F are summarized in the following section.

Summary: The Candidate Pricing Type Resister

This candidate type appears to be an important behavioral pattern for two reasons. First, this type may be differentiated from other candidate types in the sense that resisters are less likely to report themselves as (unwilling) "predators" or as (would be) "cream skimmers." Second, the group is more profitable than non-resisters. Resisters are more likely to report having an operating ratio of less than 90% and less likely to report having an operating ratio of over 100%.

This type is also more likely to report that their costs are lower than those of most of their competition and less likely to agree that they are still losing on those shipments which they carried at a loss before deregulation. Resisters are less likely to agree that, since deregulation, it is harder to make up a loss on one shipment by getting increased rates on another because of the increased competition. They are less likely to agree that powerful shippers have forced them to carry some shipments at a loss since deregulation. This group appears less likely to have been significantly hurt by the deregulation, as they are less likely to report that the percentage of traffic that they are actually losing on is more than before deregulation and more likely to report that it is the same or less. The group is also less likely to report that they were more profitable before deregulation and more likely to report that they were more profitable after deregulation.

This group also differs from non-resisters in that they are less likely to report that schedules of independently published tariffs aimed at a large number of shippers account for 40% or less of their revenue and more likely to report that those tariffs account for 61% or more of their revenue.

Price Aggressor

Question 30 was used to identify a group which reported that they tended to initiate price competition (or cut price first) rather than reacting to competitors' price cuts. Respondents indicating that they did this "quite often" as opposed to "once in awhile" or "rarely" were given the candidate identification of price aggressors. "Price aggressors" were thus defined as carriers who initiated price competition quite often. Responses to question 30 are depicted in Figure 6-38.

Figure 6-38

Identification Of Price Aggressors

30. We would tend to initiate price competition (cut price first) rather than reacting to competitors' price cuts.

Quite Often	Once in Awhile	Rarely
30	87	66
(16.4%)	(47.5%)	(36.1%)

$\chi^2 = 27.25$ significant at .05 2 Df

Question 30 was cross-tabulated by all other questions in the survey. Statistically significant differences among price aggressors and the non-price aggressor groups identified in Question 30 are summarized below. The logic employed is parallel to that described above for previous types.

Summary: Candidate Pricing Type Price Aggressor

Price aggressors are less likely than non price aggressors to report that they supported efforts to stop deregulation before it was passed into law. They differ from non-price aggressors in the use of several discounts, and they are more likely to report having started to give marketing people final pricing authority. They are more likely to report having started or engaging in more in-depth logistical analysis of a shipper's distribution system at either carrier or shipper expense. This group is more likely to report they are now "more" involved in taking the lead in suggesting price-service innovation to customers and more likely to report that they have started or become more involved in freight all kinds (F.A.K.) pricing.

Other Taxonomic Perspectives

Several other specific questions were investigated to facilitate

taxonomy development. Three major sets of cross-tabulations were undertaken. In the first set, responses to change in the use of specific revenue categories (the multiple choice component of Question 35) were cross-tabulated by all other responses to see whether there were relationships between these measures of change and other characteristics of the firm. Statistically significant differences between those groups making more, the same, or less use of contracts, special tariffs or items, schedules of independent tariffs, and bureau tariffs are summarized in Appendix G.

Change in Tariff and Contract Behavior

These cross-tabulations resulted in a large number (115) of statistically significant relationships. Study of these data revealed a tendency for change in tariff and contract behavior to associate itself with change in the use of specific discounts and innovations. Significantly, a relationship to profitability was not found. This result indicates that we may be able to place carriers on an innovative/non-innovative axis in pricing behavior, but there is, as yet, no evidence to support the idea that this generalized innovativeness has been relatively more adaptive in this environment.

Relationships Between Tariff Behavior and Discounting Behavior

The second major cross-tabulation was undertaken in order to investigate relationships between tariff behavior and the use of specific discounts. Carrier responses to the use of specific discounts (Question 36) were cross-tabulated by the carrier's estimates of percentage of revenue in tariff vs. contract categories (Question 35). Statistically significant relationships were identified at the $\alpha = .05$ level. While several statistically significant relationships were found, no substantive pattern emerged.

Relationships Between Aspects of Rate Behavior and the Firm's Size and Profitability

In the third major cross-tabulation, the groups identified as using contracts, special tariffs, items, and schedules which were "always" or "usually" lower than bureau tariffs (Questions 20, 21, and 22) were compared with respondents not falling into those groups along the axes of size and profitability. The detailed results of this procedure are presented in Appendix H. Only one statistically significant result was found. A cross-tabulation of the respondents' contract behavior with respect to whether contracts are always, usually, rarely, or never lower by the firm's operating ratio classified as under 90%, 90-100%, or over 100% yielded a statistically significant value for χ^2 . Those responding rarely lower were less likely to be unprofitable than those responding in other categories.

Summary: Pricing Taxonomy Development

A clean and complete taxonomy has not been developed as clean, mutually-exclusive pricing "types" have not been found. But a substantial preliminary contribution to taxonomy development has been made. This contribution consists of the following findings:

1. Carrier pricing behavior is substantially heterogeneous.
2. While mutually exclusive categories have not been found, categories have been found such that members of certain categories are unlikely to fall into certain of the other identified categories (as described in each summary by "type").
3. A pattern of price cost behavior has been associated with each category which differentiates members of that category from non-members.

The Stigler Perspective

The goal of the final data analysis was to determine whether the data conformed with the idea that regulation is sought by a group of firms for their own protection. As discussed in chapter four, this idea would be most strongly supported by the data pattern presented in Figure 6-39.

Figure 6-39

Data Pattern Supporting The Stigler Perspective

- Q- 7 Before deregulation supported effort to stop it (T)
 - Q-15 Now support efforts to roll back or stop deregulation (T)
 - Q-31 (Strongly against) deregulation before
 - Q-32 (Strongly against) deregulation now
 - Q-33 More profitable (before deregulation)
- No difference between 31 and 21
- (No change in the direction of adjustment to the new status quo)

Results in the Context of the Stigler Perspective

A large majority of the carriers reported that they had supported efforts to stop the deregulation prior to its passage. Responses to Question 7, together with the results of the χ^2 Test with continuity correction, appear as Figure 6-40.

A substantial majority of the carriers also reported that they still supported efforts to roll back or slow the advance of deregulation. Carrier responses to Question 15, together with the results of the χ^2 Test with continuity correction, appear as Figure 6-41.

The majority of carrier responses concerning their feelings about deregulation before its passage also conformed to the expectations of

Figure 6-40

Pre-deregulation Political Behavior

7. Before deregulation, we supported efforts to stop it.

True	False
142	36
(79.8%)	(20.2%)

χ^2 with continuity correction = 61.94 significant at .05 1 Df

Figure 6-41

Post Deregulation Political Behavior

15. We now support efforts to roll back or slow the advance of deregulation.

True	False
126	57
(68.9%)	(31.1%)

χ^2 with continuity correction = 25.27 significant at .05 1 Df

the Stigler framework. A majority was strongly against the deregulation and a large majority was either strongly or moderately against the deregulation. This perspective was developed in question 31, and responses to Question 31, together with the results of the χ^2 Test with continuity correction, appear as Figure 6-42.

In the post-deregulation period, the majority position may still be characterized as being against the deregulation. This perspective was developed in Question 32. Responses to Question 32, together with the results of the χ^2 Test with continuity correction, appear as Figure 6-43.

Figure 6-42

Pre-deregulation Carrier Feelings

31. How did you feel about deregulation before it was passed into law?

Strongly Against	Moderately Against	No Opinion or Neutral	Moderately For	Strongly For
106	44	7	18	19
(57.3%)	(23.8%)	(3.8%)	(9.7%)	(5.4%)

Value of $\chi^2 = 183.78$ significant at .05 4 Df

KS calculated value of D = .411

KS critical value of D = .089

One group 1 tailed Goodness of Fit Test; null hypothesis of equal proportions

Figure 6-43

Post Deregulation Carrier Feelings

32. How do you feel about deregulation now?

Strongly Against	Moderately Against	No Opinion or Neutral	Moderately For	Strongly For
92	36	13	22	21
(50.0%)	(19.6%)	(7.1%)	(12.0%)	(11.4%)

Value of $\chi^2 = 110.96$ significant at .05 4 Df

KS calculated value of D = .300

KS critical value of D = .089

One group 1 tailed Goodness of Fit Test; null hypothesis of equal proportions

The Stigler perspective would also expect that the carriers would have been more profitable before deregulation than after. This per-

spective was developed in Question 33, and carrier responses to Question 33 again support the Stigler view. The large majority of carriers report themselves as having been more profitable before the deregulation. Figure 6-44 presents carrier responses to Question 33, together with the results of the χ^2 Test with continuity correction.

Figure 6-44	
Profitability Before And After Deregulation	
33. When was your firm more profitable?	
Before Deregulation	After Deregulation
152	24
(86.4%)	(13.6%)
Value of χ^2 with continuity correction = 91.64 significant at .05 1 Df	

These results conform well with the expectations of the Stigler perspective. But the alternative view provided by Allen would suggest that carriers simply prefer the status quo or the game that they understand. If the Allen perspective were to be preferred to the Stigler perspective, one might expect a shift toward adjustment to the new deregulated status quo, even in the context of a decline in profitability for the group as a whole.

A comparison of Figures 6-42 and 6-43 (Questions 31 and 32) suggests such a shift in the direction of adjustment to the new status quo. Comparing these two response distributions using the Kolmogorov-Smirnov 2 Sample 1 Tailed Test resulted in a calculated value of D of .115 which was not statistically significant ($\alpha = .05$ critical value of D = .127). Thus given the magnitude of the adjustment and the sample

size, the observed shift in carrier attitudes toward deregulation is likely to have occurred by chance.

The parallel difference between reported positions of political support before and after the deregulation is statistically significant. Comparison of the distribution in Figure 6-40 (Question 7) with the distribution Figure 6-41 (Question 15) yields a corrected value of χ^2 of 5.072, which is significant at the .05 level. The carriers' behavioral change in the direction of somewhat decreased opposition to the deregulation is unlikely to have occurred by chance.

Thus, the data pattern is as expected in order to support the Stigler position. But observation of this conformance might be somewhat mitigated by the observation that some carriers have removed political support from the anti-deregulation movement. This change may not be entirely explained economically, as a cross-tabulation of responses to Question 15 (Figure 6-41) by the level of carrier profit, while yielding results which are directionally as expected by the Stigler perspective, did not yield a statistically significant result. These results are portrayed in Figure 6-45.

Summary: The Stigler Perspective

Prior to data analysis, the response pattern which would most strongly have supported the Stigler perspective was set forth. It was expected that the majority of carriers would respond that they had supported efforts to stop deregulation prior to its passage. It was expected that they would still support efforts to roll back or slow deregulation. It was expected that they were and still are strongly against the deregulation, and it was expected that they would have been more profitable before the deregulation. It was also expected that

Figure 6-45

Cross-Tabulation Of Political Activity By
Level Of Profit (Operating Ratio)

We now support efforts to roll back or
slow the advance of deregulation.

Operating Ratio	True	False
Under 90%	13 (56.5%)	10 (43.5%)
90-100%	83 (67.5%)	40 (32.5%)
Over 100%	20 (83.3%)	4 (16.7%)

$\chi^2 = 4.012$ NS at .05 2 Df

their attitudes would not have shifted significantly in the direction of a positive adjustment to deregulation. While each of these expectations have been met and provide substantial support for the perspective, the observation of a slight withdrawal of political support from efforts to oppose the deregulation, which is not well explained by relative profitability of the carriers involved, may provide some mitigation.

Major Findings of the Study and Their Implications

A summary of the major results of the data analyses developed in this chapter comprised Chapter Five of this report. The implications of the findings comprise Chapter Seven, the last chapter of this report.

CHAPTER VII

IMPLICATIONS

Introduction

This chapter presents the implications of the study. Both major findings as summarized in Chapter Five and selected minor findings are considered. The chapter will first consider implications to theory; economic theory as applied to marketing problems, marketing theory, and the Stigler theory concerning the economic regulation of market activities. Implications to practice will then be considered as the behavioral patterns associated with higher levels of profit are reviewed. National policy implications are taken up next, placing the results of the study in the context of selected policy positions and perspectives. This is followed by a speculative discussion, a consideration of hypotheses suggested by the data, and by an overview statement. Finally, implications to future research are presented.

Implications to Theory

As discussed in Chapter Three, applied price theory has provided a primary theoretical perspective for this study. In an aggregate sense, the findings of the study are as would be predicted by this theoretical perspective. Deregulation of an industry which was argued to have been structured competitively has resulted in entry into transportation markets. It has resulted in a change in the price cost relationship such that prices now approximate costs more closely for the majority of carriers involved. The oligopoly models have also provided useful guidance for expectations. Observed carrier preference for a tariff structure might be explained in terms of attempts to retain the option of focal point pricing.

But there is substantial heterogeneity of pricing behavior within the group, such that preliminary contributions to a taxonomy development have been possible. Within the last year some firms have raised price, some have lowered price, and others report their prices to have been stable. Some have engaged in innovation while many have not.

Much of the heterogeneity can be explained by straightforward cost, location, and capability differences among the carriers. Price theory should, therefore, be applied to individualistic point to point transportation markets. In general, these findings support the position taken by Harper concerning the application of price theory to transportation companies:

Traditional price theory applies to pricing by for-hire transportation companies as it does to other pricing situations. The difficulties inherent in price theory are also applicable to transportation, the difficulties having to do primarily with certain assumptions upon which price theory rests. ... These assumptions have to do with such things as rational behavior of the decision maker, availability of full information, the profit maximizing motive, the production of a single product or service (further discussion of this follows), and the number of firms in the industry.

Another difficulty in applying conventional price theory to transportation is that transportation is not a single homogeneous industry that resembles one of the market structure situations described in price theory. Instead, transportation is a collection of several modes of transportation that are different "industries," each of which has economic characteristics, such as number of firms, size of firms, capital required to enter and so on, peculiar to itself. Some modes have characteristics similar to oligopoly, and others similar to monopolistic competition. In addition, regardless of the general economic characteristics of a particular mode, when any one kind of traffic over a given route is to be given a fare or a rate, the market structure situation may be different from the general industry case.¹

These findings and perspectives, together with the finding of increased use of special tariffs or special items aimed at one or a few

shippers lend general support to Alderson's perspective. Individually profitable ecological niches must exist for some carriers, otherwise these carriers would not be able to "walk away" from powerful shippers when they demand rates which are extremely close to their costs as the profitable "resister" group does.

The implication to the theory of regulation of marketing activities consists of substantial support for the Stigler perspective. Stigler had postulated that regulation is sought by a group of firms for their own protection. This research found that the majority of this carrier group supported efforts to stop the deregulation prior to its passage and also now supported efforts to stop or roll back the deregulation. The majority of the carrier group was against the deregulation both now and prior to its passage, and the majority of the carrier group was more profitable before the deregulation. The only finding which might be viewed as mitigating the perspective would be the observation of a small shift away from support for anti-deregulation efforts. This might be construed when viewed in the context of the parallel but statistically insignificant shift away from being "against" toward being "for" the deregulation as support for the alternative or perhaps complementary view suggested by Allen. Allen believed that carriers may simply prefer the status quo, or the game they understand.² Alternatively, this shift might be viewed as evidence of carrier recognition that this particular battle has been lost.

Implications to Practice

The most significant implications to marketing practice derive from the association of the behaviors of the "resister" behavioral pattern with higher profitability. This relatively successful group was found

not only to be in a position to "walk away" from powerful shippers when they demanded prices which were extremely close to costs, but also to be likely to possess a cost advantage. Thus, the ecological niche of the resister may be based both on superior cost and superior revenue performance. Resisters are less likely to agree that, since deregulation, it is harder to make up a loss on one shipment by getting increased rates on another, due to increased competition. This finding suggests that the resisters have been more successful in finding the still profitable shipments in their area of operations. The use of independently published tariff schedules may be a key to the resister group's superior revenue performance. If these tariff schedules are simple and convenient for the small shipper to use, they may be preferred to the more complex tariffs or lengthy individual negotiation process offered by competitors. Resisters are less likely than non-resisters to report that schedules of independently published tariffs aimed at a large number of shippers account for 40% or less of their revenue, and more likely to report that those tariffs account for 61% or more of their revenue.

The source of the resister's cost advantage does not appear as a result of the cross tabulations undertaken. Resisters do not differ significantly from non-resisters with respect to rate of use of non-union drivers, non-union terminal workers, or in the use of other specific innovations. It is possible that resisters find themselves in a better balance and backhaul situation, but that perspective was not researched.

The resister appears, therefore, not as a particularly innovative carrier, but as a particularly shrewd business person who has coupled a

cost advantage to a tenacious unwillingness to give his services away. The success of this pattern implies that innovativeness and sophistication do not appear to be prerequisites to success in this changed environment, while a certain shrewd business sense does appear adaptive.

Implications to National Policy

This section presents a comparison of selected findings of this study with expectations concerning post-deregulation pricing behavior and the implications of these comparisons. Wyckoff's expectation concerning the potential for oligopoly behavior within this carrier group is considered first. The expectation that socially desirable cross subsidy would be eliminated is examined next. Expectations that increased competition would stimulate innovation are then examined, and finally the implications of the Stigler theory findings are considered.

Wyckoff expected that the barriers to entry in this industry segment were sufficiently high so as to prevent the entry of the numbers of new carriers which would be required to offset merger and attrition. Increasing concentration would result, with its associated potential for oligopolistic pricing behaviors.³ The findings of this study would imply that this has not yet happened. The initial pricing behavior appears to be largely competitive. While this survey did not document significant entry of new firms, large numbers of firms were found to have expanded geographically, entering new transportation markets. In line with this transportation market entry, there is the finding of a closer price cost relationship for the majority of carriers. These initially competitive findings should not rule out the eventual realization of some non-competitive effects, however. The finding that resistance to price reductions is adaptive, and the finding that this

carrier group continues to prefer tariffs to contracts appear important. Some carriers still rely on bureau tariffs to a large degree, and the tariff structure remains intact with a large number of carriers using it as a base point from which to discount. Thus, with resistance to price declines adaptive even in the face of discounting, and with the bureau tariff structure remaining in place, both the motive and the mechanism for pricing coordination still exist in this carrier group. Mergers, attrition, and/or strengthening demand for carrier services could serve as catalysts here. In the context of the findings supportive of the Stigler theory, it would not appear that this situation should suggest a return to regulation. It should perhaps suggest anti-trust vigilance, both in terms of price coordination and merger activity.

The desirability of the pattern of cross subsidy which had been built into the pre-deregulation tariff structure has been the subject of considerable debate.⁴ The common expectation appears to have been that the cross subsidy would have been eliminated by increased competition for profitable traffic, and departure of carriers from unprofitable traffic until such time as rates approximated costs. The findings of this study would indicate that this has not, as yet, resolved itself in this manner within this carrier group. The majority of carriers agreed that they were forced to carry some shipments such as small LTL and rural service at a loss prior to the deregulation, but the majority also agrees that they still lose on those shipments which they lost on prior to deregulation. Thus, it would appear that the rate increases on these kinds of shipments have been insufficient as of the date of this survey to have made them into break-even traffic. It appears that the old form of cross subsidy may continue to exist. However, in the context of

carrier acknowledgement of change in the cross subsidy situation, and in the context of greater price increases on the cross subsidized items, this should reconcile itself with time.

