

The foundations of franchise regulation: Issues and evidence

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1. Introduction

Franchisors and franchisees jointly produce a product or service. Each party may disagree over their relative contributions to the success or the failure of the joint enterprise. For example, the franchisor may feel its promotional campaign was the key to the franchise's success, while the franchisee may place more importance on its local sales effort. Alternatively, if the franchise is failing, the franchisor may blame the franchisee's level of service, while the franchisee blames the franchisor's failure adequately to promote and develop the enterprise.

Not surprisingly in a society as litigious as ours, franchisor-franchisee disputes sometimes end up in court. In the early history of franchising, some courts refused to enforce the contract at all, whether it was the franchisee refusing to follow terms of the agreement such as accepting certain shipments from the franchisor or the franchisor using the contractual clause that it could terminate at will. Because of this termination power, some courts held that no aspect of the contract was enforceable because it lacked 'consideration.'¹ By about 1940, however, most courts had recognized that franchise contracts were enforceable even if terminable at will².

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¹ See e.g., *Miami Coca-Cola Bottling Co. v. Orange Crush Coke*, 296 F. 693 (5th Cir. 1924), Rittenberg (1934), Gellhorn (1967).

² See, e.g., *Bushwick-Decatur Motors, Inc. v. Ford Motor Co.*, 116 F. 2d 675, 676 (2d Cir. 1940), Gellhorn (1967).

More recently, legislatures and government agencies have favoured, or even mandated, a particular result in litigation or otherwise attempted to regulate the franchise relationship. Most of these efforts have been justified as remedying an alleged imbalance between franchisors and franchisees, and thus to protect the franchisee. One form of regulation involves pre-contractual disclosures to potential franchisees. The Federal Trade Commission's Rule, 'Disclosure Requirements and Prohibitions Concerning Franchising and Business Opportunity Ventures,' became effective in October, 1979. This rule requires that potential franchisees receive detailed information concerning the contractual rights, restrictions, and responsibilities of both parties, business facts such as the cost of starting the enterprise and what assistance the franchisor will provide, financial information about the franchisor, including the business and bankruptcy history of the franchisor and key employees, and a list of other franchisees. Moreover, if the franchisor makes earnings claims, the franchisor must also provide additional information elaborating on the claims³. Some states require additional disclosures.

A second type of legislation involves interpretation of the franchisor's termination power, establishing procedures and standards that must be followed. For example, at the federal level the Petroleum Marketing Practices Act (PMPA) imposes a 'good cause' limitation on termination and non-renewal of the franchises for the marketing and distribution of petroleum products. Another federal statute covers automobile dealers, and some states have statutes for particular industries or franchises in general⁴.

A third form of recent regulation includes judicial decisions. Some judges, often relying on legislative pronouncements voiding 'unconscionable' contracts or requiring that contracts be performed in 'good faith,' have ruled in favour of franchisees, particularly in termination disputes (Lockerby, 1985). Although these developments have increased the ability of franchisees to prevail in contractual litigation, they have stopped short of restricting the franchisor's ability to specify performance requirements for its franchisees. Thus, even under 'good cause' statutes, such as the PMPA, franchisors can terminate franchisees who do not follow explicit contractual provisions involving performance, such as provisions mandating a minimum amount of sales or requiring minimum hours of operation. Very recently, however, some legislators have moved to prevent franchisors from enforcing such explicit terms.

This paper addresses the premises and effects of franchise regulation. We begin by focusing on the contractual setting, and whether there is a problem

³ A good summary of the various forms of legislation and regulation that exist or are being proposed is provided in Bret Lowell, et al. (1993).

⁴ See, for example, Lowell et al. (1993) and Lockerby (1985).

requiring attention of legislatures and courts at all. We then discuss evidence bearing on one of the main arguments of proponents of increased franchisee protection, namely that franchisors have such greater resources, information, and bargaining power that franchisees are forced to accept ‘unfair’ terms. Next, we evaluate the empirical evidence for the assertion underlying many state statutes that franchisors will expropriate franchisee investments in the absence of statutory protection. Finally, we provide evidence from a recent case study, that of the state of Virginia’s attempts to rewrite the franchise contract between petroleum refiners and their gas station dealer franchisees.

2. Contractual setting

One might ask whether there is need for regulation at all. After all, a skeptic might say, why not simply enforce contracts as written. To answer this question, it is useful to review some basic economics of contracts and of the franchisor-franchisee relationship⁵. Consider, for example, a successful franchisor. Its trademark is valuable, representing to consumers a standard of quality of its product, service, cleanliness, etc. Franchisees must expend resources to maintain the value of the trademark. Individual franchisees have an incentive to avoid these expenditures because the franchisee will, at least for a time, continue to attract consumers who expect and are willing to pay for higher quality. The lower-quality franchisee will benefit by the full amount of the savings from reducing quality, but will only lose part of the cost. These lower quality franchisees benefit at the expense of the franchisor, higher-quality franchisees, and consumers.

Even if the franchisor tries to write a contract that describes the franchisees’ duties in exquisite detail, detecting franchisee cheating may be difficult. The franchisee might reduce quality in a manner difficult to detect. For example, the franchisee could decrease monitoring of its employees, discouraging proper service, or it could reduce the quality of its product below that level consumers have come to expect. Although these activities are sometimes detectable, their systematic detection may be costly. More important, although the franchisor may be confident itself that the franchisee has violated a specific clause designed to ensure higher quality, if the franchisee has been careful, litigation to prove a breach could be costly and its result uncertain. The franchisor must not only convince itself; to prevail in litigation it must convince external observers. When the franchisee can

⁵ For an excellent summary of the general contract literature, see Weron and WijKander (1992). In particular see Klein (1992) and Schwartz (1992).

request a jury trial, the franchisor faces the additional obstacle of juror sentiment favouring the 'little guy' against the 'bigger' franchisor.

With this background, the existence of the clause that has caused so much trouble and given rise to so much sympathy for franchisees – the franchisor's right to terminate 'at will' – becomes understandable. When such clauses are enforced, the franchisee would know that detection results in swift termination. The clause is thus a lower-cost method than litigation of reducing the franchisee incentive to cheat. Franchisors, non-cheating franchisees, and consumers benefit from the resulting reduction of both cheating and of the costs necessary to terminate cheaters.

Of course, the franchisor has other, sometimes complimentary, methods to deter franchisee cheating besides the explicit franchisee contract, even one with the right to terminate 'at will.' A particularly effective method appears to be the franchisor paying the franchisee a premium that the franchisee will lose if terminated. To guarantee this premium, which may take the form of a 'generous' split of the profits, the franchisor may grant an exclusive territory or attempt to keep retail prices high.

Because of the premium payments, the franchisee may stand to lose more from cheating than it would gain. Moreover, the franchisor can require non-refundable franchise fees or specific investments from the franchisee, including investments in buildings and fixtures that may be more useful in the current franchise than in alternative uses. If the franchisee cheats, it would then lose those investments, which are a type of performance bond. Franchisors can also carefully investigate their prospective franchisees for their honesty and likely business acumen. A franchisor can even own its outlets, rather than franchise them.

The existence of these methods of deterring franchisee cheating does not mean that the 'at will' clause is not a useful adjunct to them. In fact, either the quality assuring premium or the performance bond complements the ability to terminate. A franchisee receiving only a normal rate of return from following the contract would always realize a short term gain from cheating until detected. If the franchisee can hide his noncompliance from prospective employers and thus earn a normal return elsewhere, there would be no incentive to comply with the contract.

Other options are less attractive. Investigation of prospective franchisees is costly and no amount of investigation can fully protect franchisors. Vertical integration can create additional problems, in particular discouraging the entrepreneurial incentives that franchisors seek to tap. Highly detailed contracts, specifying the appropriate behaviour under every scenario, are expensive; conversely, most franchisors will have great difficulty in using general franchise provisions or techniques such as pre-contractual investigations to solve the individual problems of its potentially hundreds of franchisees.

The methods some franchisors use to deter cheating, particularly the

requiring of forfeitable franchisee investments, raise an additional problem, that of so-called franchisor ‘hold-ups’ or ‘opportunistic’ behaviour. Depending upon how the at will clause is interpreted, franchisors could terminate solely to capture the value of franchisee investments, and not because of franchisee cheating. Or, franchisors could threaten termination to purchase franchisee specific investments at discount prices. Even if the contract was interpreted to allow such actions, franchisees could seek to protect themselves. They could investigate prospective franchisors carefully or seek changes in the contract before hand, such as clauses requiring the franchisor to reimburse the franchisee upon franchisor termination. Moreover, they could make their own investment in the firm of limited value to the franchisor (so-called ‘ugly princess’ clauses ⁶), or even limit the amount of their investments. More important, if the franchisee knows of the potential hold-up, then the franchisor will have to compensate the franchisee *ex ante* for the risk. Once such compensation occurs, it is hard to condemn subsequent franchisor use of the ‘at will’ clause as unfair or a contract violation.

There is at least one potentially potent check on franchisor hold-ups. When a franchisee is terminated without some plausible claim of cheating, the incentives of the remaining franchisees to maintain quality will decline and the franchisor will find it more difficult to find new, qualified franchisees. The franchisor might accept this cost if it is willing to engage in mass turnover from franchise to company-owned outlets or if it can hide the opportunistic nature of the termination.

Nevertheless, the effect of the relative reputational loss on franchisors and franchisees who engage in hold-ups is one reason why a contract results that appears (to some) one sided. Franchisors generally are more likely to have reputation capital than are franchisees. Because franchisors are larger and transact more frequently than franchisees, franchisor cheating is more likely to become known than the cheating of a particular franchisee (Klein (1980); Klein and Kennerly (1989)). To the extent the franchisor can rely less on the franchisee’s loss of reputation as a check on franchisee cheating than the franchisee can rely on the franchisor’s loss of reputation, the franchisor will need to rely on other methods to protect itself. All else equal, the franchisor will thus seek, and many franchisees will be willing to provide, contracts with terms such as forfeitable investments or termination ‘at will.’

Just because parties would still enter contracts if the ‘at will’ clause is interpreted to allow franchisor hold-ups does not mean another interpretation is not more efficient in the sense of producing less costly or more productive outcomes for the combined efforts of franchisors and franchisees

⁶ Dnes’ (1993) study of largely unregulated franchise contracts in the UK finds that franchisees use a variety of contractual devices to protect themselves from franchisor opportunism.

as measured *ex ante*. Economic actors will optimize their arrangements given the constraints and incentives they face, and different constraints can produce different outcomes. In other words, both franchisors and franchisees may react differently depending on judicial interpretation of the contract.

