

Contractual Allocation of Decision Rights and Incentives: The Case of Automobile Distribution

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We analyze empirically the allocation of rights and monetary incentives in automobile franchise contracts. All of these contracts substantially restrict the decision rights of dealers and grant manufacturers extensive rights to specify and enforce dealers' duties. The allocation of decision rights and incentive intensity differs across brands, however. This variation is explained by the incidence of moral hazard. In particular, when the cost of dealer moral hazard is higher and the risk of manufacturer opportunism is lower, manufacturers hold more rights to determine the performance required from their dealers and to use mechanisms such as monitoring, termination, and monetary incentives to ensure that such performance is provided.

1. Introduction

This article analyzes empirically the solutions provided by automobile franchising contracts to the moral hazard problems present in franchising relations. It goes further than the previous literature in that, rather than focusing only on the strictly “monetary” aspects of the contracts, or only on the assignment of a particular right, it analyzes the entire system of allocation of rights over substantive decisions and the monitoring, punishment, and reward mechanisms. We find that the extent of rights allocated to manufacturers varies between different networks in a manner consistent with the differential impact of moral hazard. Contracts allocate more rights to manufacturers when the potential cost of dealer moral hazard is higher and when manufacturers' opportunism is better controlled by their reputation.

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Most of the empirical literature on contract design has focused on the strictly “monetary” aspects of the contracts, whether dealing with compensation and incentives in firms [see Prendergast (1999) for a survey of this literature] or in franchising, with royalty rates and franchise fees (e.g., Lafontaine, 1992; Sen, 1993; Lafontaine and Shaw, 1999).¹ A small but growing body of literature has studied the use of other contractual terms. The pioneering study here is Masten and Crocker’s (1985) analysis of the use of take or pay provisions for natural gas as an incentive mechanism. Shepard’s (1993) study of gasoline retailing shows that variation in the characteristics of the outlet (rather than of the brand, like in our work) determine which of the available standard contractual forms is chosen in a way that is consistent with agency theory. In a work more related to ours, Gompers and Lerner (1996) systematically study the use of covenants in venture partnership agreements, and explain the variation partly as a consequence of the difference in the incidence of opportunistic behavior. Kaplan and Strömberg (1999) are closest to our work in that they study the whole system of rights allocation in venture capital contracts. In the franchising context, Dnes (1993), Mathewson and Winter (1994), and Brickley (1998) have studied the use of some specific clauses and the extent to which complementarities between them exist. However, neither the general contractual design literature nor the franchising literature have, to our knowledge, attempted to analyze empirically the role of each element in the system of contract terms and monetary incentives to the solution of the conflicts present in these relations, and the interactions between the different elements of the system.

In analyzing the allocation of decision rights by these contracts, we argue that assigning decision rights to one of the parties involves a trade-off between the risk of *ex post* opportunism on the two sides. More manufacturer discretion reduces the risk of moral hazard on the dealer side, while simultaneously intensifying the risk of manufacturer incentive and holdup hazards. Thus we expect manufacturer discretion to increase with the importance of vertical and horizontal externalities and with manufacturer reputational capital.

We report two main sets of findings. First, all contracts substantially limit the decision rights of franchisees, while granting extensive implementation and enforcement powers to manufacturers. In particular, dealers must attain sales targets set by manufacturers, provide information and publicity as required by manufacturers, and use the quantity and quality of facilities, labor, and machinery that manufacturers prescribe. Manufacturers are also assigned a range of enforcement rights (monitoring, termination, and use of monetary incentives) to ensure that these outcomes take place. We find substantial cross-brand variation on the contractual allocation of these

1. Rather than on the contract terms, the bulk of the empirical literature on franchising focuses on the choice between franchising and vertical integration. See Lafontaine and Slade (1998) for an excellent survey of this literature.

enforcement rights to manufacturers. We also find some, even if less important, variation in the allocation of “completion” rights, those rights that allow manufacturers to render more precise and to adapt to environmental changes the obligations of the parties. Moreover, we find no within-brand variation in the contracts used. All dealers of the same network sign an identical contract, updated yearly.

Second, we find support for the hypothesis that the degree of “contractual asymmetry” (i.e., the allocation of more completion and enforcement rights to manufacturers) varies between the different networks in a manner consistent with the differential impact of moral hazard. Manufacturers of higher-quality cars and those with larger networks are allocated, by contract, more discretion over the operation of their networks, both in terms of their completion rights and in their ability to enforce and provide incentives to their dealers. This is consistent with the predictions of a theory relying on the cost of (dealers’) moral hazard as the source of variation in the contracts. Moreover, older networks assign more completion and enforcement rights to manufacturers. This may reflect, as we suggest, the fact that longer horizons are related to higher manufacturer reputation (allowing contracts to be more asymmetric). Also, Asian networks exhibit a significantly lower level of centralization of rights in the manufacturer. This is consistent with recent findings in the empirical literature about the reliance of Asian manufacturers on nonverbal, trust-based agreements (Sako and Helper, 1998; Holmstrom and Roberts, 1998).

The rest of the article is structured as follows. Section 2 presents a theoretical framework to analyze the relationship between manufacturer and automobile dealers, the elements of the contractual solution, and the sources of variation in these elements. Section 3 examines the data. Section 4 presents the results and discusses them. Section 5 concludes.