A new form of cross subsidy appears to have resulted from the deregulation. This is the cross subsidization of the powerful shipper by "other" shippers. The pattern of findings developed when considering the nature of cross subsidy included the following:

1. The majority of carriers agree that powerful shippers are now causing some of their shipments to be carried at a loss.
2. The majority of carriers agree that powerful shippers are now negotiating the prices on their traffic down closer to the carriers' costs than other shippers have been able to do.
3. The majority of carriers agree that a trucking firm now has to have a balance of other shippers in order to be able to afford to do business with powerful shippers.

These responses may be indicative of the development of a mechanism whereby carriers serving both powerful and "other" shippers have become a conduit for the transfer of some shipping costs from the powerful shippers to other shippers. It is doubtful that this form of cross subsidy, arguably price discrimination, is conscious or desirable national policy.

Another expectation voiced prior to the deregulation was that more innovation would result from a removal of governmental constraint.⁵ The findings in this context do not provide strong support for either the position that this is true or the position that it is not. Many of the carriers report engaging in what have been termed innovative motor carrier behaviors. But when asked whether these amounted to a change

since deregulation, a surprisingly small number of innovative behaviors constituted change for the majority of the carriers. If the interpretation of what was expected by those predicting greater innovation was simply that some innovations would occur which would not have otherwise occurred, this appears to be the case. If the expectation was that the carrier group as a whole would become greatly innovative, carrier behavior would appear to have fallen short of expectations.

The findings supportive of the Stigler theory of economic regulation would imply that a return to former policy would not be suggested. Even such potentially negative findings as the continued potential for pricing coordination or the possibility of price discrimination should not indicate a return to regulation. What does appear to be suggested is a combination of anti-trust vigilance and small shipper awareness of their opportunities and options.

Speculative Discussion, Hypotheses Suggested by the Data

This section considers ideas germane to the study which were not strongly enough supported by the data to be considered elsewhere, but which were nonetheless suggested by the survey data and/or the preliminary interviews.

There appears to be evidence to suggest that firms may be using perceptual manipulations and a shrewd understanding of industrial buyer behavior in order to defeat the economic rationality assumption in industrial purchasing. This is evidenced first by the resister group's use of schedules of independent tariffs aimed at a large number of shippers, but more importantly by the fact that firms might publish an independent tariff which is not in all respects lower than the bureau tariff and then discount the independent tariff. When combined with the

practice of sending the shipper a statement to show him how much he has saved off of the published rate, this practice could have the effect of delivering into the hands of a shipping clerk a statement showing a greater savings associated with the higher of two competing rates. Assuming the shipping clerk found these statements useful in defending his efficiency and worth within the firm, economic rationality will have been defeated through an understanding of the real exchanges involved, and the real politics of individual survival within the firm.

Secondly, the results of the taxonomy development would suggest that innovative behaviors may not be all that adaptive. The resister is not a particularly innovative pricing type and yet is more profitable than non-resisters. The extensive cross tabulation of levels of change in the use of various rate categories with all other responses uncovered relationships which suggested that these changes associated themselves with other changes and innovations and yet not with profit. One explanation of these observations may be that innovation is expensive in the immediate post-deregulation period and is, therefore, holding the profits of innovators down, but that the innovators may become more profitable as the situation evolves.

Overview

What emerges from this study is the picture of an industry cast against its will into a more competitive environment. The timing of the recent recession has made this transition even more difficult. That the transition was against the will of the industry, that the industry fought and continues to fight the deregulation, and that the industry was hurt, are all observations which provide support for the Stigler theory of economic regulation. The occurrence of market entry, and the

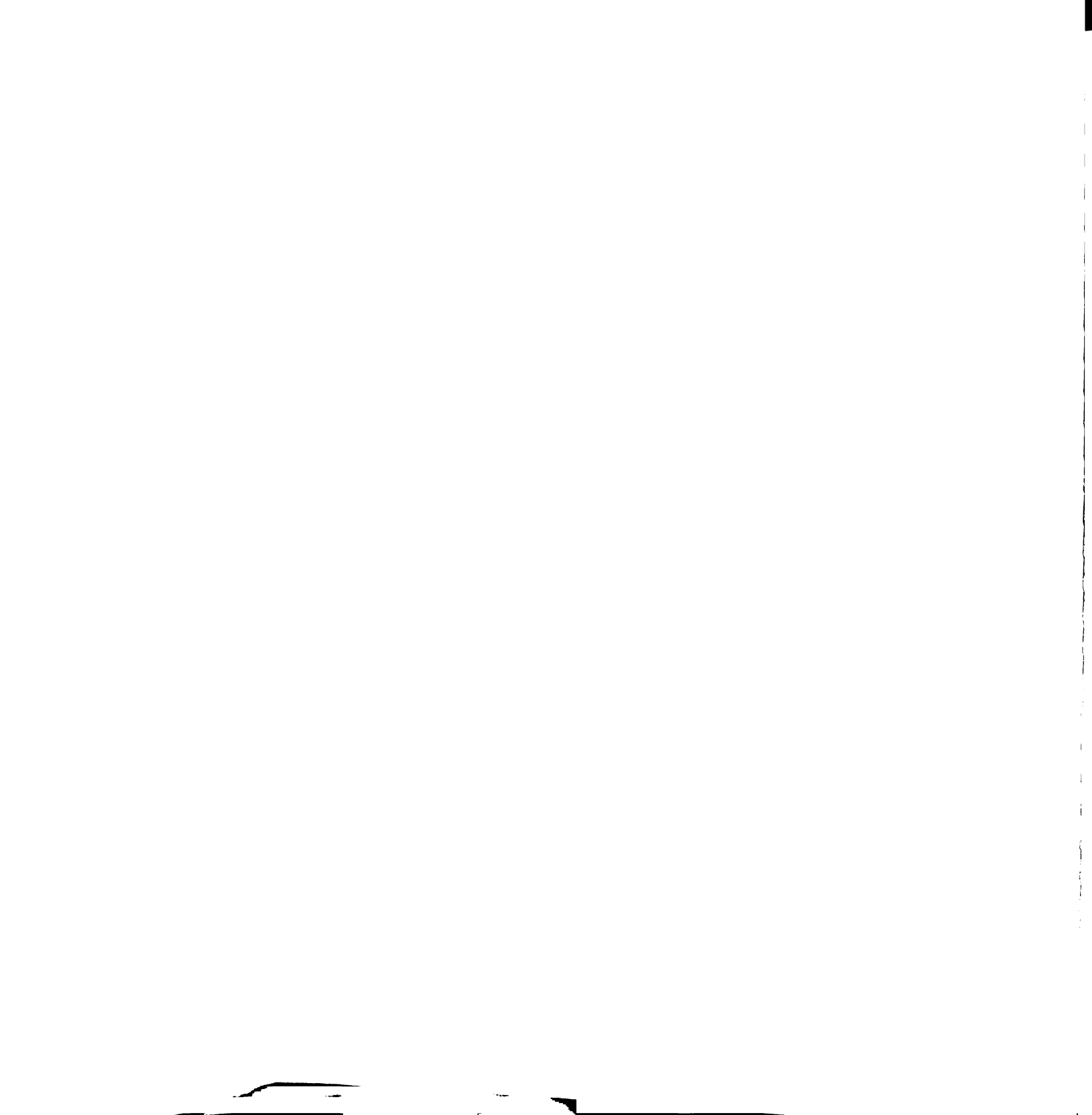
closer proximity of rates to costs provide support for the microeconomic price theory which informed the pre-deregulation arguments.

The observation of substantial heterogeneity in carrier behavior supports Alderson's theoretical framework, and opens the door to a vast array of actual and potential marketing strategies for members of the industry. But, the adoption of marketing ideas in the industry appears to be a slow process. The industry has demonstrated only modest innovation of either a technical or a marketing variety. Importantly, they do seem to have embraced the essence of the marketing idea, that of individualistic matching, and have increased their awareness of their competitors.

The industry still prefers tariffs, using bureau tariffs as a focal point from which to discount. With the bureau structure intact, these firms will retain the option of effective collective rate making when market conditions warrant. The old form of cross subsidy appears to be phasing out, but a new and important one is replacing it. Powerful shippers are reaping much of the economic harvest of the deregulation.

For motor carriers, the implications seem to be to practice marketing shrewdly, avoiding, where possible, the temptation to follow the industry discounting trend. For policy makers, the implications appear to include a call for anti-trust vigilance; a close inspection of the potential for collective rate making, and a sensitivity toward any merger trend which may develop.

Placed in the context of the pre-deregulation arguments, these findings provide some support for both the pro and anti-deregulation positions. Lower rates have certainly been observed, but the argument that recession effects are included in this observation might still be



made. Innovation appears to have been stimulated in a modest way, but the group as a whole is not greatly innovative as measured here. The argument that the deregulation would result in flexibility and adaptability to individual shipper needs appears to be supported by the group's increased use of individualistic tariff devices.

The cross subsidy situation appears to be in a state of change, but there is evidence to support arguments that any cross subsidy benefits formerly enjoyed by small shippers and rural shippers are now being at least shared by powerful shippers. These results arguably amount to price discrimination.

Evidence of non-competitive pricing behavior in this carrier group as anticipated by Wyckoff, does not yet exist, and classic predatory behavior was sought but not found. But the position is not without some evidence to support it. Continued reliance upon the bureau tariff structure, and the profitability of individual firm resistance to the downward pricing trend provide an environment conducive to pricing coordination. The final resolution of this argument must await further evolution of the pattern of merger and entry. This preliminary result provides evidence of competitive behavior.

Implications to Further Research

The findings of this study give rise to further questions. Several appear to be important and researchable.

To begin with, this study presents the pricing behavior of this carrier group at what may be an important point of transition. The group appears to be recovering from the recession, the majority now reports profitable operating ratios, and some report rate increases. Will the bureau tariff structure remain to facilitate pricing coordina-

tion? A potential for non-competitive pricing effects suggests several studies. The aggregate structure of the carrier group should be monitored. Shippers and carriers should be surveyed concerning the level of competition for specific traffic in specific point to point transportation markets, and this study should be replicated. Focusing upon pricing behavior, this study focuses upon the important result of changes in market structure, demand characteristics, and opportunity for coordination. Surveys of all regular route common carriers of general commodities using the identical questionnaire would provide a basis for comparison of pricing behaviors within different time periods.

The taxonomy development here is preliminary. It was a sub-component of the research intended to provide an investigation of the heterogeneity of carrier pricing behavior. Further development of taxonomy in this industry would warrant entire studies devoted to just that goal. Initially this might involve case studies, using the preliminary taxonomy developed here for guidance. The complete story of each firm's adjustment to the deregulation with a focus upon marketing strategy would be a useful research goal. Should a sufficient number of case studies be developed, a taxonomy might be developed using that information base alone. If not, further quantitative survey based research might be indicated.

The traffic purchasing behavior of the small or less powerful shipper should be investigated. The research objective here might be to discern what role this behavior might play in the cross subsidization of larger or more powerful shippers. Hypotheses might include the ideas that information is insufficient, that traffic purchasing people are not able to give the job sufficient attention to process the information now

relevant in the deregulated environment, and that collect shipping procedures or other administrative devices allow the responsibility for intelligent carrier selection to become spread among too many people. These studies might be combined with parallel and contrasting studies of the purchasing behavior of large and powerful shippers.

Other studies which suggest themselves would include the investigation of what might be termed perceptual manipulation within the industrial traffic purchasing context. Are carriers providing billings and statements of amounts saved which are structured so as to provide the grist for this behavior? How do upper-level traffic and physical distribution people perceive these savings? Do these perceptions differ within the purchasing firm, or between the purchasing firm and the carriers?

Finally, the relationship of innovation to profit might be investigated in this context. No solid relationship was found in this research, although there would be grounds to expect that one might exist. Is there a reasonable way to classify carriers as innovative or non-innovative? Does this resulting classification predict profit in the short or long term? Within this context, innovation in marketing specific activities should be considered. This study found that the majority of carriers were now developing detailed knowledge of competitors and their rates and services, and that the majority was now pricing after a complete market analysis to include 1) study of customer needs, 2) study of competition, and 3) study of costs. Moreover, these two innovations comprise two of only three "innovative" behaviors which the majority of carriers report as constituting change since deregulation. These observations, when coupled with the observations that the

majority of carriers are not allowing marketing or sales people to have pricing authority, not engaging in logistical analysis of shippers distribution systems, and not using computer models to look at marketing and/or operational options, must cause one to entertain the hypothesis that the essence of the market matching process could be performed by other than marketing people in this industry. This might be achieved through means other than those taught in the marketing and physical distribution disciplines. If so, what are these mechanisms and means? Does the association between price aggressor or price cutting behavior and the practice of allowing marketing people to have final pricing authority, as discovered in this study's taxonomy development, indicate anything concerning marketing specific innovation or marketing's real role in the marketing decision process? Alternatively, the results may suggest a lag between education and field practice. If this is so, a replication of this study should show increased use of marketing tools and concepts.

The pursuit of these research areas should substantially enhance the understanding of both academics and practitioners in the areas of theory, practice, and national policy.

Footnotes

¹ Donald V Harper, Transportation in America, 2nd ed. (Englewood Cliffs, N.J.: Prentice Hall, Inc., 1982), p. 171.

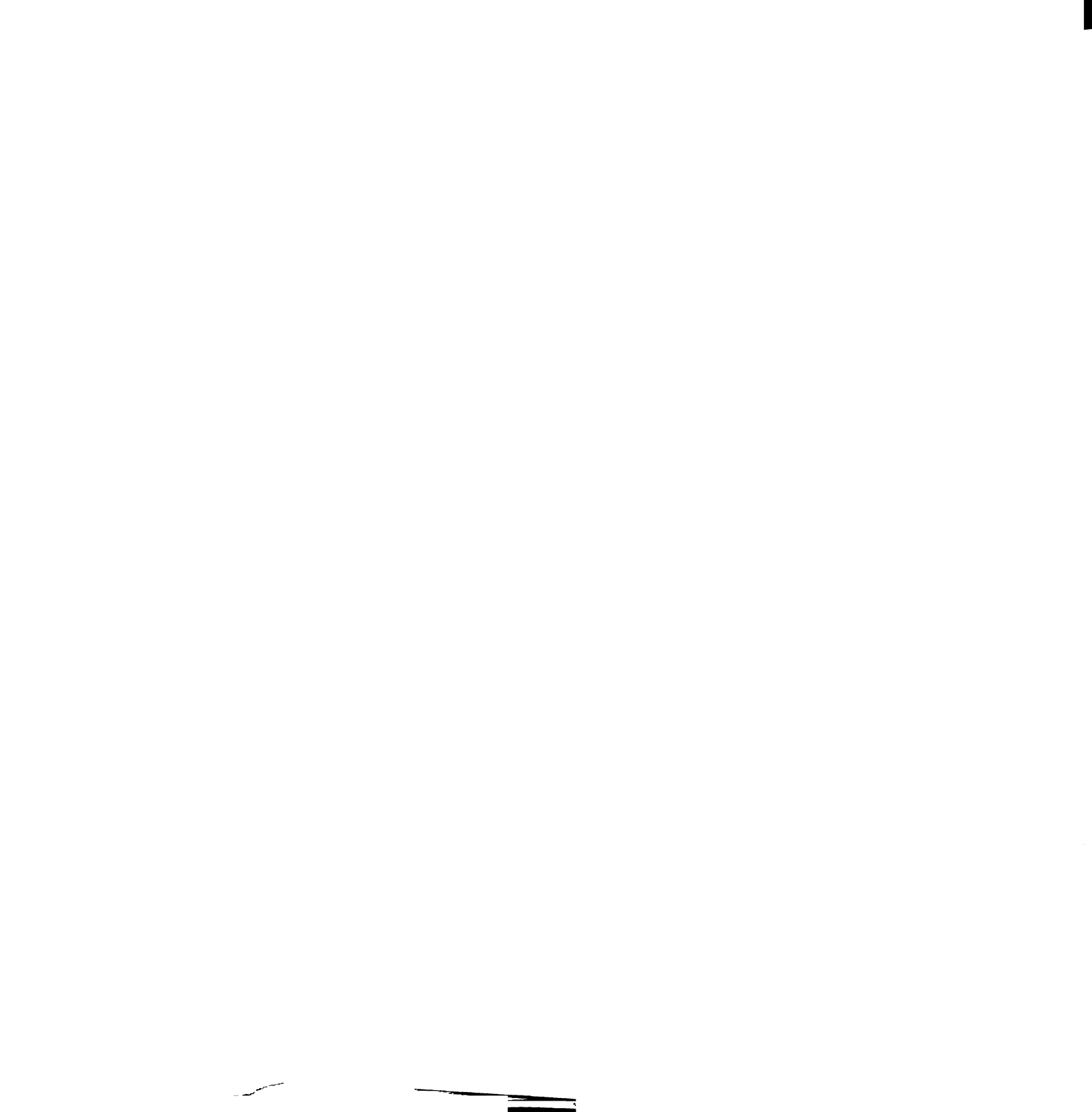
² W. Bruce Allen, Steven Lonergan, and David Plane, Examinations of the Unregulated Trucking Experience in New Jersey, prepared for the research and special projects administration, U.S. Department of Transportation, Washington, D.C., 1978, p. 178.

³ D. Daryl Wyckoff "Factors Promoting Concentration of Motor Carriers Under Deregulation," Transportation Research Forum (1974): p. 106.

⁴ See for example U.S. congress, Senate, The Impact on Small Communities of Motor Carrier Regulatory Revision 95th Cong., 2nd Sess. (Washington, D.C.: U.S. Government Printing Office, 1978), p. 128 for a discussion of cross subsidy and small communities. See also U.S. Congress, Senate, Committee on Commerce, Science and Transportation, Intercity Domestic Transportation System for Passengers and Freight 95th Cong., 1st Sess., (Washington, D.C.: U.S. Government Printing Office, 1978), pp. 186-187 for a discussion of cross subsidy and small shipments.

⁵ Charles L. Dearing and Wilfred Owen, National Transportation Policy (Washington, D.C.: The Brookings Institution, 1949), p. 192.

APPENDIX A
QUESTIONNAIRE



QUESTIONNAIRE
PLEASE USE A SOFT LEAD (NO. 2) PENCIL

Please mark whether the following statements are TRUE (T) or FALSE (F).

- | | T | F |
|---|-----------------------|-----------------------|
| 1. Our trucking firm is new; it did not exist prior to deregulation | <input type="radio"/> | <input type="radio"/> |
| 2. Our trucking firm is owned by another firm | <input type="radio"/> | <input type="radio"/> |
| (If false, skip to question 5) | | |
| 3. Our parent company is encouraging us to invest in truck transportation | <input type="radio"/> | <input type="radio"/> |
| 4. Our parent company has major businesses other than truck transportation | <input type="radio"/> | <input type="radio"/> |
| 5. Our costs are lower than those of most of our competition | <input type="radio"/> | <input type="radio"/> |
| 6. We carry (or would carry) shipments at a loss if they were a part of a profitable "overall package" for a customer | <input type="radio"/> | <input type="radio"/> |
| 7. Before deregulation we supported efforts to stop it | <input type="radio"/> | <input type="radio"/> |
| 8. Since deregulation we have operated at breakeven or a small loss because we are confident we will survive the "shake-out" and make our profit after that | <input type="radio"/> | <input type="radio"/> |
| 9. When a shipper uses a rate that is discounted from the published rate, we often send him a statement or other type of notice showing how much he has saved off of the published rate | <input type="radio"/> | <input type="radio"/> |
| 10. Since deregulation we have tried to lead the price up | <input type="radio"/> | <input type="radio"/> |
| 11. Before deregulation the tariff structure caused us to carry some shipments (small LTL, rural service, etc.) at a loss | <input type="radio"/> | <input type="radio"/> |
| 12. Since deregulation we still lose on those shipments which we carried at a loss before deregulation | <input type="radio"/> | <input type="radio"/> |
| 13. Since deregulation it is harder to make up a loss on one shipment by getting increased rates on another, because of increased competition | <input type="radio"/> | <input type="radio"/> |
| 14. The shipments we lose money on and the shipments we make money on have changed since deregulation | <input type="radio"/> | <input type="radio"/> |
| 15. We now support efforts to roll back or slow the advance of deregulation | <input type="radio"/> | <input type="radio"/> |
| 16. In your opinion have mergers and consolidations in the trucking industry increased since deregulation? | <input type="radio"/> | <input type="radio"/> |
| 17. Since deregulation powerful shippers have sometimes forced us to carry some shipments at a loss | <input type="radio"/> | <input type="radio"/> |
| 18. Since deregulation powerful shippers have negotiated the prices on their traffic much closer to our costs than other shippers have | <input type="radio"/> | <input type="radio"/> |
| 19. Since deregulation to be able to afford to do business with powerful shippers, a trucking firm has to have a balance of other shippers to make up the profit | <input type="radio"/> | <input type="radio"/> |

Multiple Choice Questions — Please Mark One Response Per Question.