In fact, at least four problems exist with an interpretation of 'at will' that allows 'hold-ups.' First, in a world of uncertainty and positive information costs, franchisee investigation of franchisor reputation is not fool proof. Second, changed circumstances can give franchisors incentives to hold-up when before they would not. Third, simply paying franchisees more to accept the risk of a hold-up may not be an economical solution because the gain to the franchisor from a hold-up may be less than the loss to the franchisee⁷. Finally, the joint costs of dealing with the hold-up problem may be cheaper if courts interpret the at will clause to prohibit hold-ups.

One of the authors of this paper has previously suggested that courts do have a role in enforcing this interpretation⁸. The argument is that contract law could reduce the overall cost of protecting franchisees against franchisor opportunism by presuming that the parties have agreed not to engage in hold-ups unless they explicitly state to the contrary. Given that franchisees often lose large investments in property, reputation, and time when the franchise is terminated, they would presumably not expose themselves to this hazard lightly. Although this interpretation reduces franchisee costs by allowing the franchisee additional protection and the avoidance of investment in other forms of protection, it has costs of its own, namely using the judicial system and the consequent reaction of the franchisor. The problem stems from the difficulty of distinguishing opportunistic from other terminations. The franchisee, given the presence of the judiciary, could sometimes reasonably dispute the franchisor's evidence and, in any event, claim that a hold-up was the 'real' reason for the termination. Because franchisors could not freely use the 'at-will' clause without being forced into litigation, the benefits of the 'at-will' clause would be reduced, and franchisors would be forced to rely more upon other checks against franchisee cheating.

Thus, while some basis exists for the law to adopt a posture other than merely allowing all terminations, the legal system's response to the termination problem has greatly exceeded mere interpretation of the 'at-will' clause to prevent the franchisor from terminating opportunistically. A whole series of laws and doctrine have arisen, with many more suggested, based on

⁷ For example, the franchisor may be able only to capture partially the franchisee's specific investment. As some evidence for differential valuations, many firms and individuals are willing to pay real resources to avoid hold-ups (or, a similar problem, shirking) rather than simply adjust compensation for the risk.

⁸ Muris (1981). A similar conclusion was reached by Goetz and Scott (1981).

another premise, the alleged weak position of the franchisees. As we next discuss, these arguments are dubious ⁹.

2.1. Evidence on the bargaining power argument

Although the potential of franchisor opportunism (perhaps) justifies some regulation, proponents of franchisee protection have offered a more expansive rationale: disparity in bargaining power between the franchisee and franchisor. As one court stated: Because of the vast disparity in bargaining power between the parties, the franchise relationship frequently amounted to a contract of adhesion unilaterally imposed on reluctant dealers by an all-powerful distributor. (*Munno v Amoco Oil Co.*, 488 F. Supp. 1114, at 1118. D. Conn).

This rationale, used as a justification for all manner of regulation to protect the franchisee, has been surprisingly untested. This section discusses evidence about the nature of franchisees – who they are, where they come from, and how they approach the contracting process ¹⁰.

When facts about franchisees and potential investors are presented, the picture that is revealed is sharply at odds with that of the helpless individual forced to accept a ‘take it or leave it’ proposition. Table 1 presents data about the characteristics of actual franchisees. A strong majority obtained outside assistance before signing the contract, mostly from lawyers. Similarly, most thought they had received enough information prior to the contract that they did not desire any additional information and most had relevant business experience, either working for the franchisor or other directly relevant experience. Moreover, most franchisees had sought other opportunities, frequently having personal meetings with one or more other franchisors.

The franchisees’ personal background hardly indicates helplessness. Eighty-two percent had attended or graduated college, and the modal annual income in 1984 was \$25,000–\$50,000. (In 1984, average income in the United States was \$22,415. *Statistical Abstract of the United States*, 1993). Finally, the overwhelming majority of franchisees were content with their relationship.

⁹ Pre contract, the legal system also requires disclosures. Although a discussion of their costs and benefits is beyond our scope, they implicitly proceed from some alleged failure in the information market. Moreover, even if such a failure exists, the costs and benefits of the specific disclosures must be addressed.

¹⁰ We rely extensively on a 1984 survey done by Audits and Surveys, Inc., a private survey research firm, using telephone interviews with 500 franchisees and 200 potential franchisees. The study was performed for the Federal Trade Commission, as part of an impact evaluation of its franchise rule. Unless otherwise indicated, the data are from a report by Audits and Surveys, released by the FTC in 1984.

Table 1
Personal and bargaining profile of franchise owners (in percentages, unless otherwise indicated)

Franchise owners who obtained outside assistance before signing franchise contract.	69
Franchise owners who consulted an attorney before signing franchise contract.	49
Franchise owners who had relevant ^a business experience.	60
Franchise owners who sought other opportunities ^b .	59
Franchise owners who sought other opportunities and had personal meetings with one or more of the franchisors.	58
Franchise owners who had personal meetings with one or more other franchisors.	34
Franchise owners who believed they had received sufficient information prior to their signing franchise contract ^c .	81
Franchise owners who were content ^d with relationship with franchisor.	80
Franchise owners who have attended or graduated from college.	82
Modal income	\$25,000–\$50,000
Modal age	35–39

^a i.e. either working for the franchisor, or other directly relevant experience.

^b The average number of other opportunities considered by franchise owners was four.

^c i.e. did not desire any additional information.

^d Fifty-five percent described themselves as very satisfied, and 25 percent described themselves as somewhat satisfied.

The data for potential investors is similar. Sixty percent had comparison shopped, visiting more than four other franchises. The age, experience, education, and income level of potential investors were similar to that of actual franchisees.

Thus, the bargaining power model appears dubious. Franchisors and potential franchisees meet in a market in which franchisees are hired. Franchisees can choose from competing alternatives, and franchisors have incentives to compete for the most capable and most skilled franchisees. Moreover, potential franchisees have alternatives, not just among different franchisors in any one business, but in different lines of business as well.

A skeptic might reject this conclusion. After all, Table 1 reveals that a substantial minority of franchise owners do not search for their franchise, have relevant experience, seek outside help, feel they received adequate information, or are not content with their relationship with the franchisor. One response is that the bargaining power agreement hardly seems consistent with a majority of franchisors being such sophisticated consumers.

But, what of the minority? Because franchise contracts are standardized across franchisees (Lafontaine, 1992), knowledgeable parties are likely to have more influence on the terms than are the less sophisticated. Standardization thus protects, not harms, the minority. McAfee and Schwartz (1994) make a similar argument.

In any event, the mere existence of standard form contracts does not reveal a lack of bargaining power. Such contracts are widely used in all aspects of business. Standard forms are a way to reduce transaction costs: to avoid the formidable cost of starting each negotiation from scratch. Standardization reflects the high economic cost of individualized negotiations. In competing for dealers or customers, business have incentives to offer contract terms that the other party will find attractive. The result is standardization, but it is also competitive, reflecting the cost and benefits to both parties of the contract.

Moreover, for any business that needs to deal with a large number of consumers, standardization is beneficial. These benefits would be lost if a franchisor allowed each franchisee to use a unique set of procedures. For example, Dairy Queen's difficulty in obtaining franchisee compliance with a standardized approach has become notorious. As Ray Kroc, the man who built McDonald's, once said, his secret of success in franchising was to avoid doing everything Dairy Queen did ¹¹.

Thus, if problems exist, they are not because of unequal bargaining power,

¹¹ See "When Franchisees Go Their Own Way," *Wall Street Journal*, B1 July 6, 1989.

but are post contractual, as explained in the previous section ¹². We next consider evidence bearing on the opportunism issue.

3. Franchise termination and the risk of opportunistic behaviour

3.1. Franchisor termination

As we explained above, many states restrict franchise termination out of fear that franchisors will ‘exploit’ franchisees by either terminating or declining to renew the relationship for reasons unrelated to the franchisee’s performance. In contrast, efficiency explanations of franchising emphasize the franchisor’s interest in maintaining a well-functioning network of franchises. The franchisor must police the system to maintain uniformity and quality, as well as to encourage appropriate pricing. Thus, franchisors may terminate or not renew either to exploit franchisees or to maintain network quality.

Franchisors will terminate franchisees for efficiency reasons when the franchisee is free riding or is otherwise unable to meet the franchisor’s performance standards. We characterize all other terminations as ‘exploitive’ or opportunistic. We note that this is a broad definition of opportunism. In theory, franchisees should be allowed to accept an explicit contractual clause that permitted termination of even strong performers. In practice, such a clause is unlikely, and the contract will include a less precise statement such as termination ‘at will.’ For the reasons articulated above, we interpret such franchise contracts to include an implicit understanding that, absent performance problems, the relationship will continue ¹³.

Given these two general reasons for ending the franchise relationship, we need to consider the factors that influence the likelihood of each. A crucial issue is the likelihood that performance problems will in fact occur ¹⁴.

From the franchisee’s perspective, the decision to free ride rather than honour the agreement will depend on the benefits and costs of cheating. One fact likely to induce cheating or poor performance is the industry failure rate. When many locations fail, the short term gains of free riding are more likely

¹² It is possible that, post contractually, the franchisor has altered the contract. In this case, the new terms could represent a hold-up of the type discussed in the previous section. Resolution of this problem is not informed by the general bargaining power argument.

¹³ As we also explained above, we would not necessarily place the burden of proving poor performance on the franchisor.

¹⁴ The process of selecting franchisees is necessarily imperfect, and, as a result, some franchisees will simply lack the skills necessary to meet the franchisor’s standards. Although we cannot test for this phenomenon directly, some of the variables employed in the empirical analysis should reflect poor performance from either free riding or “incompetent” franchisees.

to be significant relative to the potential long term loss of future rents, simply because those rents are less likely to materialize. By the same reasoning, the expected value of the loss of future rents is lower when the failure rate is high, thus reducing the cost to the franchisee of cheating. Thus, given the extent of franchisor monitoring, we would expect to find more terminations by the franchisor in industries where the failure rate is high.

Growth in the number of outlets may also increase the likelihood of franchisee free riding, particularly if new outlets are nearby. Additional outlets reduce the expected future benefits of an existing outlet, thereby increasing the attractiveness of short term gains from free riding. As we discuss below, however, outlet growth also reduces the franchisor's incentives to terminate opportunistically, because recruiting new franchisees would be more difficult if potential franchisees are aware of the risk of such termination. In contrast, growth in sales per outlet should reduce the likelihood of free riding, because the franchisee has a larger future premium at stake if cheating is detected.

Sales from franchisors to franchisees will reduce the benefit of free riding to franchisees. If franchisees purchase more supplies, whether for resale or for use in producing a subsequent product, the ability to reduce quality by substituting inferior merchandise is reduced. Thus, we expect that greater sales from franchisors to franchisees would reduce the likelihood of termination by the franchisor.