2. Analytical Framework

2.1 The Dealer Manufacturer Relationship

Automobile distribution is centered on a vertical relationship between automobile manufacturers and dealers. Manufacturers supply automobiles to dealers, write contracts governing their relationships with them, and police the behavior of the network. Dealers provide sales and after-sale services. In our data, each dealer distributes only automobiles for a particular manufacturer. They also provide customers with information on new cars, which requires investment in advertising and in sales staff. Dealers maintain brochures, showrooms, and trial cars and a substantial stock of new cars to facilitate inspection and allow for test driving and quick delivery. Moreover, they provide complementary services by acting as insurance and finance brokers, as well as dealing with the paperwork involved in car registration. A byproduct of these services is that dealers produce information on customer preferences, which is used by manufacturers to plan car manufacturing. Finally, dealerships also provide the specialized maintenance and repair services required

by cars. To supply these services, dealerships maintain specialized technicians, machines, and automobile spare parts.²

Dealers thus make choices concerning the price of automobiles, the level of promotional and sales services, and the level and quality of after-sale services. The literature has identified two reasons why unconstrained dealer choices will be suboptimal in terms of the maximization of the total value of an integrated dealer-manufacturer network. First, there exists a vertical externality. As, for example, Klein and Murphy (1988) have argued, as long as the marginal return of a sale to the dealer is only a part of the total return on an extra sale (which is the sum of both mark-ups), the dealer chooses to sell a lower quantity of automobiles and to provide a lower promotional and sales service level than optimal.

Second, the existence of horizontal externalities also leads dealers to produce excessively low informational and promotional services. Dealers generate information by investing in publicity and providing certain services. Consumers have incentives to obtain information from the dealers who provide it and then acquire their car from other dealers, who may sell at lower prices but do not provide this information. This free riding by dealers reduces the total supply of publicity and information, which decreases the final demand for cars (Telser, 1960).

The task of controlling these conflicts through contracts faces two main difficulties, related to contract completion and contract enforcement. First, it is impossible to write a comprehensive contract *ex ante*. Instead, efficient adaptation requires that many terms of exchange, that is, the precise contractual obligations of the dealers, be established and continuously revised *ex post*. This is the case, in particular, for the price and number of cars to be sold by each dealer in each year, as well as their sales and service effort. Second, enforcement of the terms of exchange so defined suffers from the fact that many performance variables are costly to observe by the parties and are difficult to verify by potential third-party enforcers. This is especially the case for sales and service effort. Not only does the sale of automobiles frequently involve bargaining over price, in order to price discriminate among buyers, but part of the payment for a new car is often the trade-in of a used vehicle.

2.2 Contractual Design

This article argues that the main role of the contract is to articulate mechanisms to ensure that the dealers' choices are more consistent with the maximization of the entire network value. These mechanisms are the allocation of completion and enforcement rights to manufacturers and the consequent operation of incentives and quasi-rents to constrain dealers' behavior.

2. See Pashigian (1961) for a pioneer and excellent analysis of the relationship between automobile manufacturers and distributors.

2.2.1 Rights Assignment. In specifying the dealers' obligations, the contracts do not specify the actual actions that dealers should undertake in the future. Instead, they grant manufacturers the right to choose these actions in future moments. Thus, for example, contracts do not determine the target sales of the dealership, the level of publicity investment by dealers, or the appropriate qualification of the sales personnel. Instead, they provide for manufacturers to determine and adjust these variables in the future. Given that manufacturers complete many dimensions of the contract in this way, we call these rights to determine *ex post* the actual content of the performance to be delivered, "completion rights."

Contracts also assign "enforcement rights" that allow manufacturers to play a quasi-judicial role in ensuring that dealers fulfil their obligations, including those defined by the manufacturers in exercise of their completion rights. Enforcement rights include manufacturers' rights to monitor dealers, to terminate the relationship, and to establish monetary discount mechanisms to ensure that sales and service targets are met.

This asymmetric assignment of completion and enforcement rights involves a trade-off between the risk of *ex post* opportunism on the two sides. More manufacturer discretion in completion and enforcement reduces the risk of moral hazard on the dealer side, while simultaneously intensifying the eventual risk of manufacturer incentive and hold-up hazards (Williamson, 1975, 1979; Klein, Crawford and Alchian, 1978). The latter is a concern in end-game situations, such as when the manufacturer has bad prospects, so that his discount rate is very high, or when technological changes require a radical transformation of the distribution network. In these cases, it may be difficult for third-party enforcers to distinguish opportunistic from disciplinary decisions made by the manufacturer.³ As a consequence of this trade-off, the contract will allocate more completion and enforcement rights to manufacturers when the risk of dealer moral hazard is higher and when the reputation of the manufacturer is better.

2.2.2 Direct Monetary Incentives. Most dealership networks also rely on direct monetary discounts linked to the achievement of sales targets and the degree of customer satisfaction as measured by client polls. As the agency literature has long argued, these direct monetary incentive schemes may be used to align the incentives of the two parties to the contract. In our context, the implication of the theory is that the intensity of monetary incentives related to sales and service should be higher the higher the incidence of the relevant vertical and horizontal externalities.

3. Williams (1996), however, shows that terminations by franchisers are infrequent in the United States (fewer than 4% annually) and that the conditional probability of termination decreases significantly as outlet performance increases, the opposite to the relationship predicted if termination were primarily motivated by manufacturer opportunism.

2.2.3 Quasi-Rents. As Klein and Leffler (1981) have argued, the threat of termination together with the existence of a flow of quasi-rents may be sufficient to assure performance in a context of repeated transactions. To this effect, the quasi-rent that the dealer receives must be higher the lower the probability that cheating will be detected and punished and the larger the gain from cheating. Notice that, as a consequence of the asymmetric allocation of decision rights, the level of dealers' quasi-rents results, in our case, not from *ex ante* agreements, but from *ex post* decisions taken by the manufacturers.