20. Compared to the Bureau Tariff that would ordinarily apply to the traffic, contracts we negotiate are:
 Always a lower rate Usually a lower rate Rarely a lower rate Never a lower rate We do not do this
21. Compared to the Bureau Tariff that would ordinarily apply to the traffic, special tariffs or special items which we aim at one or a few shippers are:
 Always a lower rate Usually a lower rate Rarely a lower rate Never a lower rate We do not do this
22. Compared to the Bureau Tariff that would ordinarily apply to the traffic, schedules of independent tariffs which we aim at a large number of shippers are:
 Always a lower rate Usually a lower rate Rarely a lower rate Never a lower rate We do not do this
23. Our rates are now extremely close to our costs for about what % of our total \$ revenue?
 none 1-24% 25-49% 50-74% 75-99% all of it
24. As measured by \$ revenue, the % of our traffic that we are actually losing money on is approximately:
 none 1-24% 25-49% 50-74% 75-99% all of it
25. This % of our traffic that we are actually losing money on (number 24 above) is:
 more than before dereg the same as before dereg less than before dereg
26. As compared with 1 year ago our prices are:
 less (lower) about the same more (higher)
27. In terms of their importance in getting and holding a customer for our company, "social extras" (wining and dining) now are
 more important than before deregulation just as important as before deregulation less important than before deregulation
28. Since deregulation our prices are
 closer to our costs no closer to our costs
29. We "walk away" from a shipper when he demands rates which are extremely close to our costs
 most of the time about 1/2 the time rarely
30. We would tend to initiate price competition (cut price first) rather than reacting to competitor's price cuts
 quite often once in a while rarely
31. How did you feel about deregulation before it was passed into law?
 strongly against moderately against no opinion or neutral moderately for strongly for
32. How do you feel about deregulation now?
 strongly against moderately against no opinion or neutral moderately for strongly for
33. When was your firm more profitable?
 before deregulation after deregulation
34. We are primarily a
 Local carrier Regional carrier National carrier

37. PLEASE LOOK AT THE FOLLOWING KINDS OF RATE OR RATE/SERVICE INNOVATIONS AND MARK THE APPROPRIATE CIRCLE FOLLOWING EACH INNOVATION. PLEASE MARK ONLY ONE CIRCLE FOLLOWING EACH INNOVATION.



Innovation	We have STARTED doing this since deregulation	We did this before dereg and do MORE of it now	We did this before dereg and do about the SAME now	We did this before dereg but do LESS of it now	We have STOPPED doing this since dereg	We have NEVER done this
a) Using detailed shipment reports (provided by the shipper) to cost-out service to that shipper	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b) Hiring people with logistical backgrounds for sales work	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c) Allowing our marketing people to have final pricing authority	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d) Using computer models to look at marketing/operational options	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e) Developing detailed knowledge of our competitors and their rates/services	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f) Allowing our sales people to have pricing authority	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
g) Using road drivers to make "peddle" deliveries	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
h) Using non-union drivers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
i) Using non-union terminal workers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
j) Using special commodity divisions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
k) Buying larger trailers or trailer combinations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
l) Pricing after complete market analysis, including: 1) study of customer needs, 2) study of competition, 3) study of our costs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
m) Zip code pricing (prices quoted between zips)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
n) Use of trip leases with owner operators	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
o) Formula pricing (any specific shipment can be billed to an account using that account's formula)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
p) In depth logistical analysis of a shipper's distribution system (at our expense)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
q) Vending logistical analysis to a shipper at his expense	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
r) "Taking the lead" in suggesting price/service innovation to customers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
s) Offering overnight delivery	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
t) Offering service at night and on weekends	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
u) Adding service to new geographic areas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
v) Cutting service back in some geographic areas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
w) Freight all kinds (F.A.K.) pricing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
x) Using piggyback (TOFC) for line haul	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
y) Using airfreight connections	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
z) Shipping containerized freight	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

PLEASE RESPOND TO THE FOLLOWING QUESTIONS BY WRITING A SHORT ANSWER IN THE SPACE PROVIDED.

38. What types of price reductions (discounts) not mentioned in the questionnaire above have you begun to use since deregulation?

39. What types of rate or rate/service innovations not mentioned in the questionnaire above have you begun to use since deregulation?

40. Since deregulation is there any type of traffic which you have been carrying at a loss? (Please specify) _____

41. About how big is your trucking company? (8 revenue per year) _____

42. Approximately what is your 1983 year to date operating ratio? _____

43. Approximately what percent of your truck transportation revenue comes from truck load (TL) shipments _____

44. Comparing 1983 to 1982 what would you estimate your revenue increase (+) or decrease (-) to be as a % + _____

45. When was your trucking company founded? 19 _____ year. or - _____ %

THAT COMPLETES THE QUESTIONNAIRE. PLEASE RETURN IT IN THE PREPAID ENVELOPE PROVIDED. I WILL SEND A RESULTS SUMMARY IF YOU REQUEST (PER THE COVER LETTER).

APPENDIX B
LETTER OF INTRODUCTION



MICHIGAN STATE UNIVERSITY

GRADUATE SCHOOL OF BUSINESS ADMINISTRATION
DEPARTMENT OF MARKETING AND
TRANSPORTATION ADMINISTRATION

EAST LANSING · MICHIGAN · 48824-1121

The pricing of motor carrier services in the deregulated environment is the topic of my doctoral research at Michigan State University. I'm sure you share my interest in the topic.

Please help me out by completing the enclosed questionnaire and returning it to me in the prepaid envelope provided. If you request, I will send you a summary of the results when they are tabulated.

If you want results mailed to you but you wish to remain anonymous, please put a convenient (friend or relative's) address on a separate sheet of paper and enclose that with the questionnaire. If you don't mind my knowing who you are, just enclose this cover letter with the questionnaire.

The questionnaire has been developed using field interviews, so I'm sure you will find it interesting. It should take you only 10 to 15 minutes. Thanks very much for your time.

Sincerely,



Woody Hoover
10839 Keystone Drive
Ada, Michigan 49301

Encl.



APPENDIX C
FOLLOW-UP LETTER

MICHIGAN STATE UNIVERSITY

GRADUATE SCHOOL OF BUSINESS ADMINISTRATION
DEPARTMENT OF MARKETING AND
TRANSPORTATION ADMINISTRATION

EAST LANSING · MICHIGAN · 48824-1121

A short time ago, I mailed a questionnaire to you which concerned motor carrier financing. Since that time, many of the questionnaires have been returned. If you have already completed the form, I thank you for your help and consideration.

However, if you have not yet responded, would it be possible to find a few minutes to do so? Your response will help to insure that our understanding of our industry is accurate. You will remain anonymous and may receive a results summary by simply enclosing an address with the questionnaire.

If you have any questions or comments or if you have misplaced your questionnaire and would like another mailed to you, please feel free to write or call me at home. My home address and telephone number are given below.

I greatly appreciate your cooperation.

Sincerely,



Woody Hoover
10839 Keystone Drive
Ada, Michigan 49301
Telephone: (616) 691-8215

APPENDIX D
DETAILED BREAKDOWN
OF RESPONSES TO ITEM
35-E
"OTHER" RATE CATEGORIES

APPENDIX D

EVALUATION OF RESPONSES FALLING INTO RATE CATEGORY E

Record #	% Of Revenue Reported	Statement
1	0	None
2	0	None
3	0	None
4	0	None
5	0	None
6	0	None
7	0	None
8	0	None
9	10	Owner Operators/Agent Nation-wide Carrier
10	0	None
11	0	None
12	0	None
13	0	None
14	0	None
15	5	Consolidation + Distribution Tariffs
16	40	"LTL"
17	10	Cartage Leasing
18	0	None
19	0	None
20	0	None
21	0	None
22	0	None
23	0	None

APPENDIX D (Continued)

24	0	None
25	0	None
26	0	None
27	1	None
28	0	None
29	0	None
30	0	None
31	0	None
32	0	None
33	0	None
34	0	None
35	0	None
36	0	None
37	0	None
38	10	Local Hauls
39	0	None
40	0	None
41	0	None
42	0	None
43	0	None
44	0	None
45	0	None
46	0	None
47	0	None
48	0	None
49	0	None

APPENDIX D (Continued)

50	0	None
51	0	None
52	0	None
53	0	None
54	0	None
55	20	None
56	30	Combination Of d) And Private Discount Tariff
57	0	None
58	0	None
59	0	None
60	0	None
61	0	None
62	0	None
63	0	None
64	0	None
65	0	None
66	0	None
67	5	None
68	0	None
69	0	None
70	0	None
71	10	None
72	0	None
73	10	Exempt Commodities
74	0	None
75	0	None

APPENDIX D (Continued)

76	0	None
77	0	None
78	0	None
79	0	None
80	0	None
81	0	None
82	0	None
83	0	None
84	0	None
85	0	None
86	0	None
87	10	Leasing, Intrastate and No Tariffs
88	0	None
89	0	None
90	0	None
91	0	None
92	45	" <u>+</u> %" "
93	0	None
94	0	None
95	0	None
96	0	None
97	2	Local Cartage
98	0	None
99	0	None
100	0	None
101	0	None
102	0	None

APPENDIX D (Continued)

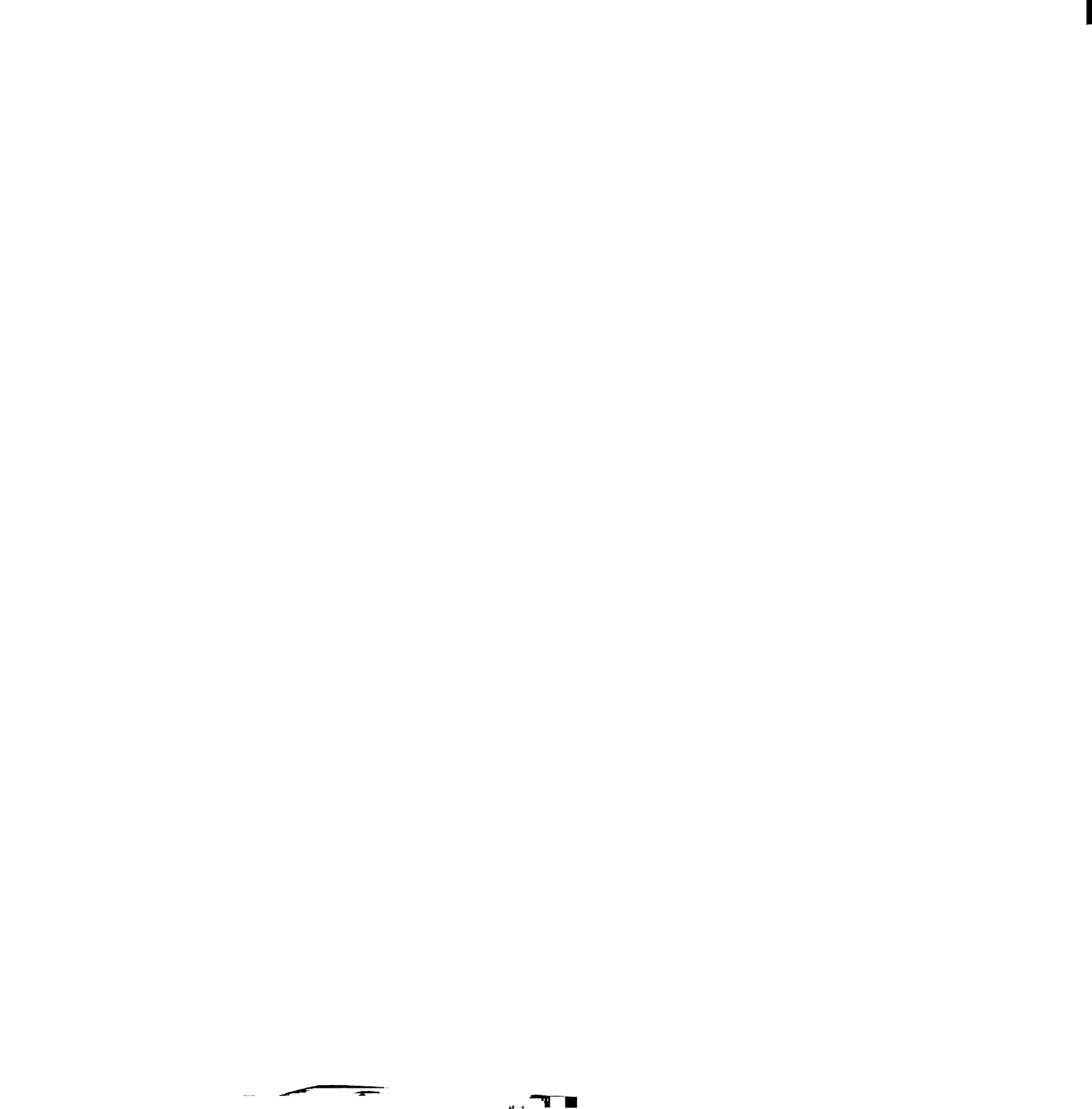
103	0	None
104	0	None
105	0	None
106	0	None
107	10	Independent Actions
108	0	None
109	0	None
110	0	None
111	1	Section 22 Tenders
112	0	None
113	0	None
114	0	None
115	0	None
116	0	None
117	0	None
118	0	None
119	0	None
120	0	None
121	0	None
122	0	None
123	0	None
124	0	None
125	0	None
126	20	Distribution
127	0	None
128	0	None
129	0	None

APPENDIX D (Continued)

130	0	None
131	0	None
132	9	Exempt/Government Tenders
133	0	None
134	0	None
135	0	None
136	0	None
137	0	None
138	0	None
139	0	None
140	0	None
141	0	None
142	0	None
143	10	Cartage
144	0	None
145	2	Sec. 409 Frt. Forwarder
146	0	None
147	0	None
148	0	None
149	0	None
150	0	None
151	0	None
152	5	Government + Exempt
153	0	None
154	0	None
155	0	None
156	0	None

APPENDIX D (Continued)

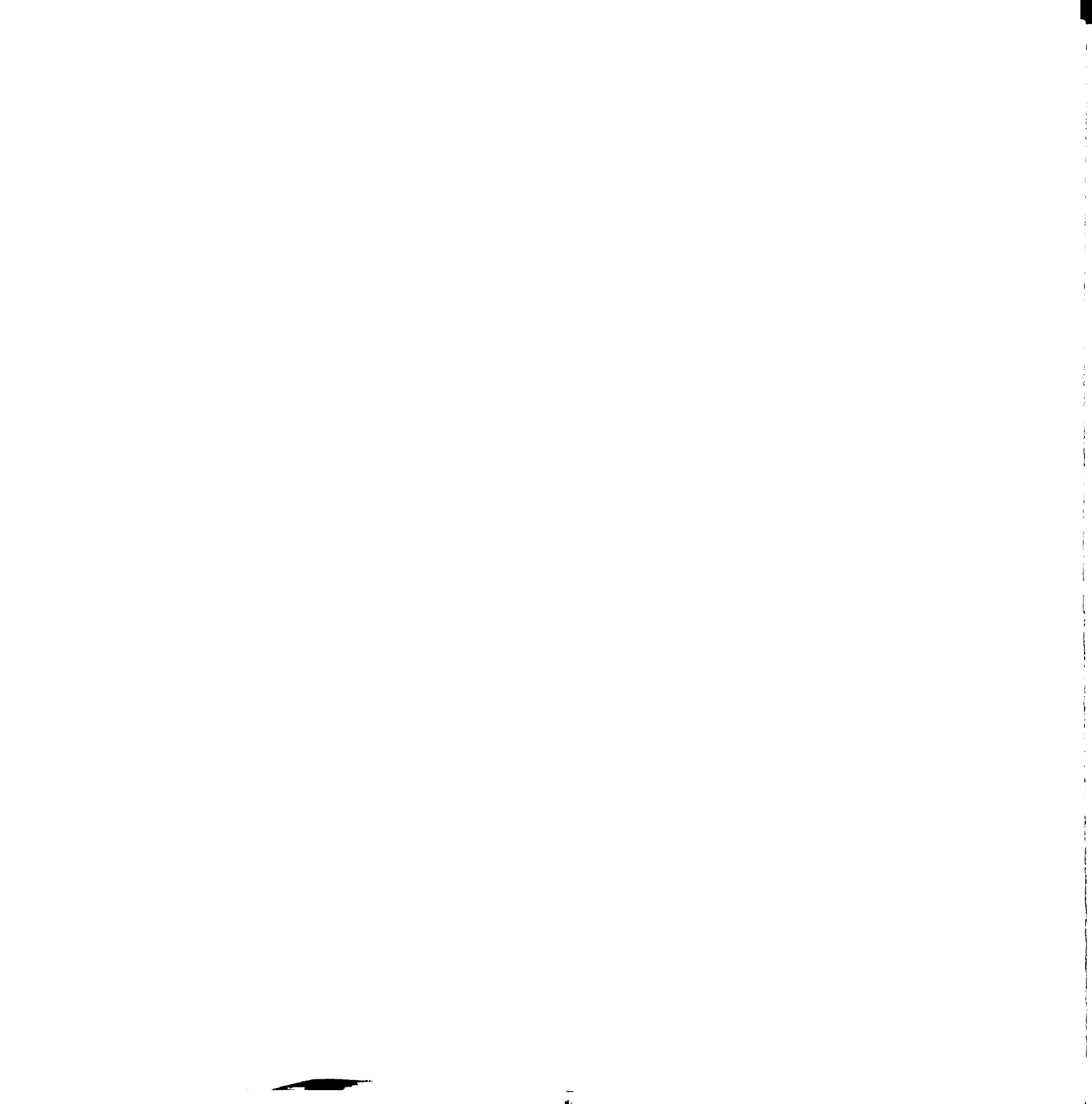
157	0	None
158	0	None
159	0	None
160	0	None
161	10	Carloading
162	0	None
163	1	Government Traffic
164	0	None
165	0	None
166	0	None
167	0	None
168	0	None
169	25	Guaranteed Traffic Based on Low Cost Bid
170	0	None
171	0	None
172	0	None
173	0	None
174	0	None
175	0	None
176	0	None
177	0	None
178	1	Gov't. Tenders
179	0	None
180	0	None
181	0	None
182	0	None



APPENDIX D (Continued)

183	50	Blanket Discount Tariffs
184	0	None
185	25	None

APPENDIX E
LISTING OF DETAILED
CROSS TABULATION RESULTS
AVAILABLE BY SPECIAL REQUEST



APPENDIX E

Some cross tabulations performed during this research were not included in the appendices. They are available from the author upon special request. These cross tabulations include:

1. Pricing Type Predator
2. Pricing Type Price Leader
3. Pricing Type Shipment Targeter
4. Pricing Type S.B.U.
5. Pricing Type Cream Skimmer
6. Pricing Type Price Aggressor
7. Discounts and Revenue in Contract and Tariff Categories

APPENDIX F
STATISTICALLY SIGNIFICANT
DIFFERENCES BETWEEN CANDIDATE
PRICING TYPE RESISTER AND
NON-RESISTERS
[$\alpha = .05$]

STATISTICALLY SIGNIFICANT DIFFERENCES BETWEEN RESISTERS AND NON-RESISTERS

[Statements in parentheses are amplifying statements which characterize aspects of the matrix.]