From the franchisor's perspective, in determining the likelihood of termination, the franchisor must consider the costs of cheating by franchisees, costs of terminating existing franchisees, and costs of monitoring to assess franchisee performance. Variables that increase the cost to the franchisor of franchisee cheating would tend to increase the likelihood of termination. Variables increasing the costs of termination or the costs of monitoring would tend to reduce the likelihood of franchisor termination.

The fraction of outlets the franchisor owns may influence termination decisions through all three mechanisms. A franchisor faces a considerable share of the costs of franchisee cheating in any event, but cheating also imposes costs on other franchisees. A franchisor who owns a larger fraction of the outlets in the system thus faces larger costs, all else equal. This effect would tend to increase franchisor terminations in industries with more company owned outlets. On the other hand, as the fraction of outlets that are company owned increases, the influence of franchisee cheating on perceptions of the quality of the system as a whole decreases, a factor that reduces the costs of cheating¹⁵. Second, a franchisor who owns a larger fraction of

¹⁵ Alternatively, the franchisor may feel less need to monitor franchisees, producing the same result.

outlets has less need for concern about adverse reactions from other franchisees. Thus, the costs of termination to the franchisor are lower. Finally, a franchisor who owns more outlets is likely to experience reduced monitoring costs, because he has more experience with his own outlets to provide a basis for comparison. With lower monitoring costs, the likelihood of termination should increase. Because the effects described in this paragraph are offsetting, the net effect of company ownership on the likelihood of termination is ambiguous.

Growth in the number of franchised outlets should reduce the likelihood of termination by the franchisor. When franchised outlets are growing, the franchisor needs additional franchisees, and recruiting more franchisees is likely to be more difficult as terminations increase. Thus, the costs of termination to the franchisor are increased by growth in the number of outlets.

Two other influences on franchisor terminations are the ease with which franchisors can eliminate poor performers through nonrenewal of their contracts and the average size of a franchised establishment. The greater the percentage of franchisees who have long term contracts, the more the franchisor must rely on termination to police poor performance rather than waiting for the contract to expire and simply not renew it. The larger the average size, the fewer outlets there are to monitor. Given total industry sales, larger average size reduces the costs of monitoring. Moreover, the benefits of monitoring are greater as well because quality problems in relatively large outlets are likely to have a greater impact on the franchise system. Both factors imply that franchisor terminations should be positively correlated with the size of the average franchisee.

As noted above, franchisor decisions to terminate may also be opportunistic. Franchisors may gain from termination, even in the absence of performance problems, in two ways. First, some of the franchisee's investment is paid to the franchisor. Termination may enable the franchisor to capture this investment. Second, the franchise contract contemplates a stream of rents to the franchisee. Termination may enable the franchisor to expropriate these rents, either by operating the outlet himself or reselling the outlet to someone else ¹⁶.

Strictly speaking, the opportunism hypothesis predicts that the likelihood of termination should increase with the size of the appropriable rent. Unfortunately, however, data on such rents are not available. We use three

¹⁶ Although we characterize terminations as opportunistic, we do not in fact know the terms on which the termination occurs. Either by contract or custom, the franchisor may compensate the franchisee upon termination. Such compensation can mitigate or even eliminate any expropriation by the franchisor. We do know, however, that the terminations we study are involuntary from the franchisee's perspective.

proxy variables. The first is the median investment required for a franchisee. (A subset of this investment, which may be the easiest portion to expropriate, is the amount of initial cash required.) To the extent that expropriation involves rents that the parties planned to allocate to the franchisee at the time the contract was signed, the magnitude of those rents should be related to the franchisee's investment, although we do not know the precise correlation. A second proxy is the growth in sales per franchised outlet. To the extent that sales growth is better than expected, the stream of appropriable rents is higher than anticipated when the contract was signed and higher than that presumably reflected in the amount of investment required. A third proxy is the average size of franchised establishments, which may be positively related to the rents that a franchisor can appropriate through termination. Size may reflect both the *ex ante* and *ex post* realization of the size of the appropriable stream of rents. On the other hand, as explained above, as the average size increases monitoring costs decrease, and the benefits of monitoring may increase as well.

Which proxy best captures opportunism is unclear. The franchisor realizes some benefits from the franchisee's investment, and there is the possibility of churning, or selling a single franchise location to multiple franchisees in succession. Given the royalty rate, which unfortunately is unknown, the size of the investment should reflect the size of the stream of anticipated rents. Because cash is more easily expropriable, the amount of cash required of a new franchisee may better reflect the opportunism potential in the franchisee's investment. Investment is also closely related to size, however, making it more difficult to separate the influence of size and investment. Size itself is an ambiguous proxy for opportunism, not only because termination when size is greater is consistent with efficiency explanations of franchisor terminations, but also because the portion of rents that are expected *ex ante* should be better reflected in investment. Growth in sales per outlet suffers to some extent from the same problem as size, because we cannot know the extent to which growth was expected, and therefore reflected in the required franchisee investment. Given the greater volatility of growth rates over time, it seems likely that the unanticipated component of growth is relatively larger than the unanticipated component of size. In any event, results based on these proxies must be treated with great caution.

In addition to factors influencing terminations due to poor franchisee performance and the possibility of franchisor opportunism, the franchisor's termination decision may be influenced by state laws designed to protect franchisees. During the time for which we have data, 14 states had laws prohibiting franchisor terminations unless the franchisor has 'cause' for the action (Table 2). Moreover, eight of these states also gave the franchisee a right to 'cure' any alleged nonperformance.

Such laws have at least two offsetting effects on the franchisor's decision

Table 2

States that allow termination only with cause

States	Cure allowed in case of proposed termination
Arkansas	Yes
California	Yes
Connecticut	No
Delaware	No
Hawaii	Yes
Illinois	Yes
Indiana	No
Michigan	Yes
Minnesota	Yes
Nebraska	No
New Jersey	No
Virginia	No
Washington	Yes
Wisconsin	Yes

to terminate. Relative to states without such laws, termination is more difficult, and, hence, presumably less common. More subtly, however, such laws may make franchisors more likely to terminate poorly performing franchisees. Because these laws make termination of poor performers more difficult, a franchisor with a valid reason for termination may be more willing to terminate a franchisee in states with termination laws than in states without such laws. One reason is that a franchisor who fails to terminate a non-performing franchisee when the opportunity arises will find it harder subsequently to terminate such a franchisee for similar performance problems. After all, the franchisee can argue that the failure to terminate the first time demonstrates that the performance problem was not the main motivation for the subsequent termination decision. In addition, state laws restricting termination are likely to change the franchisor's desired mix of outlets towards more company owned and fewer franchised outlets, because of the difficulty of terminating for quality problems that may be difficult to prove to a third party (Brickley et al. (1991)). Thus, franchisors have an added incentive to terminate, or attempt to terminate poor performing franchisees; it moves them closer to their desired mix.

3.2. *Franchisor nonrenewal*

Although there are important similarities between decisions to renew contracts and decisions to terminate, there are also significant differences. One major difference involves the market for franchisees. Although this market should constrain franchisor opportunism in any event, at the time of a renewal decision, it should be of particular relevance. To the extent that current law protects franchisees with contracts without a fixed term from

arbitrary termination, such contracts are better for franchisees than contracts with fixed terms, for which arbitrary nonrenewal may be easier, depending on state law. With these facts, the size of the franchise in the nonrenewal context has a different relevance than in the context of termination. The relatively unattractive nature of contracts with fixed terms makes it harder to find competent individuals to run franchises, particularly the large ones, for which the talent pool is probably smaller in the first place. This effect would tend to reduce the likelihood of nonrenewal as franchise size increases.

Moreover, the channel through which we expect size to influence termination decisions is that greater size encourages greater franchisor monitoring. Given the extent of franchisee nonperformance, larger outlets therefore lead to more terminations, because the probability of detection is higher. In the renewal context, however, the probability of detection is less relevant. Unless problems have been detected just prior to the renewal decision¹⁷, the franchisor is likely to have addressed whatever problems he discovered. In deciding whether to renew a particular franchisee, the issue is simply the *ex ante* likelihood that the individual will perform. The extent of ongoing monitoring is thus less relevant.

The other proxies for opportunism used for franchisor termination should, on the opportunism hypothesis, work in a similar manner for franchisor nonrenewal¹⁸. One difference is that, to the extent a franchisor needs less evidence of franchisee poor performance to justify nonrenewal, whether for legal reasons or to meet the expectations of other franchisees, then franchisee self protection should result in a smaller appropriable rent stream. Because exploitation depends on the magnitude of the appropriable rents, it should be less likely, and therefore more difficult to detect.

Growth in dollar sales also has a differential effect on nonrenewal because of the operation of the market for new franchisees. Because the potential supply of new franchisees is presumably greater the greater is current growth in sales per outlet, the likelihood of finding a higher quality replacement is higher. The effect is to make franchisors more likely not to renew, independent of an opportunism motive. Moreover, at the time of the renewal decision, observed growth, which may have been unanticipated *ex ante*, has

¹⁷ Although we do not know the precise length of individual franchise contracts, as discussed above, franchisors are more likely to terminate, rather than await the renewal decision, the longer the contractual period.

¹⁸ Again, we note that we use a very broad definition of opportunism, given that the contract at issue explicitly permits nonrenewal. Consistent with our reading of "terminate at will," discussed above, this definition of opportunism reads the contract to imply at least some presumption of renewal, absent poor franchisee performance. The franchisor's desire to avoid the diminution of incentives to maintain quality that would otherwise occur in the last period strengthens the reasonableness of this presumption.

been realized, and is more likely to be reflected in the terms of contract renewal.

The state law variables should have the same impact on nonrenewal as they have on termination, with one important exception. Some states that give a franchisee threatened with termination a right to ‘cure’ any problems have an easier standard in the context of renewal decisions. In such states, nonrenewal is easier than is termination and should occur more frequently.

3.3. *Franchisee decisions*

At least three broad considerations are likely to influence franchisee termination decisions: the success of the franchise system, the commitment of the franchisor to that system, and the franchisee’s security within the system. Regarding the success of the system, franchisees are more likely to leave franchisors they regard as unsuccessful. One measure of system success is the franchisee failure rate: the greater the failure rate, the more likely that other franchisees will abandon the system. Moreover, the failure rate also reflects the location-specific risk of the industry. Industries with greater risk are likely to experience more franchisee terminations, because unsuccessful franchisees will seek better opportunities elsewhere. A second measure of success is the growth rate of sales per franchised outlet. Where the system is successful, as indicated by growing sales, franchisees should be less likely to leave.