2.3 Network Characteristics and Risks of Opportunism

Among the strategic decisions the automobile manufacturer makes are the extent of the dealership network, the market positioning of the automobiles, and the timing of market entry. We argue that these strategic choices by the manufacturer determine the scope for opportunistic behavior on the two sides and, as a consequence, the particular combination of solutions chosen by the contract. Our empirical work aims to explain the observed contractual variation as a consequence of the variation in these network characteristics.

As in any public good context, the larger the network size, as given by the *number of dealers*, the more important the horizontal externalities. Therefore we expect manufacturers to be assigned more rights to decide and control the behavior of dealers in larger networks; similarly, the intensity of service-related monetary incentives for the dealer should be higher the larger the dealership network. For the same reasons, we expect dealers to earn larger quasi-rents the higher the number of dealers in the network. On the other hand, competition derived from an increase in the size of the network reduces the potential for double marginalization, causing an overall ambiguous effect on sales-related discounts.

The cost of dealer opportunism also grows with the *quality of the cars* sold, where "quality" is understood as the market position of the particular brand in the vertically differentiated space of automobile brands. The reason is that unobservable sales and after-sales services are more important the higher the quality of the car. Thus we expect manufacturers of higher-quality brands to be given more discretion on completing the contract and enforcing it. Moreover, we also expect the intensity of sales- and service-related monetary incentives to be higher the higher the quality of the car. Finally, dealer quasi-rents put in place to avoid shirking should be greater the higher the quality of the car.

A third variable that may influence the balance of risk of opportunistic behavior is the age of the network. This has few consequences for the risk of dealers' moral hazard. It does, however, have implications for the reputational capital of the manufacturer. A longer-lasting relationship allows for more reputational capital to be created, as it increases the potential for a

cooperative outcome to come about.⁴ As a consequence, we expect manufacturers to be allocated more contractual rights in older networks.⁵

The choices by the manufacturer of the market position of the brand, the timing of entry, and the size of the network are driven by demand and supply conditions and, as such, are independent of the importance of the horizontal and vertical externalities object of our analysis. This exogeneity is also clear in the case of the proxy we use for the market position of the brand, the average retail list price of each brand's automobiles. Given the incidence of bargaining and the frequent use of trade-ins, retail list prices are, like "sticker prices" in the United States, entirely different from the actual retail transaction prices. Moreover, it is the retail *margin* of the dealer, that is, the difference between the wholesale price and the effective retail price (but not the list price), the relevant "price" that determines the dealer's incentives.⁶

3. The Data

The empirical analysis is based on the dealership contracts of the 23 main networks operating in Spain, which represent 99.3% of the market and all of the important multinational firms. We complement the contractual data with data on the characteristics of the dealerships of the different networks, including particularly the number of dealerships, the age of the network, the price of the automobiles sold by the network, and the average profitability of the dealerships in the network, as measured by the average return on sales.⁷

A first striking feature of the data is that the contracts present no variance between dealers of the same brands. They are updated yearly by the manufacturer and circulated to all members of the network for their signa-

4. We are implicitly assuming that the time a relationship has lasted is a predictor of the time it will still last.

5. Network size and car quality may also covary with the manufacturer reputation. First, as a number of previous studies have noted (Lafontaine, 1992; Agrawal and Lal, 1995), brand-name value increases with the total number of outlets in each network, since brand-name value increases as more people are exposed to the brand. Second, the average *quality* of the automobiles sold is also correlated with the manufacturer reputational capital because manufacturers who sell more expensive cars incur higher costs with their customers if the relationship with their dealers deteriorates. Thus, due both to the higher risk of dealer moral hazard and to the lower risk of manufacturer opportunism, we expect more decision rights to be allocated to the manufacturer the larger the network and the higher the quality of the automobiles sold.

6. Further reassurance is provided by the fact that the use of other proxies for the market position of the brand does not affect our results. We have undertaken the analysis in Tables 3–7 using, first, the proportion of cars in the luxury category sold by brand and, second, the average list price of each brand in the United Kingdom as alternative proxies for position, and have obtained almost identical results to those reported here. These results are available from the authors upon request.

7. See the appendix for a more extensive data collection description and the descriptive statistics of these variables. Readers interested in a more complete description of the individual contractual clauses should refer to Arruñada and Vázquez (1999).

ture.⁸ Thus contracts do not respond to the within-brand variation in dealer's characteristics, such as their reputation or the time they joined the network.

All contracts assign dealers certain rights. This allocation, mostly made implicitly by not including limiting rights in the contract, defines a core set of dealers' rights common to all the networks. In particular, dealers set prices of cars sold, always below the ceilings established periodically by the manufacturers. They also decide on the quantity and models of automobiles they order from the manufacturers. Manufacturers, however, can force them to sell some models (quantity forcing), in exceptional circumstances. Finally, dealers may choose, subject to manufacturer's approval, the price of after-sale services, the tools for the after-sale service, the local marketing campaigns, and the location of the dealership.

As Table 1 shows, contract variation in manufacturer completion rights between networks is small. Of the 16 completion rights that the contracts potentially assign to manufacturers, only 4 show some variation: those affecting the level of training of the sales force, the number of trial vehicles, the determination of a minimum capital by the manufacturer, and the right to limit dealer sales outside of his own territory. The other 12 rights are assigned to manufacturers in all 23 networks.

All contracts assign certain monitoring rights to manufacturers. In particular, as Table 1 shows, they are authorized to directly inspect the inputs of the dealership (machinery, personnel, etc.) and to measure dealer performance in terms of achievement of sales targets. Most contracts also allow manufacturers to monitor customer satisfaction, as measured by polls. Finally, most manufacturers may monitor dealers financial performance by regularly auditing their financial statements.