1. Resistors differ from non-resisters with respect to costs. [Resisters are more likely than non-resisters to report that their costs are lower than those of their competition.]

Q5. Our costs are lower than most of our competition.

	T	F
Walk Away		
Most (Resister)	26 (46.4%)	30 (53.6%)
About 1/2 (Non)	17 (29.8%)	40 (70.2%)
Rarely (Non)	15 (25.0%)	45 (75.0%)

$\chi^2 = 6.49$ (corrected χ^2 with non-resister groups consolidated = 5.36 also significant)

2. Resistors differ from non-resisters with respect to whether they report themselves to be waging to operate at break even or a small loss now because they are confident they will make up the profit later. [Resisters are less likely than non-resisters to be predators.]

Q8. Since deregulation we have operated at break even or a small loss because we are confident that we will survive the "shakeout" and make our profit after that.

	T	F
Walk Away		
Most (Resister)	20 (34.5%)	38 (65.5%)
About 1/2 (Non)	36 (59.0%)	25 (41.0%)
Rarely (Non)	33 (54.1%)	28 (45.9%)

$\chi^2 = 7.96$ (corrected χ^2 with non-resister groups consolidated = 6.80 also significant)

APPENDIX F (Continued)

3. Resisters differ from non-resisters with respect to whether they report still losing on those shipments they lost on prior to deregulation. [Fewer resisters agree that they are still losing on those shipments which they carried at a loss before deregulation.]

Q12. Since deregulation we still lose on those shipments which we carried at a loss before deregulation.

	T	F
We Walk Away		
Most (Resister)	33 (58.9%)	23 (41.1%)
About 1/2 (Non)	45 (76.3%)	14 (23.7%)
Rarely (Non)	51 (83.6%)	10 (16.4%)
$\chi^2 = 9.49$ (corrected χ^2 with non-resister groups consolidated = 7.63 also significant)		

4. Resisters differ from non-resisters with respect to their agreement with the statement that it is now harder to make up losses on one shipment by getting increased rates on another. [Resisters are less likely to agree that since deregulation it is harder to make up a loss on one shipment by getting increased rates on another because of increased competition.]

Q13. Since deregulation it is harder to make up a loss on one shipment by getting increased rates on another, because of increased competition.

	T	F
We Walk Away		
Most (Resister)	51 (87.9%)	7 (12.1%)
About 1/2 (Non)	59 (98.3%)	1 (1.7%)
Rarely (Non)	60 (96.8%)	2 (3.2%)
$\chi^2 = 7.06$ (corrected χ^2 with non-resister groups consolidated = 5.21 also significant)		

APPENDIX F (Continued)

...with respect to whether non-... children have caused them to

APPENDIX F (Continued)

5. Resister and non-resister groups differ with respect to whether powerful shippers have caused them to carry some shipments at a loss. [Resisters are less likely to agree that since deregulation powerful shippers have sometimes forced them to carry some shipments at a loss.]

Q17. Since deregulation, powerful shippers have sometimes forced us to carry some shipments at a loss.

	T	F
Walk Away		
Most (Resister)	39 (67.2%)	19 (32.8%)
About 1/2 (Non)	53 (86.9%)	8 (13.1%)
Rarely (Non)	54 (87.1%)	8 (12.9%)
$\chi^2 = 9.86$ (corrected χ^2 with non-resister groups consolidated = 8.62 also significant)		

6. Resisters differ from non-resisters with respect to whether they report themselves to be cream skimmers. [Resisters differ from non-resister groups in that they are less likely to agree that to be able to afford to do business with powerful shippers since deregulation, a trucking firm has to have a balance of other shippers to make up the profit.]

Q19. Since deregulation to be able to afford to do business with powerful shippers, a trucking firm has to have a balance of other shippers to make up the profit.

	T	F
Walk Away		
Most (Resister)	42 (73.7%)	15 (26.3%)
About 1/2 (Non)	57 (93.4%)	4 (6.6%)
Rarely (Non)	49 (80.3%)	12 (19.7%)
$\chi^2 = 8.39$ (corrected χ^2 with non-resister groups consolidated = 3.86 also significant)		

APPENDIX F (Continued)

7. Resisters differ from non-resisters with respect to whether the percentage of traffic that they are actually losing on is more or less than before deregulation. [Resisters differ from non-resister groups in that they are less likely to report that the percentage of traffic that they are actually losing on is more than before deregulation and more likely to report that it is the same or less.]

Q25. This % of our traffic that we are actually losing on is:

Walk Away	More Than Before Deregulation	The Same As Before Deregulation	Less Than Before Deregulation
Most (Resister)	38 (67.9%)	11 (19.6%)	7 (12.5%)
About 1/2 (Non)	56 (94.9%)	2 (3.4%)	1 (1.7%)
Rarely (Non)	48 (80.0%)	7 (11.7%)	5 (8.3%)

$\chi^2 = 13.87$ (χ^2 with non-resister groups consolidated = 9.5 also significant)

8. Resisters differ from non-resister groups with respect to whether they were more profitable before or after the deregulation. [Resisters are less likely to report that they were more profitable before deregulation and more likely to report that they were more profitable after deregulation.]

Q33. When was your firm more profitable:

Walk Away	Before Deregulation	After Deregulation
Most (Resister)	41 (75.9%)	13 (24.1%)
About 1/2 (Non)	54 (93.1%)	4 (6.9%)
Rarely (Non)	55 (90.2%)	6 (9.8%)

$\chi^2 = 8.14$ (corrected χ^2 with non-resister groups consolidated = 6.61 also significant)

APPENDIX F (Continued)

9. Resisters differ from non-resister groups with respect to the percentage of revenue accounted for by schedules of independent tariffs. [Resisters are less likely to report that schedules of independently published tariffs aimed at a large number of shippers account for 40% or less of their revenue and more likely to report that these tariffs account for 61% or more of their revenue.]

Q35.c. (% of \$ revenue) from independently published tariff schedules aimed at a large number of shippers

Walk Away	0-20%	21-40%	41-60%	61-80%	81+%
Most (Resister)	29 (56.9%)	4 (7.8%)	6 (11.8%)	6 (11.8%)	6 (11.8%)
About 1/2 (Non)	33 (61.1%)	12 (22.2%)	6 (11.1%)	0 (.0%)	3 (5.6%)
Rarely (Non)	37 (64.9%)	14 (24.6%)	4 (7.0%)	1 (1.8%)	1 (1.8%)

$X^2 = 19.86$ (X^2 with non-resister groups consolidated = 18.39 also significant)

10. Resisters differ from non-resister groups with respect to operating ratios. [Resisters are more likely to report having an operating ratio of less than 90% and less likely to report having an operating ratio of over 100%.]

Q42. Approximately what is your 1983 year to date operating ratio?

Walk Away	Under 90%	90-100%	Over 100%
Most (Resister)	12 (22.6%)	38 (71.7%)	3 (5.7%)
About 1/2 (Non)	7 (11.9%)	43 (72.9%)	9 (15.3%)
Rarely (Non)	3 (5.3%)	42 (73.7%)	12 (21.1%)

$X^2 = 11.13$ (X^2 with non-resister groups consolidated = 9.5 also significant)

APPENDIX G
CHANGE IN CONTRACT AND
TARIFF BEHAVIOR CROSS-TABULATED
BY ALL OTHER RESPONSES
STATISTICALLY SIGNIFICANT RESULTS
[$\alpha = .05$]

STATISTICALLY SIGNIFICANT RELATIONSHIPS BETWEEN CHANGE IN
TARIFF OR CONTRACT BEHAVIOR AND OTHER BEHAVIORS AND CHARACTERISTICS.

[Statements in parentheses are amplifying statements
which characterize the matrix.]

Supporting data for each statement comprise the second section of this appendix.

A. Group 1 Change in the Use of Contracts

Statistically significant differences between the groups using more, the same or fewer ("less") contracts than prior to deregulation are summarized below.

1. The groups differ with respect to whether they are strategic business units. [Those using "more" contracts are more likely to be strategic business units.]
2. The groups differ with respect to the use of statements sent to shippers. [Those using "more" contracts are more likely to send shipper statements showing how much he has saved off of the published rate.]
3. The groups differ with respect to carriage of shipments at a loss prior to deregulation. [Those using "more" contracts are more likely to agree that the tariff structure had caused them to carry some shipments at a loss prior to deregulation.]
4. The groups differ with respect to change in the percentage of traffic which is not profitable. [Those using "more" contracts are less likely to report that the % of traffic that they are actually losing money on is more than before deregulation, more likely to report it is the same and less likely to report that it is less than before deregulation.]
5. The groups differ with respect to change in the use of special tariffs or items. [Those using "more" contracts are more likely to report that special tariffs or special items are more or less than before deregulation and less likely to report that they are the same.]
6. The groups differ with respect to change in the use of schedules of independent tariffs. [Those reporting change in the use of contracts are more likely to report change in the use of schedules of independent tariffs.]
7. The groups differ with respect to change in the use of bureau tariffs. [Those using "more" contracts are most likely to report using fewer ("less") bureau tariffs, and those making less use of contracts are most likely to report using more bureau tariffs.]

APPENDIX G ONE (Continued)

8. The groups differ with respect to the use of aggregate discounts. [Those using more contracts are less likely to have started offering aggregate discounts, more likely to be offering more of them, less likely to be offering less and more likely to have never offered it.]
9. The groups which differ in the degree of change in the use of contracts differ with respect to offering the discount for multiple LTL shipments within a time period. [The group using more contracts also is more likely to have started the use of this discount or made more use of it.]
10. The groups which differ in the degree of change in the use of contracts also differ with respect to offering the discount for total shipments measured by tonnage within a time period. [The group using more contracts is more likely to have started using or have made more use of the discount, and less likely to have made less use of or stopped using the discount.]
11. The groups which differ in the degree of change in the use of contracts also differ with respect to offering the discount for total shipments as measured by dollar revenue. [The group using more contracts is more likely to have started or made more use of this discount, and less likely to have made the same use of this discount.]
12. The groups which differ in the degree of change in the use of contracts also differ with respect to offering the discount for day of delivery. [The group using more contracts is more likely to have started offering this discount.]
13. The groups which differ in the degree of change in their use of contracts also differ with respect to offering the discount for time of day of delivery. [The group using more contracts is more likely to have started the use of this discount.]
14. The groups which differ in the degree of change in their use of contracts also differ with respect to offering the discount for customer transport to and from the terminal. [The group using more contracts is more likely to have started or engaged in either more or the same use of this discount.]
15. The groups differ with respect to the discount for continuous moves, combined moves and/or backhaul. [The group using more contracts is more likely to have started or used more of this discount.]
16. The groups which differ in the degree of change in their use of contracts also differ with respect to offering the discount for transport to and from certain areas or along certain routes. [The group using more contracts is more likely to have started or engaged in more use of the discount.]

APPENDIX G ONE (Continued)

17. The groups which differ in the degree of change in their use of contracts also differ with respect to the specific innovation of allowing marketing people to have final pricing authority. [The group using more contracts since deregulation is more likely to have started or made more use of the innovation.]
18. The groups which differ in the degree of change in their use of contracts also differ with respect to the specific innovation of using road drivers to make "peddle" deliveries. [The group using more contracts since deregulation is more likely to have made more use of the innovation and less likely never to have made use of it.]
19. The groups which differ in the degree of change in the use of contracts also differ with respect to the specific innovation of pricing after a complete market analysis. [The group using more contracts since deregulation is more likely to have started or made more use of the innovation and less likely to have never used the innovation.]
20. The groups which differ in the degree of change in the use of contracts also differ with respect to the specific innovation of using trip leases with owner operators. [The group using more contracts since deregulation is more likely to have started, made more or the same use of the innovation and is less likely to have made less use or never have made use of the innovation.]
21. The groups which differ in the degree of change in the use of contracts also differ with respect to the specific innovation of using F.A.K. pricing. [The group using more contracts since deregulation is more likely to report making more use of the innovation since deregulation.]
22. The groups which differ in the degree of change in the use of contracts also differ with respect to the type of loss reported in the open-ended questionnaire.
23. The groups which differ in the degree of change in the use of contracts also differ with respect to the size of the firm. [The group using more contracts since deregulation is less likely to be a small company and more likely to be a medium or large company.]
24. The groups which differ in the degree of change in the use of contracts also differ with respect to revenue losses reported. [The group using more contracts was less likely to report losses of over 20%.]

APPENDIX G ONE (Continued)

B. Group 2 Change in the Use of Special Tariffs or Items

Statistically significant differences between those making more, the same or "less" use of special tariffs or items are summarized below ($\alpha = .05$).

1. the groups which differ in the degree of change in the use of special tariffs or items also differ with respect to their willingness to carry shipments at a loss if those shipments were part of a profitable overall package for a shipper. [The group making more use of special tariffs or items is more likely to agree that they would carry such shipments. Thus, they are less likely to be shipment targeters.]
2. The groups which differ in the degree of change in the use of special tariffs or items also differ with respect to whether or not they report that they still lose on those on those shipments which they lost on prior to deregulation. [The group making more use of special tariffs or items is more likely to agree that they still lose on those shipments.]
3. The groups which differ in the degree of change in the use of special tariffs or items also differ with respect to whether or not they report that it is now harder to make up a loss on one shipment by getting increased rates on another due to increased competition. [The group making more use of special tariffs or items is more likely to report this as being harder.]
4. The groups which differ in the degree of change in the use of special tariffs or items also differ as to whether they now support efforts to roll back or slow the advance of deregulation. [Those making more use of special tariffs or special items are less likely to report that they now support these efforts.]
5. The groups which differ in the degree of change in the use of special tariffs or items differ as to whether contracts they enter into are always lower, usually lower or rarely lower than the bureau tariffs which would ordinarily apply to the traffic. They also differ as to whether they enter into contracting.
6. The groups which differ in the degree of change in the use of special tariffs or items also differ as to whether these special tariffs and special items are lower than the bureau tariff that would ordinarily apply to the traffic. [The group making more use of special tariffs and special items is more likely to report that these tariffs and items are always or usually lower than the bureau tariff, and less likely to report that they are never lower.]

APPENDIX G ONE (Continued)

7. The groups which differ in the degree of change in the use of special tariffs or special items also differ as to the % of traffic that they are actually losing money on. [The group making more use of special tariffs and special items is less likely to report that they are losing on none of their traffic and more likely to report that they are losing on 75-99% of it or all of it.]
8. The groups which differ in the degree of change in the use of special tariffs or special items also differ as to whether they report initiating price competition often, once in a while or rarely. [The group making more use of special tariffs or items is more likely to report initiating price competition "once in a while" and less likely to report initiating it "rarely."]
9. The groups which differ in the degree of change in the use of special tariffs or items also differ in the degree of change in the use of contracts.
10. The groups which differ in the degree of change in the use of special tariffs or items also differ in the percentage of their revenue accounted for by contracts.
11. The groups which differ in the degree of change in the use of special tariffs or items also differ as to whether they report their use of schedules of independent tariffs to constitute a change since deregulation.
12. The groups which differ in the degree of change in the use of special tariffs or items also differ in the percentage of their revenue accounted for by schedules of independent tariffs. [The group reporting more use of special tariffs or items is more likely to report schedules of independent tariffs accounting for 0-20% of their revenue.]
13. The groups which differ in the degree of change in the use of special tariffs or item also differ as to whether they report their use of bureau tariffs to constitute a change since deregulation. [The group reporting more use of special tariffs or items is more likely to report a change in the use of bureau tariffs.]
14. The groups which differ in the degree of change in the use of special tariffs or items also differ with respect to their offering of the aggregate discount. [Those reporting either more or less use of special tariffs or items are more likely to report having started the use of the aggregate discount and are less likely to report having never used it. the group reporting more use of special tariffs or special items is also more likely to report making more use of the aggregate discount.]

APPENDIX G ONE (Continued)

15. The groups which differ in the degree of change in the use of special tariffs or items also differ as to their use of the discount for total shipments measured by tonnage within a time period. [The group making more use of special tariffs or items is more likely to report change in the use of this discount.]
16. The groups which differ in the degree of change in the use of special tariffs or items also differ as to their use of the discount for day of delivery. [The group making more use of special tariffs or items is more likely to report that they have started or made either more or less use of this discount.]
17. The groups which differ in the degree of change in the use of special tariffs or items also differ as to their use of rebates or refunds after a shipper has purchased a certain amount. [The group making more use of special tariffs or items also is more likely to report change in the use of this discount.]
18. The groups which differ in the degree of change in their use of special tariffs or items also differ with respect to the use of "negotiable" discounts. [The group making more use of special tariffs or items is more likely to have started the use of this type of discount.]
19. The groups which differ in the degree of change in their use of special tariffs or items also differ with respect to their use of discounts calculated as a % off a bureau tariff. [The group making more use of special tariffs or items is more likely to have started and less likely never to have used this discount.]
20. The groups which differ in the degree of change in their use of special tariffs or items also differ with respect to their use of the specific innovation of allowing marketing people to have pricing authority. [The group making more use of special tariffs or items is more likely to report having started and less likely to report making the same use of this innovation.]
21. The groups which differ in the degree of change in their use of special tariffs or items also differ with respect to their use of the specific innovation of developing detailed knowledge of competitors and their rates and services. [The group making more use of special tariffs or items is more likely to report having started or making more use of this innovation and less likely to report making the same use of it.]

APPENDIX G ONE (Continued)

22. The groups which differ in the degree of change in their use of special tariffs or items also differ with respect to their use of the specific innovation of allowing road drivers to make "peddle" deliveries. [The group making more use of special tariffs or items is more likely to report having started or making the same use of this innovation and less likely to report having made less use or never having used the innovation.]
23. The groups which differ in the degree of change in their use of special tariffs or items also differ with respect to their use of the specific innovation of non-union drivers. [The group making more use of special tariffs or items is more likely to report making more use of or never having used this innovation, and is less likely to have reported making the same use of this innovation.]
24. The groups which differ in the degree of change in the use of special tariffs and items also differ with respect to their use of the specific innovation of non-union terminal workers.
25. The groups which differ in the degree of change in the use of special tariffs and items also differ with respect to the use of the specific innovation of pricing after a complete market analysis. [The group reporting more use of special tariffs and items is less likely to report the same level of use of this innovation.]
26. The groups which differ in the degree of change in the use of special tariffs and items also differ with respect to the use of the specific innovation of in-depth logistical analysis of a shipper's distribution system at carrier expense. [The group reporting more use of special tariffs and items is more likely to report that they have started or made more use of this innovation and less likely to report that they have made the same or less use of this innovation.]
27. The groups which differ in the degree of change in the use of special tariffs and items also differ with respect to the use of the specific innovation of vending logistical analysis at shipper expense.
28. The groups which differ in the degree of change in the use of special tariffs and items also differ with respect to the use of the specific innovation of offering service at night and on weekends. [The groups reporting more use of special tariffs and items is not as likely to report making less use of this innovation.]