Regarding the commitment of the franchisor, franchisees will be more likely to abandon a system regardless of its success if the franchisor appears less committed to having franchisees. Thus, as the percent of company-owned outlets grows, so should franchisee termination. Moreover, sales from the franchisor to the franchisee are consistent with franchisor commitment. Greater sales may also indicate mutual commitment, and a greater difficulty for the franchisee to operate independently of the franchise system. Accordingly, we would expect fewer franchisee terminations the greater the franchisor’s sales to the franchisee. An ambiguous measure of franchisor commitment to the franchise system is the growth in the number of franchised outlets. On the one hand, a growing number of outlets indicates a strong franchisor interest in continuing to have franchisees. On the other hand, a growing number of outlets, although increasing total sales for the franchise system as a whole, may reduce sales of existing franchisees.

Regarding the franchisee’s security, the less secure franchisees feel, the more likely they are to terminate. Thus, a greater percentage of franchisees with long term contracts should lead to a reduction in franchisee termination¹⁹. Moreover, franchisees in states with laws designed to protect

¹⁹ The percentage of long term contracts may also reflect the franchisee’s ex ante commitment to the franchisor. Franchisees who have agreed to, for example, a 30 year contract are presumably less likely to walk away than those with short term commitments.

Table 3
Termination and nonrenewal rates by industry, 1979–1986 mean/standard deviation

Industry	Termination rate by		Nonrenewal rate by	
	Franchisor	Franchisee	Franchisor	Franchisee
Automotive products & services	0.0115	0.0205	0.0075	0.0297
	0.0048	0.0056	0.0054	0.0164
Construction, home improvement	0.0182	0.0146	0.1534	0.0251
	0.0048	0.0018	0.1546	0.0240
Convenience stores	0.0089	0.0399	0.0542	0.0376
	0.0059	0.0338	0.0710	0.0405
Educational products & services	0.0069	0.0195	0.0234	0.0472
	0.0031	0.0102	0.0276	0.0332
Hotels, motels & campgrounds	0.0247	0.0106	0.0409	0.0698
	0.0084	0.0034	0.0316	0.0676
Laundry & drycleaning services	0.0050	0.0226	0.0007	0.1004
	0.0030	0.0101	0.0020	0.0894
Miscellaneous	0.0076	0.0133	0.0040	0.0387
	0.0027	0.0059	0.0075	0.0462
Recreation, entertainment & travel	0.0046	0.0088	0.0319	0.0495
	0.0028	0.0027	0.0190	0.0228
Rental services (auto-truck)	0.0068	0.0093	0.0050	0.0073
	0.0022	0.0056	0.0066	0.0110
Rental services (equipment)	0.0164	0.0334	0.0343	0.0350
	0.0065	0.0102	0.0503	0.0338
Restaurants (all types)	0.0121	0.0104	0.0330	0.0473
	0.0021	0.0029	0.0145	0.0180
Retailing (food/non-convenience)	0.0108	0.0135	0.0335	0.0466
	0.0030	0.0038	0.0138	0.0259
Retailing (non-food)	0.0106	0.0175	0.0060	0.0341
	0.0021	0.0031	0.0059	0.0353
Overall mean	0.0111	0.0180	0.0329	0.0437
standard deviation	0.0069	0.0139	0.0617	0.0446

them from arbitrary termination or nonrenewal are likely to feel more secure and, hence, less likely to end the relationship.

The motivation for franchisee nonrenewal is similar to the motivation for franchisee termination, with some exceptions. One exception is that the percentage of franchisees with long term contracts should not be particularly relevant, given that the contracts have, by definition, expired. Moreover, the total failure rate is less relevant as a measure of the success of the franchise system, because franchisees facing a renewal decision are survivors.

3.4. Data and econometric issues

To examine the possible incidence of franchisor opportunism, we analyzed various measures of franchise termination in a sample of 13 industries over 8

years, providing 104 observations for analysis. Data were drawn from the U.S. Commerce Department's *Franchising in the Economy* for 1979–1986. All data are industry aggregates; we do not have data on individual franchisors or outlets. We consider four different dependent variables: terminations by the franchisor, terminations by the franchisee, nonrenewals by the franchisor, and nonrenewals by the franchisee²⁰. In each case, we seek to explain the rate of termination or nonrenewal. For terminations, the denominator for calculating the rate is the number of franchised outlets in a given industry in a given year. For nonrenewals, the denominator is the number of outlets eligible for renewal in that year.

Table 3 lists the means and standard deviations of these rates over the eight year period for each industry included in our sample. In 10 of the 13 industries, franchisee termination rates exceed franchisor termination rates. In the sample as a whole, 1.1 percent of franchisees are terminated by the franchisor each year, compared to 1.8 percent who decide to terminate themselves. Similarly, franchisee nonrenewal rates exceed franchisor nonrenewal rates in 11 industries. In the sample as a whole, franchisors decline to renew 3.3 percent of those eligible for renewal; 4.4 percent of those eligible decline to renew with the franchisor.

The nature of the data available raises a number of econometric issues. First, because we are seeking to explain proportions, which necessarily lie between zero and one, ordinary least squares is inappropriate. Instead, we assume that the probability of termination or nonrenewal follows the logistic distribution²¹. Thus, all of our regressions employ the logarithm of the odds ratio as the dependent variable²².

Second, we pool time series and cross sectional data. Although much of the variation in the sample is across industries, there is also meaningful

²⁰ The Commerce data categorizes both terminations and nonrenewals as due to the franchisor, the franchisee, or both. For each measure, we ignore the decisions by mutual agreement.

²¹ We are employing binary, discrete choice models rather than multinomial logit or profit models that allow for other alternatives as well. Although termination and nonrenewal are to some extent substitutes, the time at which each choice can be made differs substantially. Termination (by either party) is an option at any time; nonrenewal is only a possibility at contract expiration. Modelling these choices as alternatives in a multinomial logit framework would not be appropriate. Moreover, decisions by franchisees and franchisors reflect choices of distinct parties; they are not appropriately modeled as alternatives for either party.

In an earlier version of this paper, we had explored the buyout rate (the fraction of outlets converted to company ownership) as a possible measure of the end of the franchise relationship that could be an alternative to termination. Logically, however, a buyout seems to reflect a subsequent decision on what to do with an outlet when the franchisee has either been terminated or not renewed. Moreover, we have no basis for attributing a buyout decision to either the franchisor or the franchisee. Again, it is not an alternative to termination of a particular franchisee at a particular point in time.

variation over time within a given industry in both the dependent and explanatory variables. Within almost every industry, the growth rate variables exhibit the greatest volatility, with standard deviations that are almost always greater than the mean value for the industry, and often considerably greater. Even for more stable explanatory variables, however, such as median real investment required for a franchisee, there is significant variation. The standard deviation ranges from 6 percent of the mean to 38 percent, with 6 of the 13 industries between 10 and 20 percent. Thus, there is potentially valuable information in the time series variation within a particular industry, so that pooling the cross sections over time can improve our estimates.

We assume that the full model can be written as

$$\begin{aligned}
 y_{it} &= \sum_k \beta_k X_{kit} + \varepsilon_{it}, \\
 &\text{with} \\
 E(\varepsilon_{it}^2) &= \sigma_i^2, \\
 E(\varepsilon_{it}\varepsilon_{jt}) &= 0, j \neq i, \\
 \varepsilon_{it} &= \rho_i \varepsilon_{i,t-1} + u_{it}, \\
 &\text{with} \\
 u_{it} &\sim N(0, \sigma_{ui}^2) \\
 E(\varepsilon_{i,t-1}u_{jt}) &= 0,
 \end{aligned} \tag{1}$$

where i indexes the industries, t indexes time, and k indexes the explanatory variables. This model allows for heteroskedasticity within each cross section, and a separate autocorrelation coefficient in each industry²³. To estimate this model, we first use ordinary least squares (with the logarithm of the odds ratio as the dependent variable). We then estimate each industry's autocorrelation coefficient ρ_i as the sample correlation coefficient between the residuals and the lagged residuals within each industry. Thus, the estimate is based on seven observations for each industry. Using this estimated value for ρ_i , we then transform the data (using the Prais-Winsten transformation) to remove the estimated autocorrelation.

The standard procedure for estimating the model would then involve estimating the equation again using ordinary least squares, and calculating the industry specific error variance from the residuals of this new

²² There were terminations by each party in every observation. For nonrenewals, there are 24 observations with no franchisor nonrenewals, and 11 observations with no franchisee nonrenewals. For these observations, we approximated the log odds ratio using a nonrenewal rate of 0.1 divided by the number eligible for renewal. Thus, our approximation is one tenth of the smallest possible nonzero value for each observation. Weighted ordinary least squares results are very similar if the observations with zero rates are excluded.

²³ This model closely follows Kmenta (1986), pp. 618–622.

regression²⁴. The data would then be transformed using this estimated variance to remove the heteroskedasticity. The ordinary least squares estimates on the doubly-transformed data are then consistent and unbiased. Unfortunately, we cannot in general follow this procedure, because many of our models involve more variables than we have observations within a particular industry.

We therefore adopt a slightly different approach. Rather than estimating the variance in a particular industry directly, we make use of the logistic model. In a logistic model, the error variance of the log odds ratio can be estimated by

$$s_i^2 = \frac{1}{n_i p_i (1 - p_i)}, \quad (2)$$

where n_i is the number of observations in the sample, and p_i is the estimated probability in the sample. Using ordinary least squares and weighing each observation by $1/s_i^2$ yields estimates that are corrected for heteroskedasticity²⁵. Thus, we use this theoretically based estimate of the industry specific error variance to correct for heteroskedasticity that we cannot directly estimate.

In summary, we estimate each model using ordinary least squares on the full data set. We then estimate the industry specific autocorrelation parameter from the residuals, and use this estimate to transform the data to remove autocorrelation. We then estimate the model on the transformed data weighted to correct heteroskedasticity. These estimates, which are corrected for autocorrelation and heteroskedasticity, are the primary estimates reported below²⁶.

As an alternative to estimating the industry specific autocorrelation coefficient from only seven data points, we also estimated models in which it was assumed that the autoregressive parameter is the same for all industries. Using the unweighted data, we obtained maximum likelihood estimates of the autoregressive parameter²⁷. The data were transformed to remove autocorrelation, and the final model estimated using weighted least squares

²⁴ The approach was originally developed by Parks (1967) in the context of seemingly unrelated regressions. Kmenta (1986) also recommends its use.

²⁵ See Kmenta (1986) at 552. See also Amemiya (1981).

²⁶ Because this procedure is computationally cumbersome, most of our exploratory work was done using weighted least squares to correct for heteroskedasticity and simply ignoring the autocorrelation issue. With few exceptions, these estimates differ relatively little from those reported in the text.