Concerning termination rights, all contracts explicitly assign manufacturers the right to terminate the contracts when the dealer infringes certain duties. In particular, the repeated breach of sales and service targets, the change in the ownership of the dealership, or the bankruptcy of the dealership are always reasons for automatic termination. Other circumstances, such as management changes or disagreements among partners or managers also trigger termination rights in some networks.⁹

A particularly salient right assigned by the contracts is the right to establish dealers' annual sales targets. Targets are defined in terms of the market share that the dealer must achieve in the relevant local market and are then communicated to dealers in the form of the sales volume they must achieve.

8. Lafontaine and Shaw (1999) find a different pattern: They observe contract terms to be fixed for all those franchisees who joined at a point in time, but then stay constant for them over time. The literature has explained this fixity as a consequence of double-sided moral hazard (Bhattacharyya and Lafontaine, 1995) and of the cost of designing different contracts (Holmstrom and Milgrom, 1987).

9. The inclusion of termination-at-will clauses in contracts would make superfluous the enumeration of individual reasons for termination. However, both the European legislation and the general rules of Spanish contract law substantially limit the scope for termination at will.

Table 1. Rights Assigned by Contract to Manufacturers

| <i>Contract Clauses</i> | <i>Mean</i> |
|--|-------------|
| 1. Manufacturer ex post completion rights. Contracts in which Manufacturer has the right to determine: | |
| Sales targets | 1.00 |
| Size and decor of showroom | 1.00 |
| Publicity investment | 1.00 |
| Stock of new vehicles | 1.00 |
| Size and qualification of sales force | 1.00 |
| Compulsory sales force training | 0.65 |
| Number of trial vehicles | 0.52 |
| Machinery and tools | 1.00 |
| Organization and size of workshop | 1.00 |
| Size and qualification of after-sale personnel | 1.00 |
| Compulsory training of after-sale personnel | 1.00 |
| Quality of spare parts | 1.00 |
| Stock of spare parts | 1.00 |
| Minimum operating capital and net worth | 0.52 |
| Limit sales out of territory ^a | 0.52 |
| Set maximum authorized price | 1.00 |
| Total number of completion rights | 14.22 |
| 2. Manufacturer monitoring rights: | |
| Fulfillment of sales targets | 1.00 |
| Direct inspections of dealership | 1.00 |
| Dealer duty to provide accounting data | 0.87 |
| Right to poll dealer clients | 0.74 |
| Right to audit dealer accounting | 0.52 |
| Total number of monitoring rights | 4.13 |
| 3. Manufacturer termination rights in case of: | |
| Repeated breach of sales and service targets | 1.00 |
| Change in the ownership of the dealership | 1.00 |
| Bankruptcy of the dealership | 1.00 |
| Non-payment to the manufacturer | 1.00 |
| Change of management ^b | 0.83 |
| Disagreement among partners or managers | 0.61 |
| Change of location ^c | 0.61 |
| Appointment of liquidator | 0.57 |
| Court verdict ^d | 0.43 |
| False information ^e | 0.35 |
| Loss of control ^f | 0.09 |
| Dealership closed ^g | 0.09 |
| Total number of termination rights | 7.57 |

^aSales out of dealer territory not allowed.^bIncludes death or disability of dealer.^cWithout manufacturer approval.^dVerdict against dealer, partner, or manager of the dealership.^eProvision of false information to manufacturer.^fLoss of control of dealership premises.^gDealership closed for period longer than normal holiday.

They are set every year in January, relying on forecasts elaborated by manufacturers based on historical sales data in the dealer's market and at the national level. The numerical target may be revised later if either the aggregate sales of automobiles or the national market share of the brand are lower than forecasted, providing some partial insurance for the dealers.

These sales targets are linked in 20 of the networks to substantial discounts on the wholesale automobile price paid by dealers, depending on the degree to which they achieve them.¹⁰ The first row in Table 2 shows the across-network average quantity-related discounts applied to the prices of all vehicles acquired by dealers between 1993 and 1995. For example, dealers who met their annual sales targets received a mean discount of 2.38% of the price of all the automobiles they had acquired from the manufacturer in that year. The importance of these discounts is such that most dealers would be unable to obtain any profits if they were not receiving them.¹¹

Likewise, in 13 of the networks, manufacturers set service targets and dealers may obtain discounts in accordance with customer satisfaction as measured through client polls. Service-related discounts are smaller but also crucial to dealers' profitability. When customer satisfaction is highest, the mean discount on this concept that dealers could obtain annually was 0.73% of the price of all automobiles they acquired from the manufacturers. Note that since the discount falls on all the units sold, the discount increases more than proportionally with customer satisfaction.

Both of these discounts show a "stair-step" pattern. Reaching the next step (e.g., selling the car that gets the dealer to 105% of his sales target) produces a decrease in the price paid by the dealer for all of the units sold up to that level. As a consequence of this pattern, the marginal price paid by each dealer is a decreasing function of the number of cars sold by this particular dealer.

4. Results

In this section we test the predictions of the theory for the allocation of rights, the use of incentives, and the existence of quasi-rents. We then go on to study the interactions between these choices.

4.1 Cross-Sectional Variation in Manufacturer Completion and Enforcement Rights

The theory predicts that the level of discretion available to manufacturers should increase with the risk of dealer moral hazard, as determined by the

10. The three networks that did not use sales discounts declared in interviews that they do set and follow sales targets, however, which they use only to evaluate dealers' performance, to eventually impose disciplinary termination and to justify it before third-party enforcers.