APPENDIX G ONE (Continued)

C. Group 3 Change in the Use of Independently Published Tariff Schedules

Statistically significant differences between those making more, the same or less use of independently published tariff schedules are summarized below ($\alpha = .05$).

1. The groups which differ in the degree of change in their use of independent tariff schedules differ as to whether they are likely to report that they are SBU's.
2. The groups which differ in the degree of change in their use of independent tariff schedules differ as to whether their parent company holds businesses other than trucking. [Those reporting no change are less likely to be held by firms holding other businesses.]
3. The groups which differ in the degree of change in their use of independent tariff schedules differ as to whether they would carry shipments at a loss if those shipments were a part of a profitable package for a shipper.
4. The groups which differ in the degree of change in their use of independent tariff schedules differ as to whether they report that powerful shippers have negotiated their prices on traffic much closer to costs since deregulation. [The group making more use of independent schedules is more likely to report that powerful shippers have been able to do this.]
5. The groups which differ in the degree of change in their use of independent tariff schedules differ as to whether they report their special tariffs or items as being always, usually, rarely or never lower than bureau tariffs. [The group making more use of independent tariffs were more likely to report their special tariffs or items as always lower.]
6. The groups which differ in the degree of change in their use of independent tariff schedules differ as to whether they report these independent tariff schedules as being always, usually, rarely or never lower than bureau tariffs. [The group making more use of independent tariffs schedules was more likely to report these schedules as being always lower.]
7. The groups which differ in the degree of change in their use of independent tariff schedules differ as to the % of traffic that they report actually losing money on. [Those reporting no change in the use of independent tariff schedules are more likely to report losing on 1-24% or none of their traffic. Those making more use of independent tariff schedules are more likely to report losing on 50-74% or all of their traffic.]

APPENDIX G ONE (Continued)

8. The groups which differ in the degree of change in their use of independent tariff structures differ as to whether they report change in their use of contracts.
9. The groups which differ in the degree of change in their use of independent tariff schedules differ in their use of contracts. [The group making more use of independent tariffs is more likely to report that contracts account for 0-20% of revenue and more likely to report that they account for 41-80% of revenue.]
10. The groups which differ in the degree of change in their use of independent tariff schedules differ as to whether they report their use of special tariffs or items to be more, the same or less than prior to deregulation.
11. The groups which differ in the degree of change in their use of independent tariff schedules differ in the percentage of revenue that they report as derived from special tariffs or items. [The group making more use of independent schedules is more likely to report that special tariffs or items account for 0-20% of their revenue and less likely to report that they account for 81% or more of their revenue.]
12. The groups which differ in the degree of change in their use of independent tariff schedules differ as to whether they report their use of bureau tariffs or items to be more, the same or less than prior to deregulation.
13. The groups which differ in the degree of change in their use of independent tariff schedules differ in the percentage of revenue that they derive from bureau tariffs. [The group making more use of independent schedules is less likely to report 0-20% of their revenue accounted for by bureau tariffs, and more likely to report 41-80% of their revenue accounted for by bureau tariffs.]
14. The groups which differ in the degree of change in their use of independent tariff schedules also differ in the extent to which they report "other" rate categories to be more, about the same, or less than before deregulation.
15. The groups which differ in the degree of change in their use of independent tariff schedules also differ in the extent to which they report making use of the aggregate discount. [The group making more use of independent tariff schedules is more likely to report making more use of having stopped using the discount.]

APPENDIX G ONE (Continued)

16. The groups which differ in the degree of change in their use of independent tariff schedules also differ in the extent to which they report making use of the discount for total shipment by tonnage. [The group making more use of independent tariff schedules is more likely to report making either more or less use of this discount.]
17. The groups which differ in the degree of change in their use of independent tariff schedules also differ in the extent to which they report making use of the discount for transportation to and from certain areas and along certain routes.
18. The groups which differ in the degree of change in their use of independent tariff schedules also differ in the extent to which they make use of individually-negotiated discounts. [The group making more use of independent tariff schedules is less likely to report never having made use of this discount.]
19. The groups which differ in the degree of change in their use of independent tariff schedules also differ in their use of discounts calculated as a % off of a bureau tariff. [The group making more use of independent tariff schedules is more likely to report having started or having made more use of this discount and less likely to report never having made use of it.]
20. The groups which differ in the degree of change in their use of independent tariff schedules also differ in their use of the specific innovation of using detailed shipment reports provided by the shipper to cost out service to that shipper. [The group making more use of independent tariff schedules is more likely to report making "more" use of this discount.]
21. The groups which differ in the degree of change in their use of independent tariff schedules also differ in their use of the specific innovation of using non-union drivers.
22. The groups which differ in the degree of change in their use of independent tariff schedules also differ in their use of the specific innovation of zip code pricing. [The group making more use of independent tariff schedules is more likely to report having started this activity and less likely to report never having taken part in it.]
23. The groups which differ in the degree of change in their use of independent tariff schedules differ in their use of the specific innovation of formula pricing. [Groups indicating change, either more or less, in the use of independent tariff schedules are more likely to have started the use of this innovation.]

APPENDIX G ONE (Continued)

24. The groups which differ in the degree of change in their use of independent tariff schedules differ in their use of the specific innovation of taking the lead in suggesting price-service innovation. [The group making more use of independent tariff schedules is more likely to report having started the use of this innovation.]
25. The groups which differ in the degree of change in their use of independent tariff schedules differ in their use of the specific innovation of F.A.K. pricing. [Those groups indicating change, either more or less, in the use of independent tariff schedules are more likely to have started the use of this innovation.]

D. Group 4 Change in the Use of Bureau Tariffs

Statistically significant differences between those making more, the same, or less use of bureau tariffs are summarized below ($\alpha = .05$).

1. The groups which differ in the degree of change in the use of bureau tariffs also differ with respect to whether their parent company is encouraging them to invest in truck transportation. [The group making less use of bureau tariffs is more likely to be owned by a parent firm which is encouraging investment in truck transportation.]
2. The groups which differ in the degree of change in the use of bureau tariffs also differ with respect to whether they would carry a shipment at a loss if it were a part of a profitable overall package. [The group making less use of bureau tariffs is more likely to report that they would carry such traffic, thus they are less likely to report themselves to be shipment targeters.]
3. The groups which differ in the degree of change in the use of bureau tariffs also differ with respect to whether they agree that the tariff structure prior to deregulation caused them to carry some traffic at a loss. [The group making less use of bureau tariffs was more likely to agree with the statement.]
4. The groups which differ in the degree of change in the use of bureau tariffs also differ with respect to whether they agree that it is harder to make up a loss on one shipment by getting increased rates on another due to increased competition. [Those making more use of bureau tariffs were less likely to agree with that statement.]
5. The groups which differ in the degree of change in the use of bureau tariffs also differ as to whether they agree with the statement that the shipments they are losing money on and the shipments they are making money on have changed since deregulation. [The group deriving "about the same" percentage of revenue from bureau tariffs was least likely to agree with the statement.]

APPENDIX G ONE (Continued)

6. The groups which differ in the degree of change in the use of bureau tariffs also differ as to whether they now support efforts to roll back or slow the advance of deregulation. [The groups deriving "more" or "about the same" percentage of revenue from bureau tariffs were more likely to report that they supported those efforts.]
7. The groups which differ in the degree of change in the use of bureau tariffs also differ as to whether they report the contracts they engage in to represent rates which are always, usually, rarely or never lower than bureau tariffs. [The group using bureau tariffs to a lesser degree than prior to deregulation was more likely to report contracts to be always lower while the group using bureau tariffs more than before deregulation was more likely to report contracts to be usually lower.]
8. The groups which differ in the degree of change in the use of bureau tariffs also differ as to whether they report their special tariffs or special items to be always, usually, rarely or never lower than bureau tariffs. [The group using bureau tariffs to a lesser degree than prior to deregulation was more likely to report contracts to be always lower than bureau tariffs, while the group using bureau tariffs more than before deregulation was more likely to report contracts to be usually lower.]
9. The groups which differ in the degree of change in the use of bureau tariffs also differ as to whether they report their independent tariff schedules to be always, usually, rarely or never lower than bureau tariffs. [The group using bureau tariffs to a lesser degree than prior to deregulation was more likely to report their independent tariff schedules always to be lower, while the group making more use of bureau tariffs since deregulation are most likely to report their independent tariff schedules to be usually lower.]
10. The groups which differ in the degree of change in the use of bureau tariffs also differ as to the percent of their traffic which they report as having rates extremely close to costs. [The group making more use of bureau tariffs is more likely to report that 49% or less of their traffic falls into this category and is less likely to report that 50-99% falls into the category. This group is also more likely to report that all of their traffic falls into the category.]
11. The groups which differ in the degree of change in the use of bureau tariffs also differ as to whether they classified themselves as being strongly against, moderately against, no opinion/neutral, moderately for or strongly for deregulation prior to its passage.

APPENDIX G ONE (Continued)

12. Groups which differ in the degree of change in the use of bureau tariffs also differ as to whether they are local, regional or national firms.
13. Groups which differ in the degree of change in the use of bureau tariffs also differ in the degree of change in the use of contracts. [The group reporting bureau tariffs to be less than before deregulation are most likely to report contracts as being more. The group reporting bureau tariffs as being the same are most likely to report contracts as the same and the group reporting bureau tariffs to be more are the most likely to report contracts as being less.]
14. Groups which differ in the degree of change in the use of bureau tariffs also differ in the degree of change in the use of special tariffs and items.
15. Groups which differ in the degree of change in the use of bureau tariffs also differ in the percentage of revenue accounted for by special tariffs or items.
16. Groups which differ in the degree of change in the use of bureau tariffs also differ in the degree of change in the use of independent tariff schedules.
17. Groups which differ in the degree of change in the use of bureau tariffs also differ in the percentage of their revenues accounted for by bureau tariffs.
18. Groups which differ in the degree of change in the use of bureau tariffs also differ in the degree of change in the use of "other" tariffs.
19. Groups which differ in the degree of change in the use of bureau tariffs also differ in their behavior concerning the aggregate discount. [The group making less use of bureau tariffs is more likely to report more use or less use of this discount and less likely never to have used it.]
20. Groups which differ in the degree of change in their use of bureau tariffs also differ in their behavior concerning the discount for total shipments measured by dollar revenue within a time period. [The group making less use of bureau tariffs is less likely never to have used this discount.]
21. Groups which differ in the degree of change in their use of bureau tariffs also differ in their behavior concerning the discount for day of delivery. The group making use of bureau tariffs to "about the same" degree is most likely to report never having used this discount.

APPENDIX G ONE (Continued)

22. The groups which differ in the degree of change in their use of bureau tariffs differ with respect to their use of the discount for time of day of delivery. [The group making more use of bureau tariffs was more likely to have made more or less use and least likely to report never having used the discount.]
23. The groups which differ in the degree of change in their use of bureau tariffs differ with respect to their use of the discount for customer transport to and from the terminal. [The group making more use of bureau tariffs is more likely to report using more or less of the discount and least likely to report never using the discount.]
24. The groups which differ in the degree of change in their use of bureau tariffs also differ in their use of the discount calculated as a percent of a bureau tariff.
25. The groups which differ in the degree of change in their use of bureau tariffs also differ in their use of the specific innovation of using detailed shipment reports provided by the shipper to cost out service to that shipper.
26. The groups which differ in the degree of change in their use of bureau tariffs also differ in their use of the specific innovation of allowing marketing people to price. [Those using bureau tariffs to about the same degree are more likely to report that they have never used this innovation.]
27. The groups which differ in the degree of change in their use of bureau tariffs also differ in the use of the specific innovation of developing detailed knowledge of competitors and their rates and services. [The group that is making more use of bureau tariffs is more likely to report having started and less likely to be making the same use of this discount.]
28. The groups which differ in the degree of change in their use of bureau tariffs also differ in the use of the specific innovation of allowing sales people to have pricing authority. [The group making more use of bureau tariffs is more likely to have started and less likely to have used more, the same or less of this innovation. The group making about the same use of bureau tariffs is most likely to report never having made use of this innovation.]
29. The groups which differ in the degree of change in their use of bureau tariffs also differ in the use of the specific innovation of using road drivers to make peddle deliveries.
30. The groups which differ in the degree of change in their use of bureau tariffs also differ in their use of the specific innovation of the use of non-union terminal workers. [The group making more use of bureau tariffs is more likely to report having started or making more use of this innovation.]

APPENDIX G ONE (Continued)

31. The groups which differ in the degree of change in their use of bureau tariffs also differ in their use of the specific innovation of pricing after a complete market analysis. [The group making more use of bureau tariffs is the most likely to report having started this behavior but the least likely to report using more of it. The group using bureau tariffs to about the same degree is most likely to respond that they are making the same use of this innovation.]
32. The groups which differ in the degree of change in their use of bureau tariffs also differ in their use of the specific innovation of zip code pricing. [The group reporting about the same use of bureau tariffs is least likely to report having started and most likely to report never having used this innovation.]
33. The groups which differ in the degree of change in their use of bureau tariffs also differ in their use of the specific innovation of providing in-depth logistical analysis of a shipper's distribution system at carrier expense. [Those using bureau tariffs to about the same extent are least likely to report having started or having made more use of the innovation and the most likely to report making the same or less use of this innovation.]
34. The groups which differ in the degree of change in their use of bureau tariffs also differ in their use of the specific innovation of taking the lead in suggesting price service innovation to customers.
35. The groups which differ in the degree of change in their use of bureau tariffs also differ in their use of the specific innovation of adding service to new geographic areas. [The group making more use of bureau tariffs was most likely to report having started this behavior while the group making less use of bureau tariffs was most likely to have made more use of the innovation. The group using about the same amount of bureau tariffs was most likely to report making the same use of this innovation.]
36. The groups which differ in the degree of change in their use of bureau tariffs also differ in their use of the specific innovation of F.A.K. pricing. [The group making more use of bureau tariffs is most likely to report having started this innovation while the group making less use of bureau tariffs is most likely to report making more or the same use of the innovation.]
37. The groups which differ in the degree of change in their use of bureau tariffs also differ in their use of the specific innovation of using T.O.F.C. for line haul. [The group making more use of bureau tariffs is most likely to report having started or never having used this innovation.]

APPENDIX G ONE (Continued)

38. The groups which differ in the degree of change in their use of bureau tariffs also differ in the year the company was founded.

APPENDIX G SECTION TWO

QUANTITATIVE SUPPORT FOR STATEMENTS IN APPENDIX G

Data Summary and Value for χ^2

Appendix M Statement
and Questionnaire Item

	SBU	
	T	F
A 1 (2)		
CONTRACTS		
More than	15 (39.5%)	23 (60.5%)
About the Same	3 (7.7%)	36 (92.3%)
Less Than	0 (.0%)	2 (100.0%)
$\chi^2 = 11.66$		

	STATEMENT	
	T	F
A 2 (9)		
CONTRACTS		
More Than	23 (60.5%)	15 (39.5%)
About the Same	13 (31.7%)	28 (68.3%)
Less Than	0 (.0%)	2 (100.0%)
$\chi^2 = 8.27$		

APPENDIX G TWO (Continued)		SOME SHIPMENTS AT LOSS	
		T	F
A 3 (11)	CONTRACTS		
	More Than	33 (86.8%)	5 (13.2%)
	About the Same	24 (58.5%)	17 (41.5%)
	Less than	1 (50.0%)	1 (50.0%)
	$\chi^2 = 8.24$		
A 4 (25)	CONTRACTS	PERCENT OF TRAFFIC LOSING IS	
	More Than	More	Same
	About the Same	Less	
	Less Than	30 (78.9%)	7 (18.4%)
	$\chi^2 = 9.90$	30 (85.7%)	0 (0.0%)
		1 (100.0%)	0 (0.0%)

APPENDIX G TWO (Continued)			
SPECIAL TARIFFS OR ITEMS			
	More Than	About the Same	Less Than
A 5 (35b)			
CONTRACTS			
More Than	33 (91.7%)	1 (2.8%)	2 (5.6%)
About the Same	23 (60.5%)	15 (39.5%)	0 (.0%)
Less Than	2 (100.0%)	0 (.0%)	0 (.0%)
$\chi^2 = 16.98$			
A 6 (35c)			
CONTRACTS			
More Than	28 (87.5%)	2 (6.3%)	2 (6.3%)
About the Same	22 (57.9%)	16 (42.1%)	0 (.0%)
Less Than	2 (100.0%)	0 (.0%)	0 (.0%)
$\chi^2 = 14.28$			
SCHEDULES OF INDEPENDENT TARIFFS			
	More Than	About the Same	Less Than
	28 (87.5%)	2 (6.3%)	2 (6.3%)
	22 (57.9%)	16 (42.1%)	0 (.0%)
	2 (100.0%)	0 (.0%)	0 (.0%)

APPENDIX G TWO (Continued)		BUREAU TARIFFS NOW ARE			
		More Than	About the Same	Less Than	
A 7 (35d)	CONTRACTS				
	More Than	1 (3.0%)	3 (9.1%)	29 (87.9%)	
	About the Same	4 (10.8%)	15 (40.5%)	18 (48.6%)	
	Less Than	2 (100.0%)	0 (.0%)	0 (.0%)	
	$\chi^2 = 31.20$				
A 8 (35a)	TENDERING MINIMUM LTL (AGGREGATE DISC.)				
	CONTRACTS				
	More Than	14 (37.8%)	2 (5.4%)	1 (2.7%)	7 (18.9%)
	About the Same	16 (39.0%)	4 (9.8%)	2 (4.9%)	17 (41.5%)
	Less Than	0 (.0%)	0 (.0%)	1 (100.0%)	0 (.0%)
	$\chi^2 = 32.50$				

APPENDIX G TWO (Continued)						
MULTIPLE LTL BY TONNAGE						
	Started	More	Same	Less	Stopped	Never
A 9 (36b)						
CONTRACTS						
More Than	18 (48.6%)	3 (8.1%)	2 (5.4%)	0 (.0%)	0 (.0%)	14 (37.8%)
About the Same	9 (22.0%)	3 (7.3%)	3 (7.3%)	0 (.0%)	1 (2.4%)	25 (61.0%)
Less Than	0 (.0%)	0 (.0%)	0 (.0%)	1 (100.0%)	0 (.0%)	0 (.0%)
$\chi^2 = 86.21$						
A10 (36c)						
CONTRACTS						
More Than	21 (56.8%)	4 (10.8%)	2 (5.4%)	0 (.0%)	0 (.0%)	10 (27.0%)
About the Same	6 (14.6%)	1 (2.4%)	4 (9.8%)	0 (.0%)	1 (2.4%)	29 (70.7%)
Less Than	0 (.0%)	0 (.0%)	0 (.0%)	1 (100.0%)	0 (.0%)	0 (.0%)
$\chi^2 = 100.17$						
TOTAL SHIPMENTS MEASURED BY TONNAGE						

APPENDIX G TWO (Continued)		TOTAL SHIPMENTS MEASURED BY DOLLAR REVENUE				
		Started	More	Same	Stopped	Never
A11 (36d)	CONTRACTS					
	More Than	25 (67.6%)	5 (13.5%)	0 (.0%)	0 (.0%)	7 (18.9%)
	About the Same	6 (14.6%)	1 (2.4%)	5 (12.2%)	1 (2.4%)	28 (68.3%)
	Less Than	0 (.0%)	0 (.0%)	1 (100.0%)	0 (.0%)	0 (.0%)
	$\chi^2 = 44.77$					
A12 (36e)	CONTRACTS					
	More Than	6 (16.2%)	0 (.0%)	31 (83.8%)		
	About the Same	1 (2.5%)	0 (.0%)	39 (97.5%)		
	Less Than	0 (.0%)	1 (100.0%)	0 (.0%)		
	$\chi^2 = 82.43$					
	DAY OF DELIVERY					
	Started		Less	Never		