²⁷ In practice, we sort the data by year and by industry. The result is that the observation for year $t-1$ for a given industry is 13 observations before the observation for year t . We then use maximum likelihood methods to estimate an order 13 autoregressive parameter, assumed to be the same for all industries. See Muris et al. (1993).

Table 4
Determinants of franchisor decision to terminate

Equation	1	2	3	4	5	6
Variable	Industry specific autocorrelation correction					Single rho, all industries
Constant	-6.641 *** (-28.25)	-6.588 *** (-26.26)	-6.691 *** (-24.17)	-6.630 *** (-28.33)	-6.642 *** (-28.23)	-5.691 *** (-13.96)
Percent company owned outlets	-1.852 *** (-6.41)	-1.933 *** (-6.50)	-1.736 *** (-6.329)	-1.771 *** (-6.42)	-1.945 *** (-7.04)	-1.545 *** (-3.31)
Real franchisee investment	-	-	-0.052 (-0.186)	-	-	-
Size - real sales per franchised outlet	0.0002 (1.09)	0.0001 (0.90)	-	0.0003 *** (2.66)	-	0.0003 * (1.78)
Growth in number of franchised outlets	-1.068 *** (-3.45)	-0.965 *** (-2.81)	-	-	0.0003 *** (2.47)	0.00002 (0.09)
Growth in real sales per franchised outlet	-	-0.226 (-0.77)	-1.000 *** (-3.331)	-1.057 *** (-3.48)	-1.102 *** (-3.58)	-1.107 *** (-3.73)
Percent long term contracts	0.535 *** (2.60)	0.513 ** (2.43)	0.679 *** (3.218)	0.542 *** (2.69)	0.560 *** (2.74)	0.793 *** (2.19)
Failure rate	24.496 *** (8.365)	24.252 *** (8.20)	26.412 *** (9.886)	24.564 *** (8.43)	24.984 *** (8.62)	16.723 *** (5.09)
Percent outlets with known state location	0.014 *** (4.58)	0.014 *** (4.54)	0.014 *** (4.815)	0.015 *** (4.77)	0.014 *** (4.46)	0.005 (1.16)
Dummy for industry without state data	1.079 *** (3.76)	1.055 *** (3.62)	1.032 *** (3.828)	1.070 *** (3.75)	1.038 *** (3.63)	0.278 (0.66)
Percent outlets in states with cure laws	1.527 *** (2.99)	1.520 *** (2.96)	1.520 *** (3.071)	1.444 *** (2.89)	1.532 *** (3.00)	1.167 *** (2.30)
Root MSE	2.974	2.96	2.889	2.926	2.949	2.974
Adjusted R-squared	0.9976	0.9976	0.9981	0.9978	0.9976	0.9891
White specification Test						
Chi squared	44.002	65.964	32.2729	32.61	30.438	37.435
DF (probability)	52 (0.7770)	63 (0.3748)	42 (0.8604)	42 (0.8505)	42 (0.9075)	52 (0.9360)

Dependent variable: Log odds franchisor termination rate. Estimated via weighted least squares with specified autocorrelation transformation. t-statistics in parentheses. *** Significant at 0.01, ** Significant at 0.05, * Significant at 0.10.

on the transformed data. Although these results incorporate a more refined estimate of the autocorrelation parameter, we have no particular basis for the assumption that the autoregressive parameter is the same in all industries. Nonetheless, for the sake of completeness we report these estimates for our basic equations.

3.5. Results

Franchisor decisions

Table 4 presents the results for franchisor terminations. Apart from the variables measuring the effects of size and franchisee investment, the results are quite consistent across different specifications of the model. Moreover, the White (1980) specification test for heteroskedasticity and model specification cannot reject the null hypothesis of homoskedasticity. The percent of outlets owned by the franchisor is negatively related to the termination rate, suggesting that the reduced influence of franchisee cheating on overall perceptions of system quality dominates reductions in monitoring cost and increases in external costs borne by the franchisor. Similarly, growth in the number of franchised outlets leads to a lower termination rate, suggesting that the need to recruit additional franchisees is a significant constraint on franchisor opportunism. As predicted, the fraction of long term contracts (defined as contracts of 15 years or longer) and the failure rate are positively correlated with the termination rate. With long term contracts, franchisors must rely more on monitoring and termination to maintain quality; with a higher failure rate, the incentive for franchisees to cheat is increased.

To examine the influence of state laws²⁸, we measured for each industry the fraction of franchised outlets located in states with different legal regimes²⁹. Industries with more outlets in states that give franchisees the right to 'cure' have significantly higher franchisor termination rates. As explained above, we ascribe this seemingly perverse result to the incentive that such laws create to terminate poorly performing franchisees when the opportunity arises³⁰. Alternatively, the result may reflect reverse causation,

²⁸ The states are listed in Table 2.

²⁹ The Commerce Department data includes the number of franchised outlets in each state. Although our measures are relatively stable over time in a given industry, both Illinois and California first adopted "cure" laws in 1980, early in our sample period. For one industry, automotive products and services, data on the distribution of outlets was unavailable. We set the fraction of outlets in cure states for this industry equal to zero, and included a dummy variable to allow for any differential effect. Results are similar if we exclude this industry from the sample.

³⁰ We explored several different measures of the influence of state laws. In addition to the fraction of outlets in cure states, we measured the fraction of outlets located in states with laws requiring good cause for termination but without giving the franchisee a right to cure. In weighted least squares estimates uncorrected for autocorrelation, this variable was insignificant.

if states with more outlets subject to high termination rates are more likely to adopt restrictive statutes.

One additional variable not discussed above is the fraction of outlets for which the geographic location of the outlets is known. The Commerce data is based on a survey of franchisors, not all of whom could provide information on the location of franchised outlets. We originally included this variable to control for possible differences in the effective sample size, and hence in the error structure of the data, but it may also reflect the extent of franchisor monitoring. Franchisors who monitor more extensively are more likely to be able to report the location of their outlets. The positive and significant coefficient on this variable is consistent with the notion that more knowledge of franchise location is a result of more monitoring, leading to a higher termination rate³¹. Unlike the other results, this effect is not significant in the estimates using a single autocorrelation parameter for all industries (Eq. 6).

Turning to the opportunism variables, we tested two measures of franchisee investment. The percentage of the investment that is cash, included in Eq. 3, is an attractive proxy for potential opportunism, for the reasons discussed above. Regardless of the other opportunism variables included in the model, this variable was insignificant in estimates using industry specific autocorrelation corrections³². Moreover, the coefficient is generally negative³³. (We discuss collinearity between the size and investment variables below.)

Regarding real franchisee investment, this variable was not significant in the estimates using industry-specific autocorrelation corrections when size is included in the model. For both of these models, Eqs. 1 and 2 in Table 4, we tested for possible multicollinearity using the Belsley diagnostics. (Belsley et al., 1980). There was no indication of significant collinearity between size or investment³⁴.

Nevertheless, the two variables have a simple correlation of 0.83. Eqs. 4 and 5 report the results of including only one of these variables. As is clear from the table, either variable alone is associated with significantly higher

³¹ Moreover, the variable is only significant in the franchisor termination regressions, where monitoring should matter most.

³² When Eq. 3 is estimated with a single autocorrelation parameter for all industries, the coefficient on percent cash is negative and significant at the 10 percent level ($t = -1.66$).

³³ The only positive coefficient we observed occurred when real investment was added to Eq. 3, but the coefficient was utterly insignificant ($t = 0.033$). With a single autocorrelation parameter in the same model, the cash variable is again negative but insignificant.

³⁴ There was evidence of significant collinearity between the fraction of outlets in cure states and the fraction of outlets whose location is known. Omitting the latter variable, however, leave the results for the other variables reported in Table 3 essentially unchanged.

Table 5
Determinants of franchisor nonrenewal

Equation	1	2	3	4	5
Variable	Industry specific autocorrelation correction				Single rho, all industries
Constant	-3.532 *** (-6.920)	-3.606 *** (-7.139)	-3.027 *** (-6.143)	-3.057 *** (-4.341)	-3.598 *** (-4.367)
Real franchisee investment	0.0007 (1.409)	0.0007 (1.501)	0.0005 (0.893)	0.0005 (0.676)	0.0003 (0.360)
Size - real sales per franchised outlet	-0.001 ** (-2.211)	-0.0009 * (-1.927)	-0.0008 -1.591	-0.0017 *** (-3.074)	-0.0006 (-0.662)
Percent of investment in cash	-	-	-	-1.569 (-1.375)	-
Growth in number of franchised outlets	-2.189 *** (-2.513)	-2.151 ** (-2.469)	-2.094 ** (-2.326)	-1.576 (-1.370)	-0.264 (-0.226)
Growth in real sales per franchised outlet	2.671 *** (3.602)	2.620 *** (3.551)	2.560 *** (3.369)	3.434 *** (3.842)	2.752 *** (2.622)
Sales from franchisor to franchisee	-5.88E -7 *** (-4.171)	-6.88E -7 *** (-6.392)	-7.93E -7 *** (-6.902)	-5.69E -7 *** (-3.351)	-8.89E -7 *** (-4.298)
Percent outlets in states with cause laws	7.141 ** (2.580)	3.635 *** (3.044)	-	8.128 ** (2.472)	3.973 (0.939)
Percent outlets in states with easy nonrenewal	-11.019 (-1.396)	-	6.968 * (1.956)	-11.32 (-1.214)	1.235 (0.108)
Dummy for industry without state data	0.336 (0.522)	0.618 (1.034)	0.291 (0.439)	0.646 (0.814)	1.968 (1.482)
Root MSE	2.79975	2.79653	2.89009	3.3578	3.90119
Adjusted R-squared	0.9092	0.9094	0.8991	0.8938	0.7104
White specification test					
Chi squared	31.1787	25.0526	36.3263	66.8231	51.5882
DF (probability)	42 (0.8899)	34 (0.8676)	34 (0.3608)	52 (0.081)	42 (0.1475)

Dependent variable: Log odds franchisor nonrenewal rate. Estimated via weighted least squares with specified autocorrelation transformation. t-statistics in parentheses. *** Significant at 0.01, ** Significant at 0.05, * Significant at 0.10

franchisor termination rates. Moreover, Eq. 6 indicates that real investment was positive and significant at the 10 percent level, even with the size variable included, if the autocorrelation parameter is constrained to be the same for all industries.

The final opportunism variable we tested was the growth in real sales per franchised outlet. Like start up cash required, this variable was not significant. Moreover, it is negative, contrary to the positive coefficient predicted by the opportunism hypothesis.