11. Compare the discounts with the average return on sales (ROS), which was 0.35% in 1993, 0.66% in 1994, and 1.1% in 1995 (see Tables A3 and A4 in the Appendix). Note that these ROS data are in the same range as in 1997 for the United States (1.4), Japan (0.4), and the United Kingdom (1.5) (Dickinson, Dembkowski, and Shah, 1998).

Table 2. Sales and Service Discounts from Wholesale Prices, 1993–1995

| | <i>Discounts Established by Manufacturers for Each Target</i> | | | | | | <i>Mean Discounts Actually Attained by Dealers, as a Percentage of Price Paid</i> | | | | |
|--|---|------------|------------|------------|-------------|-------------|---|-------------|-------------|-------------|-------------|
| | <i>80%</i> | <i>85%</i> | <i>90%</i> | <i>95%</i> | <i>100%</i> | <i>105%</i> | | <i>110%</i> | <i>1993</i> | <i>1994</i> | <i>1995</i> |
| Maximum sales discount | 1.5% | 2% | 2.5% | 3% | 3.5% | 3.5% | 3.5% | | | | |
| Minimum sales discount | 0% | 0% | 1% | 1% | 2% | 2% | 2% | | | | |
| Mean of sales discount schedules (*) | 0.49% | 0.64% | 1.51% | 1.63% | 2.38% | 2.40% | 2.42% | 1.39% | 1.63% | 1.70% | |
| | <i>Percentage of Service Target Achieved</i> | | | | | | | | | | |
| Maximum service discount | 0.7% | 0.9375% | 1% | 1.0625% | 1.125% | 1.1875% | 1.25% | | | | |
| Minimum service discount | 0% | 0% | 0.3% | 0.325% | 0.35% | 0.375% | 0.4% | | | | |
| Mean of service discount schedules (*) | 0.18% | 0.45% | 0.55% | 0.59% | 0.62% | 0.67% | 0.73% | 0.64% | 0.63% | 0.65% | |

*Means conditional on existence of positive discount schedule.

incidence of vertical and horizontal externalities, and with the safeguard that the manufacturer can provide in the form of reputation. We investigate here this hypothesis.

4.1.1 *Dependent Variables.* We obtained predictions from the theory in Section 2 concerning the level of manufacturer discretion both in particular domains (i.e., completion, monitoring, and termination) and in the assignment of particular rights within each of these domains. We construct an index of the manufacturer discretion in each particular domain by simply adding the number of rights in that domain allocated to the manufacturer. Thus we measure allocation of completion, monitoring, and termination rights in brand i by the number of such rights assigned by the contract of that brand to the manufacturer. Simply adding up these rights presents some problems; however, it allows us to provide a comprehensive measure of contract asymmetry in different domains, as the rights within each of these three domains have a related purpose. It also permits us to focus on the object of interest in this study, namely the discretion the manufacturer has in completion, monitoring, and termination. Moreover, we check the consistency of our measure by examining the variation of all of the individual rights. As we show in Section 4.4, they indeed vary in the same direction as the aggregates.

4.1.2 *Independent Variables.* As we argued in the theory, we are interested in the effects of three variables on the assignment of decision rights: the quality of the automobiles sold (proxied by average retail list price), the number of dealerships in the network, and the length of the relationship. We also include in the analysis controls for the continent of origin of the manufacturer. Here the main concern is to take into account the fact that Asian firms usually rely less on formal contractual mechanisms. As a consequence, we would expect Asian dealers to assign explicitly a smaller number of rights to the manufacturer.

4.1.3 *Estimation.* From the theory presented in Section 3, the discretion of the manufacturer is a function of the agency costs and the reputation of the manufacturer. We run the following OLS regressions for the clauses of the different types:¹²

*Number of rights of type j of manufacturer of brand $i = \beta_0 + \beta_1$
average price of car of brand $i + \beta_2$ number of dealers
in network of brand $i + \beta_3$ log number of years brand
 i network is in operation + continent dummies.*

Since these dependent variables are count variables, and for each of them there exists a known minimum (zero clauses of type j used by brand i)

12. See the data appendix for the descriptive statistics of the independent variables.

and maximum (all clauses of type j used by brand i) number of clauses, the suitability of OLS in this context is questionable. To make sure that the results we obtain do not depend on the functional form we use, we repeat the estimation using maximum likelihood. These estimates assume that, for each brand, the number of clauses s_i that are present in the contract out of the total possible number of clauses of that category t_i is the number of successes in t_i trials.

That is, in a particular contract, each of these clauses can be a “success” (if it is present in the contract) or a failure (if it is not). Then the likelihood of observing each contract outcome (i.e., a given number of clauses are used, others are not) in the data is

$$F(\beta x)^{s_i}(1 - F(\beta x)^{t_i - s_i}),$$

and the log likelihood is (see Greene, 1993:654)

$$\ln L = -\sum_i [s_i \ln F(\beta x) + (t_i - s_i) \ln(1 - F(\beta x))],$$

where s_i is the number of clauses that are present in the contract for a given brand i and t_i is the total number of possible clauses. For example, in the case of completion rights, $t_i = 16$ for all brands. We estimate this as a Probit model. These estimates assume independence between the clauses. We rely on this assumption for now, and will study in Section 4.4 the possibility that complementarities and substitutabilities between different groups of clauses exist.

We do present both tables, however, since the OLS estimates are easier to interpret. We also check for the consistency of these results by using a linear probability model on the presence of the particular clause estimated by generalized least squares to deal with the heteroscedasticity that exists because of the binary nature of the data.¹³ The model estimates the probability that right i is assigned to the manufacturer for each individual right as a function of the above variables.