		APPENDIX G TWO (Continued)				
		TIME OF DAY OF DELIVERY				
CONTRACTS		Started	Same	Less	Never	
More Than		3 (8.3%)	1 (2.8%)	0 (.0%)	32 (88.9%)	
About the Same		0 (.0%)	2 (5.0%)	0 (.0%)	38 (95.0%)	
Less Than		0 (.0%)	0 (.0%)	1 (100.0%)	0 (.0%)	
	$\chi^2 = 80.70$					
		CUSTOMER TRANSPORT TO AND FROM TERMINAL				
CONTRACTS		Started	More	Same	Less	Never
More Than		5 (13.9%)	12 (33.3%)	12 (33.3%)	0 (.0%)	7 (19.4%)
About the Same		1 (2.4%)	1 (2.4%)	11 (26.8%)	1 (2.4%)	27 (65.9%)
Less Than		0 (.0%)	0 (.0%)	0 (.0%)	1 (100.0%)	0 (.0%)
	$\chi^2 = 62.93$					

A13 (36f)

A14 (36g)

		APPENDIX G TWO (Continued)					
		CONTINUOUS MOVEMENT, COMBINED MOVES AND/OR BACKHAUL					
		Started	More	Same	Less	Never	
A15 (36h)	CONTRACTS						
	More Than	9 (25.0%)	8 (22.2%)	5 (13.9%)	1 (2.8%)	13 (36.1%)	
	About the Same	6 (16.2%)	1 (2.7%)	5 (13.5%)	6 (16.2%)	19 (51.4%)	
	Less Than	0 (.0%)	0 (.0%)	0 (.0%)	1 (100.0%)	0 (.0%)	
	$\chi^2 = 18.80$						
A16 (36j)	CONTRACTS						
	More Than	10 (28.6%)	6 (17.1%)	6 (17.1%)	1 (2.9%)	2 (5.7%)	10 (28.6%)
	About the Same	8 (20.5%)	4 (10.3%)	9 (23.1%)	0 (.0%)	0 (.0%)	18 (46.2%)
	Less Than	0 (.0%)	0 (.0%)	0 (.0%)	1 (100.0%)	0 (.0%)	0 (.0%)
	$\chi^2 = 42.82$						
		TRANSPORTATION TO AND FROM AREAS					
	CONTRACTS						
	More Than	10 (28.6%)	6 (17.1%)	6 (17.1%)	1 (2.9%)	2 (5.7%)	10 (28.6%)
	About the Same	8 (20.5%)	4 (10.3%)	9 (23.1%)	0 (.0%)	0 (.0%)	18 (46.2%)
	Less Than	0 (.0%)	0 (.0%)	0 (.0%)	1 (100.0%)	0 (.0%)	0 (.0%)
	$\chi^2 = 42.82$						

		APPENDIX G TWO (Continued)			
		MARKETING PEOPLE PRICE			
		Started	More	Same	Never
A17 (37c)	CONTRACTS				
	More Than	12 (32.4%)	6 (16.2%)	0 (.0%)	19 (51.4%)
	About the Same	3 (7.3%)	4 (9.8%)	6 (14.6%)	28 (68.3%)
	Less Than	0 (.0%)	0 (.0%)	0 (.0%)	2 (100.0%)
	$\chi^2 = 14.95$				
A18 (37g)	ROAD DRIVERS PEDDLE				
	CONTRACTS				
	More Than	3 (8.1%)	14 (37.8%)	16 (43.2%)	4 (10.8%)
	About the Same	3 (7.5%)	11 (27.5%)	18 (45.0%)	8 (20.0%)
	Less Than	1 (50.0%)	0 (.0%)	0 (.0%)	1 (50.0%)
	$\chi^2 = 8.51$				

		APPENDIX G TWO (Continued)					
		PRICING AFTER COMPLETE MARKET ANALYSIS					
	CONTRACTS	Started	More	Same	Never		
A19 (371)	More Than	10 (27.0%)	18 (48.6%)	7 (18.9%)	2 (5.4%)		
	About the Same	4 (9.8%)	18 (43.9%)	11 (26.8%)	8 (19.5%)		
	Less Than	0 (0.0%)	0 (.0%)	0 (.0%)	2 (100.0%)		
	$\chi^2 = 18.15$						
A20 (37n)		TRIP LEASES WITH OWNER OPERATORS					
	CONTRACTS	Started	More	Same	Less	Stopped	Never
	More Than	8 (21.6%)	10 (27.0%)	11 (29.7%)	0 (.0%)	1 (2.7%)	7 (18.9%)
	About the Same	1 (2.4%)	9 (22.0%)	8 (19.5%)	2 (4.9%)	1 (2.4%)	20 (48.8%)
	Less Than	0 (.0%)	0 (.0%)	0 (.0%)	1 (50.0%)	0 (.0%)	1 (50.0%)
	$\chi^2 = 26.71$						

APPENDIX G TWO (Continued)		FREIGHT ALL KINDS (F.A.K.) PRICING					
		Started	More	Same	Never		
A21 (37w)	CONTRACTS						
	More Than	9 (24.3%)	19 (51.4%)	7 (18.9%)	2 (5.4%)		
	About the Same	6 (14.6%)	13 (31.7%)	14 (34.1%)	8 (19.5%)		
	Less Than	2 (100.0%)	0 (.0%)	0 (.0%)	0 (.0%)		
	X ² = 15.15						
A22 (40)	TYPE OF LOSS REPORTED						
	CONTRACTS						
	More Than	1. (5.3%)	2. (5.3%)	3. (2.6%)	4. (5.3%)	5. (15.8%)	6. (.0%)
	About the same	7. (2.6%)	8. (13.2%)	9. (50.0%)			
		1. (14.6%)	2. (7.3%)	3. (.0%)	4. (2.4%)	5. (14.6%)	6. (4.9%)
		7. (2.4%)	8. (9.8%)	9. (43.9%)			

APPENDIX G TWO (Continued)

	1.	2.	3.	4.	5.	6.
Less Than	0	0	1	0	0	0
	(.0%)	(.0%)	(50.0%)	(.0%)	(.0%)	(.0%)
7.	8.	9.				
0	1	0				
(.0%)	(50.0%)	(.0%)				

$\chi^2 = 27.99$

Type Code

- 1 = Balance and Backhaul
- 2 = Specific Named Commodities
- 3 = Interline Shipments
- 4 = Those Found by Cost Analysis
- 5 = Small Shipments
- 6 = All Shipments
- 7 = Major Accounts
- 8 = Other
- 9 = No Response or None

A23 (41)

SIZE OF COMPANY

	Small (0-100 Million)	Medium (100M-500M)	Large (500+ M)
CONTRACTS	22 (59.5%)	13 (35.1%)	2 (5.4%)
More Than	39 (97.5%)	1 (2.5%)	0 (.0%)
About the Same	2 (100.0%)	0 (.0%)	0 (.0%)
Less Than			
$\chi^2 = 17.79$			

APPENDIX G TWO (Continued)

		REVENUE DECREASES		
CONTRACTS		0-10	11-20	Over 20
More Than		7 (63.6%)	4 (36.4%)	0 (.0%)
About the Same		14 (73.7%)	3 (15.8%)	2 (10.5%)
Less Than		0 (.0%)	0 (.0%)	1 (100.0%)
$\chi^2 = 11.85$				

B 1 (6) WOULD CARRY A SHIPMENT AT A LOSS

		T	F
More Than		111 (94.9%)	6 (5.1%)
About the Same		20 (74.1%)	7 (25.9%)
Less Than		3 (75.0%)	1 (25.0%)
$\chi^2 = 12.28$			

A24 (44)

B 1 (6)

		APPENDIX G TWO (Continued)	
B 2 (12)		STILL LOSE	
	SPE T + I	T	F
	More Than	91 (78.4%)	25 (21.6%)
	About the Same	17 (63.0%)	10 (37.0%)
	Less Than	1 (25.0%)	3 (75.0%)
	$\chi^2 = 7.92$		
B 3 (13)		HARDER TO MAKE UP LOSS	
	SPE T + I	T	F
	More Than	113 (95.8%)	5 (4.2%)
	About the Same	25 (92.8%)	2 (7.4%)
	Less Than	2 (50.0%)	2 (50.0%)
	$\chi^2 = 14.38$		

APPENDIX G TWO (Continued)

WE NOW SUPPORT EFFORTS TO ROLL BACK OR SLOW

B 4 (15)

SPE T + I	T	F
More Than	74 (62.7%)	44 (37.3%)
About the Same	23 (85.2%)	4 (14.8%)
Less Than	4 (100.0%)	0 (.0%)

$\chi^2 = 7.04$

CONTRACTS COMPARED TO BUREAU TARIFFS

B 5 (20)

SPE T + I	Always Lower	Usually Lower	Rarely Lower	Do Not Do
More Than	49 (40.8%)	54 (45.0%)	1 (.8%)	16 (13.3%)
About the Same	8 (29.6%)	10 (37.0%)	2 (7.4%)	7 (25.9%)
Less Than	2 (50.5%)	1 (25.0%)	1 (25.0%)	0 (.0%)

$\chi^2 = 15.73$

APPENDIX G TWO (Continued)

SPECIAL TARIFFS AND ITEMS COMPARED TO BUREAU TARIFFS

B 6 (21)

SPE T + I	Always Lower	Usually Lower	Rarely Lower	Never Lower	Do Not Do
More Than	69 (57.5%)	47 (39.2%)	1 (.8%)	1 (.8%)	2 (1.7%)
About the Same	11 (40.7%)	10 (37.0%)	4 (14.8%)	0 (.0%)	2 (7.4%)
Less Than	2 (50.0%)	1 (25.0%)	1 (25.0%)	0 (.0%)	0 (.0%)
X ² = 19.90					

B 7 (24)

PERCENT OF TRAFFIC ACTUALLY LOSING MONEY

SPE T + I	None	1-24	25-49	50-74	75-99	All
More Than	3 (2.6%)	56 (48.3%)	31 (26.7%)	16 (13.8%)	9 (7.8%)	1 (.9%)
About the Same	3 (11.1%)	20 (74.1%)	4 (14.8%)	0 (.0%)	0 (.0%)	0 (.0%)
Less Than	1 (25.0%)	1 (25.0%)	1 (25.0%)	1 (25.0%)	0 (.0%)	0 (.0%)
X ² = 18.44						

APPENDIX G TWO (Continued)		WOULD TEND TO INITIATE PRICE COMPETITION		
		Often	Once in a While	Rarely
B 8 (30)	SPE T + I			
	More Than	25 (20.8%)	61 (50.8%)	34 (28.3%)
	About the Same	1 (3.8%)	9 (34.6%)	16 (61.5%)
	Less Than	1 (25.0%)	1 (25.0%)	2 (50.0%)
	$\chi^2 = 12.23$			
B 9 (35a)	CONTRACTS NOW ARE			
	SPE T + I			
	More Than	33 (56.9%)	23 (39.7%)	2 (3.4%)
	About the Same	1 (6.3%)	15 (93.8%)	0 (.0%)
	Less Than	2 (100.0%)	0 (.0%)	0 (.0%)
	$\chi^2 = 16.98$			

APPENDIX G TWO (Continued)						
		CONTRACT PERCENTAGE				
		0-20%	21-40%	41-60%	61-80%	81+ %
B10 (35a)	SPE T + I					
	More Than	106 (94.6%)	3 (2.7%)	1 (.9%)	1 (.9%)	1 (.9%)
	About the Same	21 (84.0%)	3 (12.0%)	1 (4.0%)	0 (.0%)	0 (.0%)
	Less Than	3 (75.0%)	0 (.0%)	1 (25.0%)	0 (.0%)	0 (.0%)
	$\chi^2 = 15.71$					
B11 (35c)	SPE T + I	SCHEDULES OF INDEPENDENT TARIFFS NOW ARE				
	More Than	90 (86.5%)	11 (10.6%)		3 (2.9%)	
	About the Same	5 (20.8%)	19 (79.2%)		0 (.0%)	
	Less Than	3 (100.0%)	0 (.0%)		0 (.0%)	
	$\chi^2 = 53.05$					

APPENDIX G TWO (Continued)		SCHEDULE OF INDEPENDENT TARIFF PERCENTAGE				
		0-20%	21-40%	41-60%	61-80%	81+ %
B12 (35c)	SPE T + I					
	More Than	71 (63.4%)	24 (21.4%)	10 (8.9%)	4 (3.6%)	3 (2.7%)
	About the Same	14 (56.0%)	4 (16.0%)	3 (12.0%)	2 (8.0%)	2 (8.0%)
	Less Than	1 (25.0%)	1 (25.0%)	0 (.0%)	0 (.0%)	2 (50.0%)
	$\chi^2 = 20.96$					
B13 (35d)	BUREAU TARIFFS NOW ARE					
	SPE T + I					
	More Than	21 (18.9%)	13 (11.7%)		77 (69.4%)	
	About the Same	2 (8.3%)	18 (75.0%)		4 (16.7%)	
	Less Than	0 (.0%)	1 (33.3%)		2 (66.7%)	
	$\chi^2 = 45.19$					

APPENDIX G TWO (Continued)

B14 (36a)

TENDERING MINIMUM LTL (AGGREGATE DISCOUNT)

SPE T + I	Started	More	Same	Less	Stopped	Never
More Than	53 (45.7%)	24 (20.7%)	6 (5.2%)	7 (6.0%)	2 (1.7%)	24 (20.7%)
About the Same	5 (19.2%)	1 (3.8%)	4 (15.4%)	0 (.0%)	0 (.0%)	16 (61.5%)
Less Than	2 (66.7%)	0 (.0%)	0 (.0%)	0 (.0%)	0 (.0%)	1 (33.3%)
						$\chi^2 = 26.32$

B15 (36c)

DISCOUNT FOR TOTAL SHIPMENTS BY TONNAGE

SPE T + I	Started	More	Same	Less	Stopped	Never
More Than	44 (38.3%)	11 (9.6%)	6 (5.2%)	2 (1.7%)	1 (.9%)	51 (44.3%)
About the Same	0 (.0%)	0 (.0%)	3 (12.0%)	0 (.0%)	0 (.0%)	22 (88.0%)
Less Than	0 (.0%)	0 (.0%)	1 (33.3%)	0 (.0%)	0 (.0%)	2 (66.7%)
						$\chi^2 = 26.09$

APPENDIX G TWO (Continued)

B16 (36e)

DAY OF DELIVERY DISCOUNT IF LATE

SPE T + I	Started	More	Same	Less	Never
More Than	8 (7.0%)	1 (.9%)	0 (.0%)	2 (1.8%)	103 (90.4%)
About the Same	0 (.0%)	0 (.0%)	1 (4.0%)	0 (.0%)	24 (96.0%)
Less Than	0 (.0%)	0 (.0%)	1 (33.3%)	0 (.0%)	2 (66.7%)
$\chi^2 = 27.48$					

B17 (36k)

REBATES OR REFUNDS

SPE T + I	Started	More	Same	Less	Never
More Than	52 (44.8%)	5 (4.3%)	0 (.0%)	1 (.9%)	58 (50.0%)
About the Same	2 (8.0%)	1 (4.0%)	1 (4.0%)	0 (.0%)	21 (84.0%)
Less Than	0 (.0%)	0 (.0%)	0 (.0%)	0 (.0%)	3 (100.0%)
$\chi^2 = 18.89$					

		APPENDIX G TWO (Continued)				
		"IT'S NEGOTIABLE" (NEGOTIABLE DISCOUNTS)				
	SPE T + I	Started	More	Same	Never	
B18 (361)	More Than	74 (64.9%)	18 (15.8%)	3 (2.6%)	19 (16.7%)	
	About the Same	9 (34.6%)	3 (11.5%)	6 (23.1%)	8 (30.8%)	
	Less Than	1 (33.3%)	2 (66.7%)	0 (.0%)	0 (.0%)	
	$\chi^2 = 25.82$					
		DISCOUNTS CALCULATED AS A % OFF BUREAU				
	SPE T + I	Started	More	Same	Less	Never
B19 (36m)	More Than	90 (76.9%)	16 (13.7%)	0 (.0%)	0 (.0%)	11 (9.4%)
	About the Same	8 (30.8%)	5 (19.2%)	3 (11.5%)	1 (3.8%)	9 (34.6%)
	Less Than	1 (33.3%)	0 (.0%)	0 (.0%)	0 (.0%)	2 (66.7%)
	$\chi^2 = 40.96$					

APPENDIX G TWO (Continued)		MARKETING PEOPLE PRICE				
B20 (37c)	SPE T + I	Started	More	Same	Never	
	More Than	27 (23.1%)	12 (10.3%)	8 (6.8%)	70 (59.8%)	
	About the Same	0 (.0%)	2 (7.7%)	3 (11.5%)	21 (80.8%)	
	Less Than	0 (.0%)	1 (33.3%)	1 (33.3%)	1 (33.3%)	
	X ² = 13.24					
APPENDIX G TWO (Continued)		KNOWLEDGE OF COMPETITORS				
B21 (37e)	SPE T + I	Started	More	Same	Less	Never
	More Than	27 (23.1%)	50 (42.7%)	23 (19.7%)	4 (3.4%)	13 (11.1%)
	About the Same	5 (20.0%)	7 (28.0%)	9 (36.0%)	0 (.0%)	4 (16.0%)
	Less Than	0 (.0%)	0 (.0%)	2 (66.7%)	1 (33.3%)	0 (.0%)
	X ² = 17.30					

APPENDIX G TWO (Continued)

B22 (37g)

ROAD DRIVERS "PEDDLE"

	Started	More	Same	Less	Never
SPE T + I					
More Than	21 (17.9%)	36 (30.8%)	47 (40.2%)	0 (.0%)	13 (11.1%)
About the Same	3 (11.5%)	8 (30.8%)	9 (34.6%)	0 (.0%)	6 (23.1%)
Less Than	0 (.0%)	0 (.0%)	0 (.0%)	1 (50.0%)	1 (50.0%)
X ² = 78.07					

B23 (37h)

NON-UNION DRIVERS

	Started	More	Same	Less	Stopped	Never
SPE T + I						
More Than	18 (15.3%)	18 (15.3%)	30 (25.4%)	1 (.8%)	0 (.0%)	51 (43.2%)
About the Same	2 (7.7%)	5 (19.2%)	8 (30.8%)	1 (3.8%)	0 (.0%)	10 (38.5%)
Less Than	0 (.0%)	0 (.0%)	2 (66.7%)	0 (.0%)	1 (33.3%)	0 (.0%)
X ² = 54.82						

		APPENDIX G TWO (Continued)					
		NON-UNION TERMINAL					
		Started	More	Same	Less	Stopped	Never
B24 (37i)	SPE T + I						
	More Than	10 (8.4%)	6 (13.4%)	28 (23.5%)	1 (.8%)	0 (.0%)	64 (53.8%)
	About the Same	0 (.0%)	5 (19.2%)	9 (34.6%)	1 (3.8%)	0 (.0%)	11 (42.3%)
	Less Than	0 (.0%)	0 (.0%)	1 (33.3%)	0 (.0%)	1 (33.3%)	1 (33.3%)
	X ² = 55.00						
B25 (37i)							
	PRICING AFTER MARKET ANALYSIS						
	SPE T + I						
	More Than	29 (24.4%)	53 (44.5%)	21 (17.6%)	16 (13.4%)		
	About the Same	1 (4.0%)	10 (40.0%)	10 (40.0%)	4 (16.0%)		
	Less Than	1 (33.3%)	0 (.0%)	2 (66.7%)	0 (.0%)		
	X ² = 13.46						