These results are difficult to interpret. Besides the theoretical problems discussed above, in particular the imperfect correlation between these proxies and the theoretically relevant quasi rent stream, there is little consistency in signs or significance of the results. Only size and total investment are ever both positive and significant at conventional levels, and then only when one of the measures is omitted. Cash investment and growth in real sales are never significant, and, contrary to the opportunism hypothesis, they are consistently negative. Moreover, interpretation of the size variable is fraught with ambiguity. As explained above, efficiency considerations suggest that as size increases, so should the termination rate. Thus, our results neither strongly support nor clearly reject the opportunism hypothesis.

Table 5 presents the results for the determinants of franchisor nonrenewal. Like the decision to terminate, growth in the number of franchised outlets is negative and highly significant in the models with industry-specific autocorrelation corrections. Three variables that were significant in the termination regressions – the percent of company owned outlets, the percent long term contracts, and the failure rate – were insignificant, and are not included in Table 5. Consistent with our expectations, sales from franchisor to franchisee, although insignificant as a determinant of the franchisor termination rates, is negative and highly significant in predicting nonrenewal.

As in the termination decision, state laws have a significant influence on franchisor nonrenewal. In states that require good cause for termination, franchisor nonrenewal is significantly higher³⁵. Four of the eight states that require an opportunity to cure in the context of termination have markedly easier requirements for franchisor nonrenewal. With a separate variable included to identify the fraction of outlets in these states, Eq. 1 indicates that nonrenewal rates are lower when the standard is easier, but the effect is not significant. The fraction of outlets in cause states and in easy nonrenewal states, however, is highly correlated ($r = 0.90$), and the regression diagnostics

³⁵ As with franchisor terminations, we initially used separate variables to measure the fraction of outlets in cure states and the fraction of outlets in states that require good cause for termination but do not give a right of cure. In models without an autocorrelation correction, the two coefficients were similar. The fraction of outlets in cause states is the sum of these two variables. Using a single variable reduces the collinearity problems, without a significant sacrifice in explanatory power of the model as judged by the adjusted R^2 .

Table 6
Determinants of termination by franchisee

Variable	Industry specific autocorrelation correction				Single rho, all industries
	Equation	1	2	3	4
Constant		-4.008 *** (-15.577)	-3.960 *** (-16.421)	-3.996 *** (-16.184)	-3.647 *** (-15.367)
Percent company owned outlets		2.252 *** (7.414)	2.226 *** (9.712)	2.335 *** (9.781)	2.133 *** (6.286)
Real franchisee investment		-3.82E - 5 (-0.156)	-	-	3.59E - 5 (0.132)
Size - real sales per franchised outlet		-3.12E - 5 (-0.143)	-	-	-8.71E - 5 (-0.344)
Growth in real sales per franchised outlet		0.825 *** (2.874)	0.821 *** (2.891)	0.682 ** (2.456)	0.727 ** (2.310)
Percent long term contracts		-1.486 *** (-5.552)	-1.555 *** (-6.685)	-1.646 *** (-7.030)	-1.647 *** (-5.865)
Sales from franchisor to franchisee		-1.58E - 7 *** (-4.740)	-1.55E - 7 *** (-4.743)	-1.07E - 7 *** (-3.871)	-1.75E - 7 *** (-5.416)
Failure rate		28.027 *** (8.252)	27.582 *** (8.315)	26.895 *** (7.942)	24.894 *** (7.340)
Percent outlets in states with cure laws		-3.384 *** (-3.853)	-3.366 *** (-3.875)	-1.385 *** (-3.444)	-2.576 *** (-2.943)
Percent outlets in states with cause laws		-4.935 *** (-2.874)	-5.148 *** (-3.242)	-2.855 *** (-2.175)	-6.118 *** (-3.788)
but not cure laws					
Percent outlets in states with easy nonrenewal		5.817 ** (2.461)	5.818 ** (2.516)	-	4.383 * (1.933)
Root MSE		4.22871	4.18740	4.17909	4.32776
Adjusted R-squared		0.9944	0.9944	0.9939	0.9944
White specification test					
Chi squared		54.8290	36.7637	33.6998	49.1602
DF (Probability)		66 (0.8351)	45 (0.8040)	36 (0.5785)	66 (0.9399)

Dependent variable: Log odds franchisee termination rate. Estimated via weighted least squares with specified autocorrelation transformation. t-statistics in parentheses. *** Significant at 0.01, ** Significant at 0.05, * Significant at 0.10.

indicate significant collinearity problems as well. As indicated in Eqs. 2 and 3, either variable entered alone is positive and significant. Neither variables was significant when the autocorrelation parameter is constrained to be the same in all industries (Eq. 5).

Like terminations, the results in Table 5 are ambiguous regarding the opportunism variables. Results for three of the four variables – size, investment, and the percent cash – were inconsistent with the opportunism hypothesis. Moreover, in Eqs. 1, 2, and 4, the coefficient of size is negative and significant, a result inconsistent with the opportunism hypothesis. These size results could occur if franchisors engage in more monitoring in industries with larger outlets, because problem franchisees would more likely have been terminated prior to the expiration of the contract³⁶. We know of no explanation, however, that would explain why size is an opportunism proxy in the termination context but not in the nonrenewal context. Thus, the combination of the termination and nonrenewal results suggests that size is measuring efficiencies, not opportunism.

Only real sales growth per franchised outlet behaves in a manner consistent with franchisor opportunism. Again, however, interpretation is ambiguous, because of the labour market effects discussed above.

Franchisee decisions

Table 6 presents our results for the determinants of franchisee decisions to terminate. Two variables measure the success of the franchise system, the failure rate and the growth in sales per franchised outlet. As predicted, the failure rate is positive, and the coefficient is statistically significant in all formulations. For sales, we expected greater sales growth to reflect greater success, and hence reduce franchisee terminations. In fact, however, the coefficient is positive and significant.

The two variables reflecting franchisor commitment to the system are the percent of outlets that are company owned and sales from franchisor to franchisee. Both variables are consistently significant and have the expected signs³⁷. As discussed above, franchisee security should also influence franchisee termination. Consistent with our expectations, industries with more long term contracts, and hence greater franchisee security, have a lower rate of franchisee termination.

³⁶ If Eq. 1 of Table 4 is estimated with investment included but size excluded, the investment coefficient is negative and insignificant. If size is included and investment excluded, size remains negative, but is only significant at the 10 percent level. With investment excluded, size is not significant if the fraction of outlets in cause states is deleted, and is never significant in estimates with a single autocorrelation parameter for all industries.

³⁷ Growth in the number of franchised outlets was never significant and is not included in the results reported in Table 5.

Table 7
Determinants of franchisee nonrenewal

Equation	1	2	3	4	5
Variable	Industry specific autocorrelation correction				
Constant	-1.992 *** (-4.854)	-1.976 *** (-4.803)	-2.043 *** (-5.083)	-2.393 *** (-9.789)	-1.842 *** (-3.434)
Real franchisee investment	0.0007 (1.310)	-	0.0005 * (1.724)	-	0.0007 (1.069)
Size - real sales per franchised outlet	-0.0002 (-0.471)	0.0003 (0.889)	-	-	-0.0003 (-0.435)
Growth in number of franchised outlets	-0.306 (-0.361)	-0.248 (-0.292)	-0.259 (-0.307)	-	-1.056 (-1.016)
Growth in real sales per franchised outlet	-0.4740 (-0.881)	-0.526 (-0.977)	-0.494 (-0.928)	-0.672 (-1.304)	-0.404 (-0.599)
Sales from franchisor to franchisee	-2.8E - 7 *** (-3.259)	-3.2E - 7 *** (-3.971)	-2.9E - 7 *** (-3.811)	-3.2E - 7 *** (-4.310)	-4.2E - 7 *** (-3.922)
Percent outlets in states with cause laws	-9.77E - 7 *** (-4.383)	-10.18E - 7 *** (-4.602)	-9.95E - 7 *** (-4.550)	-9.09E - 7 *** (-5.049)	-8.07E - 7 *** (-2.644)
Percent outlets in states with easy nonrenewal	22.755 *** (4.605)	23.641 *** (4.818)	23.389 *** (4.889)	24.37E *** (5.602)	19.301 *** (2.899)
Dummy for industry without state data	-0.713 (-1.496)	-0.665 (-1.395)	-0.659 (-1.424)	-	-0.365 (-0.572)
Root MSE	3.15173	3.16067	3.13029	3.10915	3.81471
Adjusted R-squared	0.9330	0.9323	0.9337	0.9309	0.8776
White specification test					
Chi squared	55.6916	43.5906	45.4339	14.5175	40.2305
DF (Probability)	42 (0.0767)	33 (0.1028)	33 (0.0733)	15 (0.4867)	42 (0.5489)

Dependent variable: Log odds franchisee nonrenewal rate. Estimated via weighted least squares with specified autocorrelation transformation. t-statistics in parentheses. *** Significant at 0.01, ** Significant at 0.05, * Significant at 0.10.

Table 6 includes three variables reflecting state regulation of franchise terminations, which should also influence franchisee security. Industries with more outlets in states in which franchisees have the right to cure any problems, as well as in states where franchisors must have good cause for termination without a right to cure, have significantly lower franchisee termination rates in all model formulations. Conversely, in the cure states with an easier standard for nonrenewals, franchisees are more likely to terminate. The result is not significant in the estimates with a single autocorrelation parameter for all industries.

The Belsley et al. (1980), regression diagnostics indicate that collinearity among the state law variables is a likely problem. We therefore reestimated the model excluding the variable for outlets in states with easy nonrenewal standards (Eq. 3). The coefficients of the other state law variables fall substantially in absolute value, but both remain significant. Moreover, the collinearity problem is substantially reduced³⁸.

Finally, we added variables for franchisee investment and franchise size. Although we know of no theoretical reason why these variables should be correlated to franchisee termination, they serve as a check on our results for franchisor decisions. Had these variables been significant influences on franchisee decisions, this fact would have indicated that the variables were measuring some additional influences beyond those we hypothesized. As Table 6 reveals, these variables were not significant, and do not increase the explanatory power of the equation. Deleting one variable at a time yielded similar results.

Table 7 presents the results for the determinants of franchisee nonrenewal decisions. There are some significant differences between nonrenewal and termination. In particular, three variables that were significant predictors of franchisee termination were not significant and are excluded from the regressions reported in Table 7 – the percent of company owned outlets, the fraction of long term contracts, and the failure rate. Other than the state law variables, only sales from the franchisor to the franchisee is significant, with the expected sign. Of the state law variables, as predicted franchisee nonrenewal is less likely in states where franchisors must have good cause for termination. In industries with more outlets in states with easy nonrenewal standards, however, franchisee nonrenewal is more likely.