4.1.4 Results. We present the empirical analysis of the manufacturer discretion in Table 3. For each discretion variable we present two specifications. The baseline specification includes the three main proxies. The second row for each variable includes controls for the region of origin of the manufacturer.

The effects of the price, dealer, age, and Asia variables are consistent with the predictions of the incentive theory enunciated above. They are also consistent across specifications and across regressions, and, despite the relatively small number of observations, they are significant in most of the regressions

13. This is a standard two-step feasible GLS procedure which first obtains the estimate of the covariance matrix of the errors from an OLS procedure and uses them in the second stage. The procedure was first suggested for binary models by Goldberger (1964:248–250).

Table 3. Manufacturer Discretion: Ordinary Least Squares^a Estimates

| Dependent Variables | Independent Variables | | | | | | Adj. R^2 (N) |
|--|-----------------------|----------------------|----------------------|-----------------------|---------------------|-----------------------|-----------------------|
| | Average Car Price | Dealers in Network | Log Age of Network | Asia | Europe | Intercept | |
| Completion Rights | 0.473** (0.1401) | 0.0126* (0.0054) | 0.9368** (0.3569) | — | — | 8.8133** (0.7769) | 0.6963 (23) |
| | 0.3319* (0.1318) | 0.0093* (0.0047) | 0.4219 (0.3384) | -1.6697** (0.6090) | 0.2751 (0.5543) | 11.4532** (0.9925) | 0.8263 (23) |
| Monitoring Rights | 0.2919** (0.0823) | 0.0084** (0.0032) | 0.5218* (0.2097) | — | — | 0.8825 (0.4566) | 0.7086 (23) |
| | 0.2306* (0.0958) | 0.0069* (0.0034) | 0.3348 (0.2461) | -0.6908 (0.4430) | 0.0589 (0.4032) | 1.953** (0.722) | 0.7447 (23) |
| Termination Rights | 0.8246** (0.2037) | 0.0258** (0.0078) | 0.7590 (0.5188) | — | — | 0.074 (1.1294) | 0.6872 (23) |
| | 0.4762* (0.1893) | 0.0164* (0.0068) | 0.4115 (0.4861) | -3.2702** (0.8750) | -0.8506 (0.7963) | 4.6945** (1.4259) | 0.8253 (23) |
| Total Number of Clauses Used ^b | 1.5894** (0.3606) | 0.0468** (0.0138) | 2.2176* (0.9185) | — | — | 0.7624 (1.9996) | 0.7624 (23) |
| | 1.0387** (0.306) | 0.0326** (0.0109) | 1.1682 (0.7859) | -5.6307** (1.4146) | -0.5166 (1.2875) | 18.1008* (2.3054) | 0.8893 (23) |

^aOrdinary least squares regressions of a cross-section of contracts.

^bCompletion, monitoring, and termination.

*Significant at 5% level; **significant at 1% level.

on the number of clauses. The exception to this is the age coefficient, which becomes insignificant in all regressions when the Asia control is added. Also quite remarkably, the significance of the main explanatory variables does not decrease substantially as continent controls are added. On their own, the average price sold, the number of dealers in the network, and the age of the network explain about 70% of the variation in the allocation of completion rights by these contracts.

The regressors are also economically significant. Focusing on the most complete specification for the total number of rights (the last row in Table 3), we see that an increase in the price of automobiles of one standard deviation (1.935 million pesetas, around \$13,000) increases manufacturer discretion on average in two decision rights. Similarly, an increase of one standard deviation of the number of dealers (65 dealers) also adds on average two rights to the manufacturers discretion. Finally, an increase in the logarithm of the age of the network of one standard deviation (.88) increases manufacturer discretion by one right.

The main observation that can be derived from using MLE methods to estimate the relation between decision rights and network characteristics, as shown in Table 4, is that the results of such a procedure are entirely consistent with those in Table 3. None of the 28 signs of the dependent variables is altered by the change in methods. Price and number of dealerships are clear

Table 4. Manufacturer Discretion: Maximum Likelihood Estimates

| Dependent Variables | Independent Variables | | | | | | Pseudo- R^2 (N) |
|---------------------------|-----------------------|----------------------|--------------------|-----------------------|---------------------|-----------------------|--------------------------|
| | Average Car Price | Dealers in Network | Log Age of Network | Asia | Europe | Intercept | |
| Completion Rights | 0.2702** (0.1163) | 0.0065** (0.0028) | 0.2317 (0.1678) | — | — | -0.7365** (0.3711) | 0.148 (368) |
| | 0.2463 (0.1307) | 0.0058 (0.0031) | 0.0781 (0.1898) | -0.3444 (0.3669) | 0.2592 (0.3876) | -0.1421 (0.6295) | 0.169 (368) |
| Monitoring Rights | 0.5176** (0.2428) | 0.0136** (0.006) | 0.274 (0.2959) | — | — | -2.372** (0.7614) | 0.312 (115) |
| | 0.5726 (0.311) | 0.0141** (0.0066) | 0.0752 (0.336) | -0.2100 (0.6867) | 0.5188 (0.7957) | -2.1225 (1.3118) | 0.337 (115) |
| Termination Rights | 0.296** (0.0848) | 0.0085** (0.0025) | 0.1284 (0.152) | — | — | -1.6067** (0.3346) | 0.162 (253) |
| | 0.1934** (0.0942) | 0.0061** (0.0027) | 0.0703 (0.1827) | -0.9405** (0.3611) | -0.3960 (0.3583) | -0.3298 (0.5622) | 0.19 (253) |
| Total Number of | 0.2839** (0.0626) | 0.0076** (0.0017) | 0.1713 (0.1) | — | — | -1.136** (0.2194) | 0.154 (736) |
| Clauses Used ^a | 0.2178** (0.0679) | 0.0061** (0.0018) | 0.0765 (0.116) | -0.612** (0.2332) | -0.1049 (0.237) | -0.2291 (0.3704) | 0.173 (736) |

Probit estimation of cross section of contracts data by MLE.