APPENDIX G TWO (Continued)

LOGISTICAL ANALYSIS AT CARRIER EXPENSE

	Started	More	Same	Less	Never
B26 (37p)					
SPE T + I					
More Than	16 (13.3%)	19 (15.8%)	15 (12.5%)	0 (.0%)	70 (58.3%)
About the Same	0 (.0%)	3 (11.5%)	5 (19.2%)	1 (3.8%)	17 (65.4%)
Less Than	0 (.0%)	0 (.0%)	1 (33.3%)	1 (33.3)	1 (33.3%)
$\chi^2 = 32.30$					

VENDING LOGISTICAL ANALYSIS

	Started	More	Same	Less	Never
B27 (37q)					
SPE T + I					
More Than	4 (3.4%)	2 (1.7%)	5 (4.3%)	1 (.9%)	105 (89.7%)
About the Same	1 (3.8%)	2 (7.7%)	2 (7.7%)	0 (.0%)	21 (80.8%)
Less Than	0 (.0%)	0 (.0%)	0 (.0%)	1 (33.3%)	2 (66.7%)
$\chi^2 = 26.95$					

		APPENDIX G TWO (Continued)				
		SERVICE AT NIGHT AND ON WEEKENDS				
	SPE T + I	Started	More	Same	Less	Never
B28 (37t)	More Than	4 (3.4%)	30 (25.2%)	67 (56.3%)	1 (.8%)	17 (14.3%)
	About the Same	0 (.0%)	7 (26.9%)	14 (53.8%)	2 (7.7%)	3 (11.5%)
	Less Than	0 (.0%)	0 (.0%)	1 (33.3%)	1 (33.3%)	1 (33.3%)
	$\chi^2 = 17.30$					
C 1 (2)		SBU, OR FIRM OWNED				
	Independent	T	F			
	More Than	21 (21.2%)	78 (78.8%)			
	About the Same	2 (6.3%)	30 (93.8%)			
	Less Than	2 (50.0%)	2 (50.0%)			
	$\chi^2 = 6.30$					

APPENDIX G TWO (Continued)	
PARENT COMPANY HAS OTHER BUSINESS	
	T F
C 2 (4)	
Independent	
More Than	18 (64.3%) (35.7%)
About the Same	0 (.0%) (100.0%)
Less Than	2 (100.0%) (.0%)
X ² = 8.75	
C 3 (6)	
WOULD CARRY SHIPMENTS AT A LOSS	
	T F
Independent	
More Than	95 (95.0%) (5.0%)
(About the Same	25 (75.8%) (24.2%)
Less Than	4 (100.0%) (.0%)
X ² = 11.13	

APPENDIX G TWO (Continued)

C 4 (18) POWERFUL SHIPPERS HAVE NEGOTIATED PRICE MUCH CLOSER TO COSTS

	T	F
Independent		
More Than	99 (97.1%)	3 (2.9%)
About the Same	29 (87.9%)	4 (12.1%)
Less Than	3 (75.0%)	1 (25.0%)
$\chi^2 = 6.69$		

C 5 (21) SPECIAL TARIFFS AND ITEMS COMPARED TO BUREAU

	Always Lower	Usually Lower	Rarely Lower	Never Lower	Do Not Do
Independent					
More Than	57 (55.9%)	43 (42.2%)	1 (1.0%)	0 (.0%)	1 (1.0%)
About the Same	15 (45.5)	11 (33.3%)	4 (12.1%)	1 (3.0%)	2 (6.1%)
Less Than	1 (25.0%)	3 (75.0%)	0 (.0%)	0 (.0%)	0 (.0%)
$\chi^2 = 17.78$					

		APPENDIX G TWO (Continued)				
		SCHEDULES OF INDEPENDENT TARIFFS COMPARED TO BUREAU				
		Always Lower	Usually Lower	Rarely Lower	Never Lower	Do Not Do
C 6 (22)	Independent					
	More Than	56 (54.9%)	42 (41.2%)	2 (2.0%)	0 (.0%)	2 (2.0%)
	About the Same	15 (45.5)	10 (30.3%)	3 (9.1%)	2 (6.1%)	3 (9.1%)
C 7 (24)	Less Than	1 (25.0%)	2 (50.0%)	0 (.0%)	0 (.0%)	1 (25.0%)
	X ² = 19.01					
		PERCENT OF TRAFFIC ACTUALLY LOSING MONEY				
C 7 (24)	Independent	None	1-24%	25-49%	50-74%	75-99%
	More Than	2 (2.0%)	49 (50.0%)	25 (25.5%)	13 (13.3%)	8 (8.2%)
	About the Same	4 (12.5%)	21 (65.6%)	6 (18.8%)	1 (3.1%)	0 (.0%)
C 7 (24)	Less Than	0 (.0%)	1 (25.0%)	1 (25.0%)	0 (.0%)	2 (50.0%)
	X ² = 25.59					

C 8 (35a)

APPENDIX G TWO (Continued)

CONTRACTS NOW ARE

APPENDIX G TWO (Continued)			
CONTRACTS NOW ARE			
	More Than	About the Same	Less Than
C 8 (35a)			
Independent			
More Than	28 (53.8%)	22 (42.3%)	2 (3.8%)
About the Same	2 (11.1%)	16 (88.9%)	0 (.0%)
Less Than	2 (100.0%)	0 (.0%)	0 (.0%)
$\chi^2 = 14.28$			
C 9 (35a)			
Independent			
More Than	92 (96.8%)	3 (3.2%)	0 (.0%)
About the Same	28 (87.5%)	2 (6.3%)	1 (3.1%)
Less Than	2 (50.0%)	0 (.0%)	1 (25.0%)
$\chi^2 = 54.02$			
CONTRACT PERCENTAGE			
	0-20%	21-40%	41-60%
			61-80%
			81 + %
	92 (96.8%)	3 (3.2%)	0 (.0%)
	28 (87.5%)	2 (6.3%)	1 (3.1%)
	2 (50.0%)	0 (.0%)	1 (25.0%)
			0 (.0%)

		APPENDIX G TWO (Continued)				
		SPECIAL TARIFFS OR SPECIAL ITEMS NOW ARE				
	Independent	More Than	About the Same	Less Than		
C10 (35b)	More Than	90 (91.8%)	5 (5.1%)	3 (3.1%)		
	About the Same	11 (36.7%)	19 (63.3%)	0 (.0%)		
	Less Than	3 (100.0%)	0 (.0%)	0 (.0%)		
		X ² = 53.05				
C11 (35b)	Independent	0-20%	21-40%	41-60%	61-80%	81 + %
	More Than	53 (55.8%)	28 (29.5%)	10 (10.5%)	4 (4.2%)	0 (.0%)
	About the Same	14 (43.8%)	9 (28.1%)	6 (18.8%)	1 (3.1%)	2 (6.3%)
	Less Than	0 (.0%)	2 (50.0%)	0 (.0%)	1 (25.0%)	1 (25.0%)
		X ² = 22.39				

C12 (35d)		APPENDIX G TWO (Continued)					
		BUREAU TARIFFS NOW ARE					
Independent		More Than	About the Same	Less Than			
More Than		18 (18.9%)	10 (10.5%)	67 (70.5%)			
About the Same		1 (3.3%)	19 (63.3%)	10 (33.3%)			
Less Than		0 (.0%)	1 (33.3%)	2 (66.7%)			
	$\chi^2 = 36.57$						
C13 (35d)		BUREAU TARIFFS PERCENTAGE					
Independent		0-20%	21-40%	41-60%	61-80%	81 + %	
More Than		24 (25.3%)	22 (23.2%)	26 (27.4%)	17 (17.9%)	6 (6.3%)	
About the Same		16 (50.0%)	4 (12.5%)	1 (3.1%)	5 (15.6%)	6 (18.8%)	
Less Than		4 (100.0%)	0 (.0%)	0 (.0%)	0 (.0%)	0 (.0%)	
	$\chi^2 = 24.83$						

APPENDIX G TWO (Continued)		OTHER TARIFF CATEGORIES NOW ARE					
Independent	More Than	About the Same	Less Than				
C14 (35e)	More Than	12 (42.9%)	11 (39.3%)	5 (17.9%)			
	About the Same	0 (.0%)	12 (92.3%)	1 (7.7%)			
	Less Than	1 (50.0%)	0 (.0%)	1 (50.0%)			
		X ² = 13.48					
C15 (36a)		TENDERING MINIMUM LTL (AGGREGATE DISCOUNT)					
Independent	More Than	Started	More	Same	Less	Stopped	Never
More Than	45 (45.5%)	20 (20.2%)	5 (5.1%)	7 (7.1%)	2 (2.0%)	20 (20.2%)	
About the Same	9 (28.1%)	2 (6.3%)	4 (12.5%)	0 (.0%)	0 (.0%)	17 (53.1%)	
Less Than	2 (66.7%)	0 (.0%)	0 (.0%)	1 (33.3%)	0 (.0%)	0 (.0%)	
		X ² = 24.69					

		APPENDIX G TWO (Continued)					
		DISCOUNT FOR TOTAL SHIPMENTS BY TONNAGE					
	Independent	Started	More	Same	Less	Stopped	Never
C16 (36c)	More Than	37 (37.8%)	9 (9.2%)	4 (4.1%)	2 (2.0%)	1 (1.0%)	45 (45.9%)
	About the Same	3 (9.4%)	0 (.0%)	5 (15.6%)	0 (.0%)	0 (.0%)	24 (75.0%)
	Less Than	2 (66.7%)	0 (.0%)	0 (.0%)	0 (.0%)	0 (.0%)	1 (33.3%)
	$\chi^2 = 20.69$						
C17 (36j)	Independent	DISCOUNT, : TRANSPORT TO AND FROM CERTAIN AREAS					
	More Than	28 (29.2%)	18 (18.8%)	20 (20.8%)	1 (1.0%)	2 (2.1%)	27 (28.1%)
	About the Same	5 (16.7%)	3 (10.0%)	5 (16.7%)	0 (.0%)	0 (.0%)	17 (56.7%)
	Less Than	2 (66.7%)	0 (.0%)	0 (.0%)	1 (33.3%)	0 (.0%)	0 (.0%)
	$\chi^2 = 32.83$						

APPENDIX G TWO (Continued)

C18 (361)

INDIVIDUALLY NEGOTIATED DISCOUNTS

Independent	Started	More	Same	Never
More Than	61 (62.9%)	17 (17.5%)(3 (3.1%)	16 (16.5%)
About the Same	12 (37.5%)	6 (18.8%)	6 (18.8%)	8 (25.0%)
Less Than	2 (66.7%)	0 (.0%)	0 (.0%)	1 (33.3%)

$\chi^2 = 13.45$

C19 (36m)

DISCOUNTS; PERCENT OFF BUREAU

Independent	Started	More	Same	Less	Never
More than	73 (73.7%)	15 (15.2%)	0 (.0%)	0 (.0%)	11 (11.1%)
About the Same	14 (42.4%)	4 (12.1%)	2 (6.1%)	1 (3.0%)	12 (36.4%)
Less Than	2 (66.7%)	0 (.0%)	0 (.0%)	0 (.0%)	1 (33.3%)

$\chi^2 = 22.84$

		APPENDIX G TWO (Continued)			
		ZIP CODE PRICING			
		Started	More	Stopped	Never
C22 (37m)	Independent				
	More Than	64 (62.7%)	4 (3.9%)	0 (.0%)	34 (33.3%)
	About the Same	11 (34.4%)	3 (9.4%)	1 (3.1%)	17 (53.1%)
	Less Than	1 (25.0%)	0 (.0%)	0 (.0%)	3 (75.0%)
	$\chi^2 = 12.98$				
C23 (37o)		FORMULA PRICING			
	Independent				
	More Than	24 (23.8%)	8 (7.9%)	5 (5.0%)	2 (2.0%)
	About the Same	1 (3.2%)	3 (9.7%)	4 (12.9%)	0 (.0%)
	Less Than	1 (33.3%)	0 (.0%)	0 (.0%)	1 (33.3%)
	$\chi^2 = 23.14$				

APPENDIX G TWO (Continued)

C24 (37r)

TAKING THE LEAD

Independent	Started	More	Same	Less	Never
More Than	36 (35.3%)	32 (31.4%)	24 (23.5%)	1 (1.0%)	9 (8.8%)
About the Same	3 (9.4%)	8 (25.0%)	12 (37.5%)	0 (.0%)	9 (28.1%)
Less Than	0 (.0%)	2 (50.0%)	1 (25.0%)	0 (.0%)	1 (25.0%)
$\chi^2 = 16.90$					

C25 (37w)

FREIGHT ALL KINDS (F.A.K.) PRICING

Independent	Started	More	Same	Less	Never
More Than	33 (32.4%)	38 (37.3%)	21 (20.6%)	2 (2.0%)	8 (7.8%)
About the Same	2 (6.5%)	9 (29.0%)	12 (38.7%)	0 (.0%)	8 (25.8%)
Less Than	2 (50.0%)	1 (25.0%)	1 (25.0%)	0 (.0%)	0 (.0%)
$\chi^2 = 18.17$					

APPENDIX G TWO (Continued)

D 1 (3) PARENT COMPANY ENCOURAGING INVESTMENT IN TRUCK TRANSPORT

Bureau	T	F
More Than	1 (14.3%)	6 (85.7%)
About the Same	3 (60.0%)	2 (40.0%)
Less Than	15 (68.2%)	7 (31.8%)
$\chi^2 = 6.30$		

D 2 (6) WOULD CARRY SHIPMENTS AT A LOSS

Bureau	T	F
More Than	18 (78.3%)	5 (21.7%)
About the Same	31 (77.5%)	9 (22.5%)
Less Than	83 (97.6%)	2 (2.4%)
$\chi^2 = 14.82$		

APPENDIX G TWO (Continued)

D 3 (11) BEFORE DEREGULATION THE TARIFF STRUCTURE FORCED US TO CARRY SOME SHIPMENTS AT A LOSS

	T	F
Bureau		
More Than	12 (50.0%)	12 (50.0%)
About the Same	29 (72.5%)	11 (27.5%)
Less Than	67 (77.9%)	19 (22.1%)
$\chi^2 = 7.26$		

D 4 (13) HARDER TO MAKE UP LOSS DUE TO INCREASED COMPETITION

	T	F
Bureau		
More Than	19 (79.2%)	5 (20.8%)
About the Same	38 (95.0%)	2 (5.0%)
Less Than	83 (97.6%)	2 (2.4%)
$\chi^2 = 11.37$		

APPENDIX G TWO (Continued)

D 5 (14) SHIPMENTS LOSE MONEY ON AND MAKE MONEY ON HAVE CHANGED

	T	F
Bureau		
More Than	20 (80.0%)	5 (20.0%)
About the Same	17 (43.6%)	22 (56.4%)
Less Than	57 (67.1%)	28 (32.9%)
$\chi^2 = 10.01$		

D 6 (15) NOW SUPPORT EFFORTS TO ROLL BACK OR SLOW DEREGULATION

	T	F
Bureau		
More Than	20 (83.3%)	4 (16.7%)
About the Same	32 (80.0%)	8 (20.0%)
Less Than	51 (60.0%)	34 (40.0%)
$\chi^2 = 7.80$		

		APPENDIX G TWO (Continued)				
		CONTRACTS COMPARED TO BUREAU				
	Bureau	Always Lower	Usually Lower	Rarely Lower	Never Lower	Do Not Do
D 7 (20)	More Than	5 (20.0%)	16 (64.0%)	0 (.0%)	0 (.0%)	4 (16.0%)
	About the Same	12 (30.0%)	11 (27.5%)	2 (5.0%)	1 (2.5%)	14 (35.0%)
	Less Than	40 (46.5%)	34 (39.5%)	3 (3.5%)	0 (.0%)	9 (10.5%)
	$\chi^2 = 22.79$					
		SPECIAL TARIFFS AND ITEMS COMPARED TO BUREAU				
	Bureau	Always Lower	Usually Lower	Rarely Lower	Never Lower	Do Not Do
D 8 (21)	More Than	7 (28.0%)	16 (64.0%)	0 (.0%)	0 (.0%)	2 (8.0%)
	About the Same	15 (37.5%)	13 (32.5%)	5 (12.5%)	1 (2.5%)	6 (15.0%)
	Less Than	58 (67.4%)	25 (29.1%)	2 (2.3%)	1 (1.2%)	0 (.0%)
	$\chi^2 = 35.18$					

APPENDIX G TWO (Continued)

D 9 (22) SCHEDULES OF INDEPENDENT TARIFFS COMPARED TO BUREAU

Bureau	Always Lower	Usually Lower	Rarely Lower	Never Lower	Do Not Do
More Than	9 (36.0%)	12 (48.0%)	0 (.0%)	0 (.0%)	4 (16.0%)
About the Same	13 (32.5%)	12 (30.0%)	5 (12.5%)	2 (5.0%)	8 (20.0%)
Less Than	51 (60.0%)	27 (31.8%)	1 (1.2%)	1 (1.2%)	5 (5.9%)
X ² = 24.84					

D10 (23) RATES EXTREMELY CLOSE TO COSTS (% OF TRAFFIC)

Bureau	None	1-24%	25-49%	50-74%	75-99%	All
More Than	1 (4.0%)	5 (20.0%)	7 (28.0%)	2 (8.0%)	5 (20.0%)	5 (20.0%)
About the Same	0 (.0%)	7 (17.9%)	7 (17.9%)	10 (25.6%)	9 (23.1%)	6 (15.4%)
Less Than	0 (.0%)	8 (9.4%)	12 (14.1%)	26 (30.6%)	33 (38.8%)	6 (7.1%)
X ² = 20.32						

APPENDIX G TWO (Continued)

D11 (31) HOW DID YOU FEEL ABOUT DEREGULATION BEFORE IT WAS PASSED INTO LAW

Bureau	S.A.	M.A.	N	M.F.	S.F.
More Than	17 (68.0%)	1 (4.0%)	2 (8.0%)	1 (4.0%)	4 (16.0%)
About the Same	26 (65.0%)	8 (20.0%)	1 (2.5%)	5 (12.5%)	0 (.0%)
Less Than	50 (58.1%)	21 (24.4%)	3 (3.5%)	9 (10.5%)	3 (3.5%)
$\chi^2 = 16.00$					

D12 (34)

WE ARE PRIMARILY A

Bureau	Local Carrier	Regional Carrier	National Carrier
More Than	9 (36.0%)	16 (64.0%)	0 (.0%)
About the Same	17 (43.6%)	20 (51.3%)	2 (5.1%)
Less Than	17 (19.8%)	63 (73.3%)	6 (7.0%)
$\chi^2 = 9.61$			

APPENDIX G TWO (Continued)

D13 (35a)

CONTRACTS NOW ARE

Bureau	More Than	About the Same	Less Than
More Than	1 (14.3%)	4 (57.1%)	2 (28.6%)
About the Same	3 (16.7%)	15 (83.3%)	0 (.0%)
Less Than	29 (61.7%)	18 (38.3%)	0 (.0%)

$\chi^2 = 31.20$

D14 (35b)