As with the determinants of franchisee termination, in the nonrenewal context we added variables for franchisee investment and the size of franchised outlets. Neither variable was significant when both were entered (Eq.

³⁸ The largest condition number for Eq. 2 was 31.8. For Eq. 3, the largest value was 21.8. Condition numbers in excess of 30 indicate a likely collinearity problem.

Table 8
Consistency of results with the opportunism hypothesis

Variable	Franchisor termination			Franchisor nonrenewal		
	Sign consistent with		Significance	Sign consistent with		Significance
	Opportunism	Efficiency		Opportunism	Efficiency	
Real franchisee investment	Yes	?	yes, if entered alone no no	yes	?	no
Percent investment in cash	no	?		no	?	no
Growth in sales	no	?		yes	yes	yes

Based on results in Tables 4 and 5. '?' indicates no prediction of the variable's sign.

1), but franchisee investment was marginally significant (at .10) when investment was entered alone ³⁹.

3.6. *Summary regarding opportunism*

Table 8 collects the result for the opportunism variables from models of franchisor termination and nonrenewal (Tables 4 and 5). Although we cannot rule out opportunism, the results do not provide strong evidence that opportunism is a problem. Apart from real franchisee investment, the only statistically significant results that are consistent with opportunism are also consistent with efficiency explanations. Moreover, for size in the nonrenewal regressions, a statistically significant result is consistent with efficiency explanations, but not with opportunism. The best evidence for opportunism is the positive and significant coefficient on franchisee investment in the franchisor termination regressions. Here, however, the data do not allow us to distinguish reliably between the effects of size and the effects of investment. Moreover, the consistently negative and significant coefficient on the growth in the number of franchised outlets indicates that, to whatever extent opportunistic termination or nonrenewal occurs, it is constrained by the need to recruit additional franchisees.

Unfortunately, the available data do not allow us to measure directly the expected quasi-rent stream that franchisors might seek to expropriate. Instead, we must rely on a series of proxy variables. Each proxy is itself subject to conflicting interpretations and may reflect both opportunism and efficiency considerations. Stronger conclusions about the extent of opportunistic behaviour by franchisors must await the development of better data.

4. A case study of rewriting contractual terms

In 1990, the Virginia Legislature passed S.B. 235, amending the Virginia Petroleum Products Franchise Act. Among other provisions, the new statute precluded the imposition of ‘purchaser sales quotas’ in franchisor (in this case petroleum refiner) leases and supply contracts. Moreover, the statute provided that franchisees (gas station dealers) ‘shall not be required’ to keep retail outlets open for more than sixteen hours a day, six days per week. Mobil Oil Corporation sued, alleging, among other claims, that these and other provisions were preempted by the PMPA. The PMPA expressly pro-

³⁹ The White statistics in Table 6 indicate that the model as formulated in Eq. 1 may be misspecified. As insignificant variables are dropped, however, the test statistic improves substantially.

hibits state law governing termination or nonrenewal which differs from its provisions (15 United States Code Annotated, @2806 (a)). In September, 1992 the Federal District Court in Richmond agreed with Mobil. (*Mobil Oil Corp. v. Attorney General of the Commonwealth of Virginia*, 747 F. Supp. 1173 E.D.Va. 1990). In July of 1994, the United States Court of Appeals for the Fourth Circuit upheld, in relevant part, the district court's decision (*Mobil Oil Corp. v. Virginia Gasoline Marketers and Automotive Repair Ass'n.*, 1994 U.S. App. Lexis 17761). Using much the same language as the district court, the Appellate court concluded that: By denying franchisors grounds for termination that are available under the PMPA and in providing franchisees with a remedy unavailable under the PMPA, S.B. 235 impacts franchise termination and nonrenewal to a degree sufficient to fall within this broad preemption. (1994 U.S. App. Lexis 17761, p 11).

S.B. 235 went into effect on September 1, 1990, after which refiners could no longer enforce the contract provisions the statute affected. Thus, for two years, franchise contracts were effectively rewritten by the statute. To test the statutes' impact, we evaluated the impact of the law on two sets of Mobil gas station dealers, for which evidence was provided in the court records. We focus on the statutory prohibition on quota provisions in franchise contracts and the restriction on required hours of operation. Such provisions are a contractual attempt to control the potential differences in incentives facing franchisors and franchisees. For two reasons, some individual service station operators have an incentive to set higher prices and shorter hours of operation, and sell less gasoline, than the franchisor would choose.

First, the franchisor faces a double marginalization problem⁴⁰. Consumers will pay a premium reflecting the value of the trademark created by the franchisor for the brand they most prefer. Because either the refiner or the individual dealer can collect this premium, the individual retailer faces a downward sloping retail demand curve, and has an incentive to set the price higher than the joint profit maximizing price. Similarly, the individual retailer has an incentive to set shorter hours of operation than the joint profit maximizing solution.

The elasticity of demand confronting an individual dealer, and hence his incentive to set higher prices, depends on the dealer's location. A relatively isolated station along a freeway and the station at the proverbial intersection with a competitor on every corner face substantially different situations.

⁴⁰ Barron and Umbeck (1984), develop this argument in the context of divorcement legislation, which prohibits refiner ownership of retail outlets. Other recent articles addressing the relationship between gasoline refiners and their dealers include Borenstein and Gilbert (1993) and Shepard (1993).

Zoning requirements and the political difficulties of obtaining approval for a new service station may protect that locational advantage from competitive pressures.

Second, in a world of positive transactions costs, a pricing externality may also lead to different optimal prices for refiners and dealers. Part of the reason consumers value a trademark is that the mark serves as a convenient summary of numerous attributes of the product, including, presumably, its price. Thus, at least some consumers who conclude that a particular branded outlet charges a higher premium than they are willing to pay are likely to assume that the same is true of other stations selling the same brand. Through this mechanism, price increases at one station would tend to reduce demand at other stations selling the same brand⁴¹. The refiner has an incentive to consider this effect, and therefore set lower prices than would an individual dealer.

Similarly, hours of operation are likely to create external effects. The benefits of increased convenience from longer hours are likely to be shared by other service stations as well, because convenience is likely to increase the good will associated with the brand name. Having found that one station of a particular brand is open convenient (or inconvenient) hours, consumers are likely to assume that other stations follow a similar policy. Each individual station faces all of the costs of additional operations, but does not receive all of the benefits. Individually, therefore, service stations would choose fewer hours than the refiner and the public would prefer.

There are, of course, a variety of possible contractual approaches to harmonize the pricing incentives of dealers and refiners. Moreover, different refiners apparently employ different strategies to address the problem. The sales quota is one contractual solution. (The antitrust laws constrain refiners from setting the dealer's price directly.) Because it requires the dealer to meet a specified volume goal, the quota serves as a check on the dealer's incentive to set a price that is higher than the joint profit maximizing price. Because volume is likely to increase with longer hours of operation, the contractual quota may also influence hours of operation. Contract provisions requiring specified hours of operation are, of course, a more direct solution to conflict over optimal hours of operation. If these contractual devices are effective solutions to the conflict of interest between dealer and refiner over pricing and hours, then the statutory prohibition on their use should lead to increased prices and reduced volume at franchised dealers.

In contrast to the efficiency explanation for contractual restrictions on

⁴¹ The pricing externality is, to be sure, limited by the fact that stations generally post prices. Along interstate highways, however, consumers may have to choose an exit with knowledge of the brands available, but not their prices.

dealers, the dealers maintained that quota requirements and specified hours of operation are simply harassment devices used to eliminate selected dealers. Because refineries unilaterally set quotas and hours requirements, the dealers maintained these provisions could be used to generate ‘excuses’ to terminate any dealer the refiner desired. Thus, contractual restrictions are seen as devices to facilitate refiner opportunism, given that statutory constraints require that refiners have good cause for termination or nonrenewal. Although isolated stations unconstrained by the refiner’s requirements might reduce volume or hours of operation, dealers denied that there would be any systematic effects on hours or pricing.

4.1. Data and econometric issues

To examine the effects of the statute, we analyzed data on the volume of gasoline sold through Mobil stations in Northern Virginia. Our data include the monthly total volume of gasoline sold through 58 individual stations for the first six months of 1989, 1990, and 1991⁴². Of these stations, 35 were franchised ‘OG and L’ stations (owned ground and lease station, operated by franchises who lease their stations and equipment from Mobil), and the remaining 23 were company owned (salary operated, or ‘salop’)⁴³. Because these stations are all supplied from the same terminals, they face the same wholesale gasoline prices. Although we do not have data on the prices or hours at specific stations, changes in volume should therefore reflect differences in pricing and hours of operation over time.

The simplest test of the impact of the statutory prohibition on contract clauses is to examine differences between salop and OG and L stations in 1991 volume growth compared to the previous year. Essentially, this test treats the salop stations as a control group, unaffected by the statute. If the contractual provisions are effective solutions to the differences in incentives between franchisor and franchisee, then we should see lower growth in the OG and L stations than in the salops. Because the stations are all in the same geographic market and face the same wholesale prices, lower growth among OG and Ls can be attributed to the inability to enforce the contract provisions.

⁴² The statute was passed in July, 1990, with an effective date of September, 1990. Even with instantaneous adjustment, the expected effects of the law on volume in July through September are ambiguous. Moreover, stations may not have changed pricing strategies immediately. The data exclude the months during which stations were initially adjusting to the law (and perhaps anticipating its effect).

⁴³ There were a small number of stations that switched contractual status over the time period we examined, generally changing from company owned outlets to OG and Ls. Such stations were excluded from our data.

Table 9

Average change in volume from previous year franchised vs. owned stations (1991 volume/1990 volume)

Type	All ^a	Jan	Feb	March	April	May	June
ogl (N = 34)	0.941	0.925	0.954	0.943	0.935	0.936	0.953
salop (N = 22)	1.085	1.118	1.113	1.096	1.041	1.049	1.091
t	-5.40	-2.41	-1.95	-2.22	-2.13	-2.79	-2.12

^a Each month for each station is treated as a separate observation. Thus, for this analysis, there are 204 OG&L observations and 132 salop observations.

Table 9 presents the results of this analysis. Combining all six months, volume declined 5.9 percent from the previous year's levels at the average OG and L station, but increased 8.5 percent at the average salop. The difference is statistically significant. Moreover, analysing each month separately reveals the same pattern. In each month, we can reject the hypothesis of equal growth in favour of the alternative hypothesis that growth at salop stations was significantly greater than growth at OG and L stations ⁴⁴.