^aCompletion, monitoring, and termination.

*Significant at 5% level; **significant at 1% level.

determinants of the use of each individual clause. The age of the network still seems to be a factor, although in none of the estimates does it enter significantly.

Our confidence in these results is increased by the analysis of the individual clause variation presented in Table 5.¹⁴ The signs of the individual effects are overwhelmingly the ones that Table 4 has led us to expect: of 60 possible signs (15 regressions times 4 independent variables), only 4 are different than in Tables 3 and 4, and all of those 4 are insignificantly different than zero. As in Tables 3 and 4, the results on car price, number of dealers in the network, and the Asia dummy appear particularly robust.

4.2 The Use of Discounts

The theory in Section 2.2 predicts that stronger monetary incentives will be used when the potential for dealer opportunism is higher. Also, better manufacturer reputation should lead to more intense incentives, as the ability of the manufacturer to opportunistically reduce the dealer's income is larger

14. Given the relatively small sample size, we use only the Asia control, since we found the European control to be entirely insignificant in all of our Table 3 regressions.

Table 5. Variation of Individual Rights

| Dependent Variables | Independent Variables | | | | | $R^2(N)$ |
|--|-----------------------|----------------------|----------------------|-----------------------|-----------------------|----------------|
| | Average Car Price | Dealers in Network | Log Age of Network | Asia | Intercept | |
| 1. Manufacturer ex post completion rights: | | | | | | |
| Compulsory Sales Training | 0.0147 (0.0333) | -0.0002 (0.0015) | 0.0434 (0.1073) | -0.7663** (0.2480) | 0.7490* (0.4454) | 0.6652 (23) |
| Minimum Trial Vehicles | 0.0433 (0.0287) | 0.0011 (0.0013) | 0.014 (0.0544) | -0.6889** (0.1765) | 0.4898 (0.3307) | 0.9070 (23) |
| Minimum Capital | 0.0706** (0.0204) | 0.0025** (0.0008) | 0.0799* (0.0429) | -0.4824** (0.1325) | 0.0271 (0.2443) | 0.9662 (23) |
| Limit Sales Out of Territory | 0.0706** (0.0204) | 0.0025** (0.0008) | 0.0799* (0.0429) | -0.4824** (0.1325) | 0.0271 (0.2443) | 0.9662 (23) |
| 2. Monitoring Rights: | | | | | | |
| Provision of Accounting Data | 0.0075 (0.0169) | 0.0003 (0.0006) | 0.0094 (0.0496) | -0.3174** (0.145) | 0.9006** (0.2163) | 0.3607 (23) |
| Poll Clients | 0.0442** (0.0219) | 0.0012* (0.0007) | 0.1251** (0.0608) | -0.3151 (0.1989) | 0.2122 (0.3376) | 0.6897 (23) |
| Audit Accounting | 0.0706** (0.0204) | 0.0025** (0.0008) | 0.0799* (0.0429) | -0.4824** (0.1325) | 0.0271 (0.2443) | 0.9662 (23) |
| 3. Termination Rights: | | | | | | |
| Change of Management | 0.0083 (0.022) | 0.0002 (0.0006) | 0.036 (0.0482) | -0.4341** (0.1538) | 0.8241** (0.2393) | 0.5171 (23) |
| Disagreement | 0.0213 (0.0158) | 0.0008 (0.0006) | 0.0089 (0.032) | -0.8648** (0.0929) | 0.7452** (0.1773) | 0.9805 (23) |
| Change of Location | 0.0479 (0.0299) | 0.0015 (0.0013) | 0.0911 (0.0784) | -0.5022** (0.2264) | 0.2469 (0.3711) | 0.8790 (23) |
| Liquidation | 0.0351 (0.0279) | 0.0016* (0.0009) | 0.0052 (0.0408) | -0.7496** (0.1295) | 0.5569** (0.2446) | 0.9639 (23) |
| Court Verdict | 0.1304** (0.0169) | 0.0047** (0.0009) | 0.0431 (0.0557) | -0.1091 (0.0847) | -0.5627** (0.1513) | 0.9104 (23) |
| False Information | 0.1397** (0.0157) | 0.0045** (0.001) | -0.0304 (0.0471) | -0.0828 (0.0757) | -0.4681** (0.1462) | 0.9000 (23) |
| Loss of Control | 0.0025 (0.0143) | 0.0012 (0.0008) | -0.0142 (0.0476) | -0.0289 (0.0751) | -0.0313 (0.186) | 0.1537 (23) |
| Dealership Closed | 0.0732** (0.0263) | 0.0011 (0.0008) | -0.0376 (0.0358) | -0.0162 (0.0536) | -0.157 (0.1153) | 0.3159 (23) |

GLS regressions for probability that right assigned to the manufacturer.
Estimated by feasible generalized least squares.

*Significant at 5% level; **significant at 1% level.

when discounts are a more important component of dealers income, given that manufacturers are assigned by contract the right to set sales targets.¹⁵

4.2.1 *Dependent Variables.* The discount level is in itself an imperfect measure of incentive intensity. Provided that sales fall between the minimum and maximum quantity of cars sold necessary to obtain a discount, a dealer faces identical incentives and obtains the same income with higher prices paid and higher average discounts as with lower prices and lower average discounts. For this reason, the discount range is likely to be the best available measure of incentive intensity for a wide range of outcomes. However, to avoid eventual conflicts between the different indicators, we construct and use several alternative measures of incentive intensity: the use of sales and/or service discounts, the level of each of these discounts, and the range of discounts attainable. For both the level and range, we differentiate between sales and service discounts.