SPECIAL TARIFFS AND ITEMS NOW ARE

Bureau	More Than	About the Same	Less Than
More Than	21 (91.3%)	2 (8.7%)	0 (.0%)
About the Same	13 (40.6%)	18 (56.3%)	1 (3.1%)
Less Than	77 (92.8%)	4 (4.8%)	2 (2.4%)

$\chi^2 = 45.19$

		APPENDIX G TWO (Continued)				
		SPECIAL TARIFF AND ITEM PERCENTAGE				
		0-20%	21-40%	41-60%	61-80%	81 + %
D15 (35b)	Bureau					
	More Than	4 (21.1%)	11 (57.9%)	4 (21.1%)	0 (.0%)	0 (.0%)
	About the same	23 (60.5%)	7 (18.4%)	4 (10.5%)	2 (5.3%)	2 (5.3%)
	Less Than	46 (54.8%)	25 (29.8%)	11 (13.1%)	2 (2.4%)	0 (.0%)
	$\chi^2 = 18.55$					
D16 (35c)	Bureau					
	More Than	18 (94.7%)	1 (5.3%)	0 (.0%)		
	About the Same	10 (33.3%)	19 (63.3%)	1 (3.3%)		
	Less Than	67 (84.8%)	10 (12.7%)	2 (2.5%)		
	$\chi^2 = 36.58$					

SCHEDULES OF INDEPENDENT TARIFFS NOW ARE

More Than About the Same Less Than

		APPENDIX G TWO (Continued)				
		BUREAU TARIFF PERCENTAGE				
		0-20%	21-40%	41-60%	61-80%	81 + %
D17 (35d)	Bureau					
	More Than	3 (15.8%)	6 (31.6%)	8 (42.1%)	2 (10.5%)	0 (.0%)
	About the same	13 (34.2%)	4 (10.5%)	2 (5.3%)	6 (15.8%)	13 (34.2%)
	Less Than	19 (22.6%)	18 (21.4%)	22 (26.2%)	19 (22.6%)	6 (7.1%)
	$\chi^2 = 32.59$					
D18 (35e)		OTHER TARIFFS NOW ARE				
	Bureau					
	More Than	8 (66.7%)	3 (25.0%)		1 (8.3%)	
	About the Same	0 (.0%)	7 (87.5%)		1 (12.5%)	
	Less Than	6 (27.3%)	11 (50.0%)		5 (22.7%)	
	$\chi^2 = 11.73$					

		APPENDIX G TWO (Continued)					
		TENDERING MINIMUM LTL (AGGREGATE DISCOUNT)					
	Bureau	Started	More	Same	Less	Stopped	Never
D19 (36a)	More Than	13 (54.2%)	3 (12.5%)	0 (.0%)	1 (4.2%)	1 (4.2%)	6 (25.0%)
	About the Same	7 (18.9%)	3 (8.1%)	5 (13.5%)	1 (2.7%)	0 (.0%)	21 (56.8%)
	Less Than	39 (47.0%)	17 (20.5%)	5 (6.0%)	6 (7.2%)	1 (1.2%)	15 (18.1%)
							$\chi^2 = 29.09$
		(DISCOUNT FOR) TOTAL SHIPMENTS MEASURED BY \$ REVENUE WITHIN A TIME PERIOD					
	Bureau	Started	More	Same	Stopped	Never	
D20 (36d)	More Than	2 (8.7%)	4 (17.4%)	2 (8.7%)	0 (.0%)	15 (65.2%)	
	About the Same	5 (13.5%)	3 (8.1%)	6 (16.2%)	0 (.0%)	23 (62.2%)	
	Less Than	40 (48.2%)	6 (7.2%)	1 (1.2%)	1 (1.2%)	35 (42.2%)	
							$\chi^2 = 29.55$

APPENDIX G TWO (Continued)

D21 (36e)

DISCOUNT FOR DAY OF DELIVERY

Bureau	Started	More	Same	Less	Never
More Than	0 (.0%)	1 (4.5%)	1 (4.5%)	1 (4.5%)	19 (86.4%)
About the Same	0 (.0%)	0 (.0%)	0 (.0%)	0 (.0%)	36 (100.0%)
Less Than	8 (9.6%)	0 (.0%)	0 (.0%)	1 (1.2%)	74 (89.2%)

 $\chi^2 = 18.86$

D22 (36f)

DISCOUNT FOR TIME OF DAY OF DELIVERY

Bureau	Started	More	Same	Less	Never
More Than	1 (4.8%)	2 (9.5%)	2 (9.5%)	1 (4.8%)	15 (71.4%)
About the Same	0 (.0%)	1 (2.7%)	3 (8.1%)	0 (.0%)	33 (89.2%)
Less Than	3 (3.7%)	0 (.0%)	0 (.0%)	0 (.0%)	77 (96.2%)

 $\chi^2 = 22.21$

APPENDIX G TWO (Continued)

D23 (36g)

DISCOUNT FOR CUSTOMER TRANSPORT TO AND FROM THE TERMINAL

Bureau	Started	More	Same	Less	Stopped	Never
More Than	2 (8.7%)	6 (26.1%)	1 (4.3%)	1 (4.3%)	0 (.0%)	13 (56.5%)
About the Same	1 (2.6%)	6 (15.8%)	4 (10.5%)	1 (2.6%)	0 (.0%)	26 (68.4%)
Less Than	8 (9.6%)	15 (18.1%)	29 (34.9%)	2 (2.4%)	1 (1.2%)	28 (33.7%)
X ² = 21.77						

D24 (36m)

DISCOUNT CALCULATED AS A % OFF A BUREAU TARIFF

Bureau	Started	More	Same	Less	Never
More Than	16 (66.7%)	4 (16.7%)	0 (.0%)	0 (.0%)	4 (16.7%)
About the Same	17 (44.7%)	5 (13.2%)	3 (7.9%)	1 (2.6%)	12 (31.6%)
Less Than	64 (76.2%)	11 (13.1%)	0 (.0%)	0 (.0%)	9 (10.7%)
X ² = 22.10					

		APPENDIX G TWO (Continued)				
		(INNOVATION) USING SHIPPERS REPORTS				
Bureau		Started	More	Same	Less	Never
D25 (37a)	More Than	9 (36.0%)	1 (4.0%)	1 (4.0%)	0 (.0%)	14 (56.0%)
	About the Same	4 (10.5%)	4 (10.5%)	9 (23.7%)	1 (2.6%)	20 (52.6%)
	Less Than	16 (18.6%)	30 (34.9%)	12 (14.0%)	0 (.0%)	28 (32.6%)
	$\chi^2 = 27.63$					
		ALLOWED MARKETING PEOPLE TO HAVE PRICING AUTHORITY				
Bureau		Started	More	Same	Never	
D26 (37c)	More Than	8 (32.0%)	0 (.0%)	0 (.0%)	17 (68.0%)	
	About the Same	3 (7.9%)	1 (2.6%)	5 (13.2%)	29 (76.3%)	
	Less Than	16 (19.3%)	13 (15.7%)	4 (4.8%)	50 (60.2%)	
	$\chi^2 = 18.16$					

		APPENDIX G TWO (Continued)				
		KNOWLEDGE OF COMPETITION				
	Bureau	Started	More	Same	Less	Never
D27 (37e)	More Than	11 (45.8%)	5 (20.8%)	3 (12.5%)	0 (.0%)	5 (20.8%)
	About the Same	6 (16.2%)	11 (29.7%)	12 (32.4%)	0 (.0%)	8 (21.6%)
	Less Than	15 (17.9%)	39 (46.4%)	19 (22.6%)	5 (6.0%)	6 (7.1%)
	$\chi^2 = 23.07$					
		SALES PEOPLE PRICE				
	Bureau	Started	More	Same	Less	Never
D28 (37f)	More Than	9 (36.0%)	0 (.0%)	0 (.0%)	0 (.0%)	16 (64.0%)
	About the Same	4 (10.5%)	1 (2.6%)	3 (7.9%)	2 (5.3%)	28 (73.7%)
	Less Than	14 (16.3%)	13 (15.1%)	9 (10.5%)	1 (1.2%)	49 (57.0%)
	$\chi^2 = 19.61$					

APPENDIX G TWO (Continued)

D29 (37g)

ROAD DRIVERS "PEDDLE"

Bureau	Started	More	Same	Never
More Than	9 (37.5%)	5 (20.8%)	4 (16.7%)	6 (25.0%)
About the Same	5 (13.5%)	9 (24.3%)	17 (45.9%)	6 (16.2%)
Less Than	10 (11.9%)	30 (35.7%)	35 (41.7%)	9 (10.7%)
$\chi^2 = 16.07$				

D30 (37i)

NON-UNION TERMINAL WORKERS

Bureau	Started	More	Same	Less	Never
More Than	3 (12.0%)	5 (20.0%)	3 (12.0%)	0 (.0%)	14 (56.0%)
About the Same	4 (10.5%)	2 (5.3%)	18 (47.4%)	1 (2.6%)	13 (34.2%)
Less Than	3 (3.5%)	10 (11.8%)	21 (24.7%)	1 (1.2%)	50 (58.8%)
$\chi^2 = 17.55$					

APPENDIX G TWO (Continued)

D31 (371)

PRICING AFTER MARKET ANALYSIS

Bureau	Started	More	Same	Never
More Than	7 (29.2%)	5 (20.8%)	6 (25.0%)	6 (25.0%)
About the Same	2 (5.4%)	15 (40.5%)	11 (29.7%)	9 (24.3%)
Less Than	20 (23.3%)	42 (48.8%)	17 (19.8%)	7 (8.1%)
$\chi^2 = 16.60$				

D32 (37m)

ZIP CODE PRICING

Bureau	Started	More	Stopped	Never
More Than	10 (40.0%)	2 (8.0%)	0 (.0%)	13 (52.0%)
About the Same	13 (34.2%)	3 (7.9%)	1 (2.6%)	21 (55.3%)
Less Than	57 (67.1%)	2 (2.4%)	0 (.0%)	26 (30.6%)
$\chi^2 = 16.54$				

APPENDIX G TWO (Continued)

D33 (37p) LOGISTICAL ANALYSIS AT CARRIER EXPENSE

Bureau	Started	More	Same	Less	Never
More Than	6 (24.0%)	2 (8.0%)	0 (.0%)	0 (.0%)	17 (68.0%)
About the Same	1 (2.6%)	2 (5.3%)	9 (23.7%)	1 (2.6%)	25 (65.8%)
Less Than	10 (11.6%)	15 (17.4%)	14 (16.3%)	0 (.0%)	47 (54.7%)
X ² = 19.03					

D34 (37r) TAKING THE LEAD IN SUGGESTING PRICE/SERVICE INNOVATION

Bureau	Started	More	Same	Less	Never
More Than	11 (44.0%)	4 (16.0%)	2 (8.0%)	1 (4.0%)	7 (28.0%)
About the Same	5 (13.5%)	7 (18.9%)	16 (43.2%)	0 (.0%)	9 (24.3%)
Less Than	22 (25.6%)	32 (37.2%)	22 (25.6%)	0 (.0%)	10 (11.6%)
X ² = 26.32					

D35 (37u)		APPENDIX G TWO (Continued)					
NEW GEOGRAPHIC AREAS		Started	More	Same	Less	Stopped	Never
Bureau		13	5	3	1	0	3
More Than		(52.0%)	(20.0%)	(12.0%)	(4.0%)	(.0%)	(12.0%)
About the Same		7	14	14	0	1	2
Less Than		(18.4%)	(36.8%)	(36.8%)	(.0%)	(2.6%)	(5.3%)
	$\chi^2 = 24.25$	25	44	13	1	1	2
		(29.1%)	(51.2%)	(15.1%)	(1.2%)	(1.2%)	(2.3%)
D36 (37w)		FREIGHT ALL KINDS (F.A.K.) PRICING					
Bureau		Started	More	Same	Less	Never	
More Than		12	4	1	0	8	
About the Same		(48.0%)	(16.0%)	(4.0%)	(.0%)	(32.0%)	
Less Than		5	11	9	0	12	
	$\chi^2 = 30.19$	(13.5%)	(29.7%)	(24.3%)	(.0%)	(32.4%)	
		20	32	26	2	6	
		(23.3%)	(37.2%)	(30.2%)	(2.3%)	(7.0%)	

		APPENDIX G TWO (Continued)					
		PIGGYBACK (T.O.F.C.) FOR LINE HAUL					
Bureau		Started	More	Same	Less	Never	
D37 (37x)	More Than	5 (20.0%)	0 (.0%)	1 (4.0%)	0 (.0%)	19 (76.0%)	
	About the Same	3 (7.9%)	6 (15.8%)	6 (15.8%)	0 (.0%)	23 (60.5%)	
	Less Than	6 (7.1%)	14 (16.5%)	19 (22.4%)	6 (7.1%)	40 (47.1%)	
	$\chi^2 = 19.03$						
D38 (45)		YEAR COMPANY FOUNDED					
	Bureau	Before 1930	1930-39	1940-49	1950-59	1960-69	1970-79
	More Than	11 (45.8%)	3 (12.5%)	6 (25.0%)	3 (12.5%)	0 (.0%)	1 (4.2%)
	About the Same	14 (37.8%)	4 (10.8%)	9 (24.3%)	2 (5.4%)	6 (16.2%)	2 (5.4%)
	Less Than	19 (22.9%)	29 (34.9%)	14 (16.9%)	9 (10.8%)	4 (4.8%)	8 (9.6%)
	$\chi^2 = 21.72$						

APPENDIX H
ASPECTS OF RATE BEHAVIOR
CROSS-TABULATED BY THE
FIRMS SIZE AND PROFITABILITY
[$\alpha = .05$ FOR STATISTICALLY SIGNIFICANT DIFFERENCES]

Relationships Between Aspects of Rate Behavior and the Final Size and Profitability

In this cross-tabulation, the groups identified as using contracts, special tariffs, items and schedules which are "always" or "usually" lower than bureau tariffs (Questions 20, 21 and 22) are compared with respondents not falling into these groups along the axes of size and profitability. These relationships are summarized below.

Contracts Behavior, Size and Profitability

- a. Cross-tabulating the respondents contract behavior with respect to whether contracts are always, usually, rarely or never lower by the size of the company classified as small (0-100 million), medium (100-500 million), or large (500+ million) did not yield a statistically significant result.
- b. Cross-tabulating the respondents contract behavior as classified above by the operating ratio (profitability) of the firm classified as under 90%, 90-100% or over 100% did yield a statistically significant result. [Those responding rarely lower were less likely to be unprofitable than those responding in other categories.]

OPERATING RATIO

Contracts	Under 90%	90-100%	Over 100%
Always Lower	10 (15.9%)	40 (63.5%)	13 (20.6%)
Usually Lower	6 (8.3%)	60 (83.3%)	6 (8.3%)
Rarely Lower	1 (14.3%)	6 (85.7%)	0 (.0%)
Never Lower	0 (.0%)	0 (.0%)	1 (100.0%)
Do Not Do	6 (20.7%)	18 (62.1%)	5 (17.2%)

$$\chi^2 = 15.88$$

Special Tariffs and Items, Size and Profitability

- a. Cross-tabulating the respondents special tariff and special item behavior with respect to whether they are always, usually, rarely or never lower by size of the company classified as small (0-100 million), medium (100-500 million) or large (500 + million) did not yield a statistically significant result.
- b. Cross-tabulating the respondents contract behavior as classified above by operating ratio (profitability) of the firm as classified above did not yield a statistically significant result.

APPENDIX H (Continued)

Schedules of Independent Tariffs, Size and Profitability

- a. Cross-tabulating the respondent's independent tariff schedule behavior with respect to whether these schedules are always, usually, rarely or never lower by size of the company classified as small (0-100 million), medium (100-500 million) or large (500 + million) did not yield a statistically significant result.
- b. Cross-tabulating the respondent's independent tariff schedule behavior as classified above by the the firms operating ratio (profitability) as classified above did not yield a statistically significant result.

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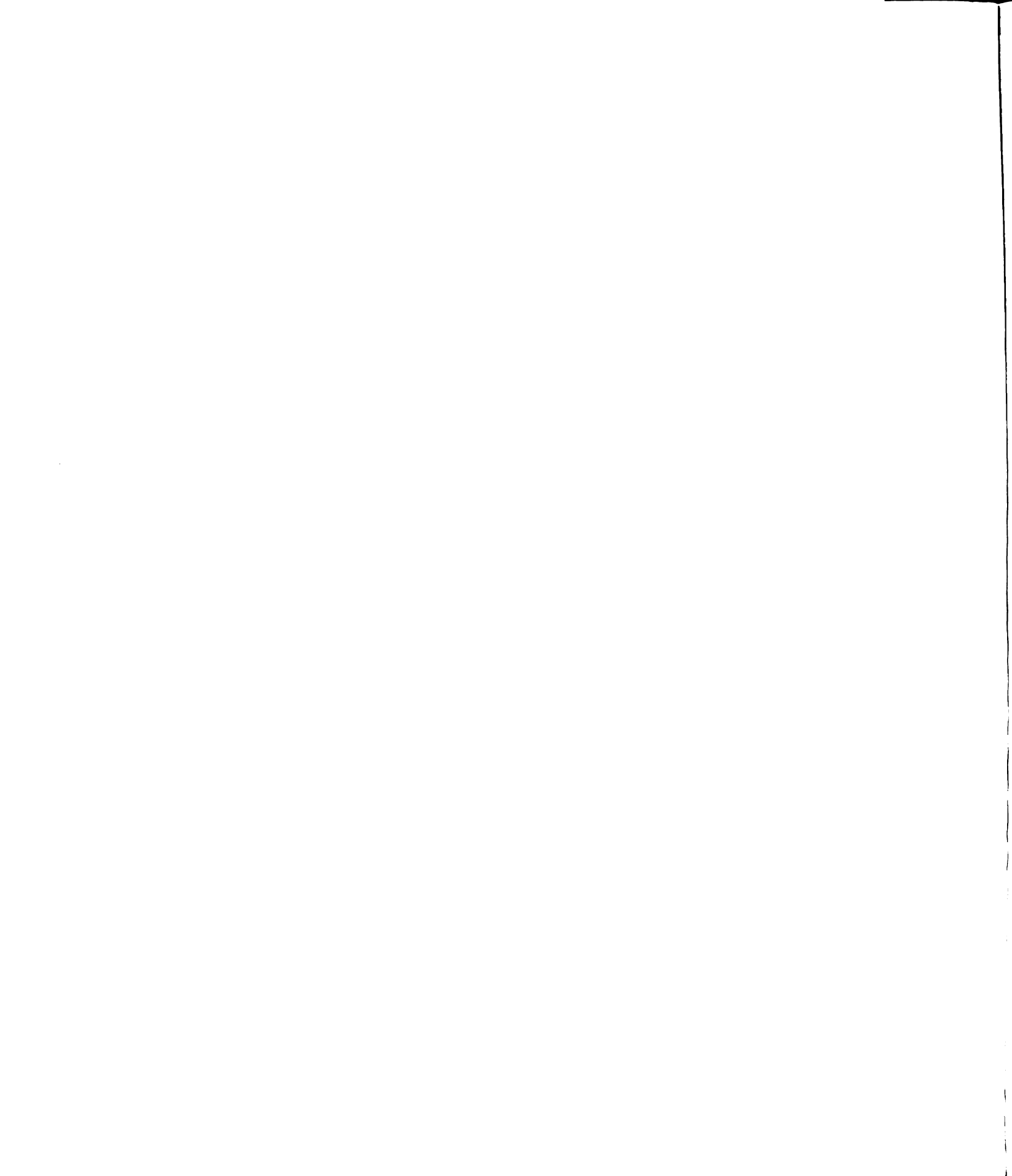
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