Of course, there may be differences between franchised and owner operated stations that have nothing to do with the statutory restriction on contractual provisions. In particular, Mobil tends to build new stations as salary operated locations, run them for a few years to develop a sense of the location's potential, and then franchise the location ⁴⁵. Moreover, by statute, new company-owned stations must be at least 1.5 miles away from any franchised outlet. Thus, growth rates at the (generally) newer salop locations may well be greater than at franchised locations. On the other hand, many of the salop stations during this period were the result of Mobil's acquisition of BP's Virginia stations, which, prior to acquisition were operated directly by BP ⁴⁶. There is little reason to expect systematic differences in growth rates at these stations.

If we knew demand and cost conditions for a typical OG and L station and a typical salop station, then we could examine directly whether the strategic choices of franchised dealers changed after the law was enacted. We lack the information to conduct such an analysis, however. Instead, we interpret volume in the previous year as a reflection of both the demand conditions at a given station and its strategic choices regarding prices and hours in the prior period. With growth in underlying demand and no change in strategy, volume this year would simply be proportional to volume a year ago. Apart

⁴⁴ Except for February, all of the differences are statistically significant at the 5 percent level or better using a two tail test. The February difference is significant at the 6 percent level.

⁴⁵ The authors learned this fact in conversations with Mobil employees.

⁴⁶ Implementation of the acquisition, announced in 1988, was finished in 1989.

from the statutory change, the only observable variable that would affect this relationship is price. If wholesale gasoline prices increase relative to last year, we would expect volume to decline relative to the previous year.

To explore the effects of the law more fully, we estimated a regression model explaining the logarithm of current volume at each station as a function of the logarithm of the previous year's volume at that same station ⁴⁷. Although this test also uses the salop stations as a control group, the regressions allow us to use data from the year prior to the law to serve as an additional control ⁴⁸. Specifically, we estimated the following model:

$$\begin{aligned} \text{LN VOLUME}_{ijt} = & \beta_1 \text{LN VOLUME}_{ij(t-1)} + \beta_2 \text{RELPRICE}_{jt} \\ & + \beta_3 \text{LN VOLAFSAL}_{ij(t-1)} + \beta_4 \text{OGL} \\ & + \beta_5 \text{POSTLAWOGL} + \beta_6 \text{POSTLAWSAL} + \epsilon_{ijt}, \end{aligned} \quad (3)$$

where *i* indexes the station, *j* indexes the month, and *t* indexes the year. RELPRICE is the average price of gasoline in Virginia for the month and year, divided by the average price one year ago ⁴⁹. LN VOLAFSAL is a slope dummy, equal to lagged volume for salop stations in 1991 and zero otherwise. Thus, the effect of the prior year's volume on current volume for salops after the law was passed is the sum of the coefficient of lagged volume and LN VOLAFSAL. OGL is a dummy variable equal to 1 for OG and L stations. Finally, POSTLAWOGL and POSTLAWSAL are dummy variables equal to one for stations of that type in months after the law was effective, and zero otherwise.

In effect, the model allows the effects of prior year volume to differ for OG and L and salop stations after the law, but constrains the coefficients to be the same before the law ⁵⁰. The dummy variables allow different constant terms for different types of stations both before and after the law ⁵¹. To allow for possible station-specific differences, the model was estimated with and without dummy variables for each individual station. The model was

⁴⁷ We compare volume to the previous year's levels, rather than the prior month, to control for seasonal variation in demand and to avoid problems created by the fact that our data covers only half of each year.

⁴⁸ Given the need for data on the previous year's volume, our three years of volume data provide two years of usable observations on each station. Prices are the average motor gasoline price through company outlets, from *Energy Information Administration, Petroleum Marketing Annual, 1989, 1990, and 1991*.

⁴⁹ We formulate the price variable in this fashion because, given the prior year's volume, it is only changes in price that should affect current volume.

⁵⁰ Tests of the restriction indicated no significant difference in the coefficient of lagged volume before the law.

Table 10
Effects of Virginia Statute on franchised vs. company owned stations (dependent variable: Log of volume)

Variable	Coefficient (t-statistic)	Coefficient (t-statistic)
INTERCEPT	1.045 ** (4.030)	9.635 ** (16.989)
LNLAVOLUME (Log Volume in prior year)	0.917 ** (48.017)	0.261 ** (5.933)
LNVOLEAFSAL (log prior year volume for salop stations only)	-0.114 ** (-3.470)	-0.195 ** (-4.516)
RELPRICE (current price/prior year's price)	-0.038 (-0.371)	-0.321 ** (-4.228)
OGI (dummy variable for OG&L stations)	-0.070 ** (-2.961)	-0.828 ** (-11.101)
POSTLAWSAL (dummy variable for OG&L stations after law)	-0.042 * (-2.444)	-0.086 ** (-6.617)
POSTLAWSAL (dummy variable for salop stations after law)	1.384 ** (3.533)	2.337 ** (4.511)
Station dummies	-	included
Adjusted R ²	0.8555	0.9253

* Significant at 0.05. ** Significant at 0.01. Estimated via ordinary least squares.

Table 11

Summary of differences between stations based on ownership

	Constant term	Lagged volume coefficient
Salops		
Before law	9.635	0.261
After law	12.072	0.066
OG&Ls		
Before law	8.807	0.261
After law	8.721	0.261

Based on results from last column of Table 10.

estimated using ordinary least squares, treating each month for each station as a separate observation. Thus, there were a total of 600 observations.

The results are reported in Table 10. To avoid uncertainty about which coefficients should be combined for a particular time and class of station, Table 11 presents the intercept and lagged volume coefficients implied by the results for each class of stations, based on the regressions including station dummy variables.

Not surprisingly, the prior year's volume is highly significant. The effect of price is negative, but only significant if the station-specific dummy variables are included. The negative and significant coefficient for OGL indicates that before the law, volume was lower at franchised stations. The difference may reflect the fact that quotas are an imperfect control for the difference in pricing incentives, but it may also reflect differences in average station size stemming from decisions about which stations to franchise. The negative and significant coefficient for POSTLAWOGL indicates that, after the law was passed, there was an additional volume decline at OG and L stations. Thus, the results are consistent with the hypothesis that contractual quota and hours of operation provisions are effective solutions to the problem of different incentives for franchisors and franchisees.

Understanding the differences in the refiner owned stations is more complex. The significant negative coefficient for LNVOLAFSAL indicates that volume in salop stations was less sensitive to the prior year's volume in 1991 than in 1990. As Table 11 indicates, this slope coefficient falls from

⁵¹ We could, of course, formulate the dummy variables allowing different slope and intercept terms in a variety of different ways. The formulation adopted here provides direct statistical tests from the regression coefficients themselves of the effects of central interest. Alternative formulations either require an additional variable to capture the same effects or impose constraints that are not consistent with the data. To reduce potential confusion about the proper combinations of coefficients, we summarize the slope and intercept coefficients for each station type in Table 11.

0.261 before the law to 0.066 after the law⁵². The POSTLAWSAL coefficient indicates that, given prior year's volume, volume increased in 1991 for these stations⁵³. Part of the difference may be due to differences in sample composition between the two years. In 1990, we have usable data on 11 salop stations; in 1991, we have data on 22. The additional salops in 1991 largely reflect the acquisition of BP and its refiner operated stations.

If we restrict the sample to stations with data available for two years (i.e., essentially the Mobil-developed salop stations), the results are essentially unchanged from those reported in the table⁵⁴. Because Mobil develops new salops in relatively new areas, prior year's volume may be a less significant factor than it is for OG and L stations. In a new area, rather than simply observing the trend in demand over time in a market with relatively constant population and competitive conditions, we are likely to see significant demand changes due to additional development (e.g., on the suburban fringe) and entry of new stations. The different statistical relationship for salops in 1991 and 1990 may simply reflect these differences⁵⁵.

⁵² Thus, the regression line is flatter for salops. Such a result could arise if high volume OG and L stations are those that face a more competitive environment. The station at an intersection with competitors on every corner is likely to have relatively little pricing discretion, reducing the significance of differences in pricing incentives. Indeed, for sufficiently large volumes, the regression results would indicate a higher volume for OG and Ls after the law was passed. As a practical matter, this difference does not affect the conclusions, because there is only one observation in the sample (an OG and L) with a large enough volume.

⁵³ We prefer the formulation based on levels of the variables, rather than first differences or percentage changes, precisely because it allows for these differences. Alternative formulations implicitly impose the constraint that there is no difference in the effect of the prior year's volume before or after the law, or between station types. Either constraint is not consistent with the data. Our basic conclusion, that the law reduced volume at OG and L stations, is confirmed when the model is estimated in differences of the logs. With station specific dummy variables included, the estimated equation for the change in the log of volume is:

0.023 –	0.002 (change in log price) –	0.062 (OG and L) –	0.040 (POSTLAWSAL)
(0.358)	(– 0.018)	(– 0.795)	(– 2.443)

Adjusted R squared was 0.2650, with t statistics in parentheses.

⁵⁴ We also explored excluding months that showed changes of more than 20 percent from the previous year and more than one standard deviation from the previous or succeeding month. These observations may have been affected by special circumstances, such as a construction project. For example, a large volume decline in a single month, followed by a return to normal or higher volume, is likely to indicate that business was disrupted by a construction project. Results were essentially unchanged with these extreme observations excluded. We also excluded all observations for stations where any one month's data was suspect. Again, results were essentially unchanged.

⁵⁵ Consistent with this explanation, if we consider only the salops for which no data was available for 1989 (i.e., essentially the salops purchased from BP and not yet franchised), the difference in the slope coefficient is just short of significant at the 5 percent level. The intercept dummy, however, increases substantially.

In summary, the results indicate that the inability to enforce contractual quota and hours of operation provisions significantly reduced the volume of gasoline sold at franchised stations. Volume at franchised stations was approximately 8.6 percent lower after the law, given their volume in the previous year ⁵⁶. The results are virtually identical if we exclude the salop stations from the analysis entirely; volume at OG and L stations fell an additional 8.5 percent after the law was adopted. Moreover, comparing a salop with a given 1990 volume to an otherwise identical OG and L indicates a lower volume for the OG and L after the law was passed. Thus, whether the prior experience of OG and Ls or the experience of salops after the law was passed serves as the control, the law significantly reduced the volume of gasoline sold through franchised outlets.

5. Conclusion

This paper has attempted to provide evidence on issues much discussed in theory, but about which little is known in fact. Contrary to the bargaining power hypothesis, we found that the characteristics of franchisees lend little support to that notion. They seem to be a relatively sophisticated and well advised group. Regarding the existence of opportunism, the data are more ambiguous. Nevertheless, even those findings that can be seen as consistent with opportunism are subject to other interpretations, and are not robust. Finally, evidence on Virginia's attempt to rewrite franchise contracts reveals that the effort was harmful to consumers.

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⁵⁶ This result is based on the model including individual station dummies.

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