4.2.2 *Estimation.* We use an ordered logit to estimate the relation between the use of discounts (zero, one if either sales or services used and two if both) and our independent variables. We use a tobit to analyze the variation on the discount ranges, as at their lowest the contracts that provide lower monetary incentive intensity have zero discounts.

4.2.3 *Results.* The results presented in Table 6 are broadly consistent with the evidence on contractual structure, even though the explanatory power of the dependent variables is weaker with respect to the variability observed in our proxies of incentive intensity than to the variability in contractual structure (i.e., the allocation of decision rights related to completion, monitoring, and termination) previously reported. First, the same independent variables that explain most of the variability in the allocation of decision rights explain here an important proportion of the variability in the use and intensity of the monetary incentives provided. Second, the vast majority of the signs of the coefficients are consistent with the theoretical predictions from Section 2, even if the coefficients are, with the exception of the network age and (once) the average price, below the usual thresholds for statistical significance.

The lack of predictive power of the sale discount specifications (the second and third sets of regressions in Table 6) is somewhat puzzling, particularly compared to the high significance levels found in the rest of our analyses. The pseudo- R^2 for these estimations is low, suggesting that the agency-related variables that explain the use of discounts fail to account for the variability of the level and range of sales discount. This might partly

15. While, in the absence of price discounts, the manufacturer may influence the dealers' profitability by altering the price charged per car, this affects the entire network and (since it creates a larger double marginalization problem) it has the potential to damage the manufacturer as much as the dealers.

Table 6. Intensity of Monetary Incentives

| Dependent variables | Independent Variables | | | | | | Pseudo- R^2 (N) |
|----------------------------------|-----------------------|--------------------------|--------------------------|-------------------|-------------------|---------------------|----------------------|
| | Average Car Price | Dealers in Network | Log Age of Network | Asia | Europe | Intercept | |
| Use of Discounts ^a | 0.241 (0.408) | 0.068 (0.045) | 2.539* (1.493) | | | | 0.598 (23) |
| | -0.428 (1.026) | 0.078 (0.05) | 2.916 (2.571) | -6.46 (7.411) | -0.328 (3.779) | | 0.689 (23) |
| Level of Sales Discounts | 0.199** (0.092) | 0.001 (0.004) | 0.185 (0.241) | | | 0.131 (0.533) | 0.137 (23) |
| | 0.116 (0.11) | -0.002 (0.004) | 0.356 (0.291) | -0.549 (0.507) | -0.616 (0.463) | 0.718 (0.83) | 0.169 (23) |
| Range of Sales Discounts | 0.095 (0.11) | -0.004 (0.004) | 0.67** (0.291) | | | -0.089 (0.646) | 0.14 (23) |
| | 0.03 (0.135) | -0.006 (0.005) | 0.685* (0.362) | -0.542 (0.624) | -0.286 (0.57) | 0.611 (1.022) | 0.152 (23) |
| Level of Service Discounts | 0.008 (0.066) | 0.002 (0.002) | 0.372** (0.177) | | | -1.177 (0.504) | 0.427 (23) |
| | 0.011 (0.075) | 0.003 (0.003) | 0.16 (0.202) | -0.131 (0.347) | 0.307 (0.294) | -0.788 (0.587) | 0.503 (23) |
| Range of Service Discounts | -0.022 (0.074) | 0.001 (0.002) | 0.482** (0.188) | | | -1.304** (0.541) | 0.451 (23) |
| | -0.067 (0.08) | 0.000 (0.003) | 0.357 (0.216) | -0.517 (0.36) | 0.003 (0.298) | -0.545 (0.594) | 0.539 (23) |

Tobit estimates except ^(a) ordered logit.

*Significant at 10% level; **significant at 5%.

Standard errors in parentheses.

be a consequence of the ambiguity on the effect of the network size variable. Alternatively, there may exist some hidden heterogeneity in the strictness of the sales targets across brands. If some manufacturers set very high targets, so that most of their dealers barely achieve the lower step of the discount schedule, while other manufacturers set low targets, so that most dealers achieve above-target sales, then the meaning of our range and level of sale discounts is different for different brands. Figuring out whether this is the case would require knowing the ex post distribution of discounts for different manufacturers. Regrettably, this data or reliable proxies are not available.

Of the three variables of our analysis, the network age variable gives the strongest support to our hypothesis. In all cases it has the “right” sign, and in 5 of the 10 specifications it is statistically significant, suggesting that older networks have more usage, higher levels, and more spread of discounts. The

significance of the network age variable in explaining incentive intensity relative to its low significance in explaining contractual structure could mean that manufacturer reputation is more important for the proper functioning of a self-enforcement mechanism, such as the explicit monetary incentives, than for asymmetric contractual completion or mere monitoring. On the other hand, while the majority of the signs of the price and dealers coefficients are as predicted by our hypothesis, their statistical significance is too low to settle the discussion. Although one needs to be cautious in interpreting these results, the lack of statistical significance of these coefficients should not be taken as an indication of a lack of importance of the variables object of our analysis in explaining discounts, given the small sample size available.

4.3 Evidence on Quasi-Rents

To test Klein and Leffler's (1981) hypothesis that the flow of quasi-rents to the dealers combined with termination provides a self-enforcing device, Table 7 presents a panel regression of the profitability during three years of the automobile dealerships. We use year dummies, as the observations are at substantially different points in the cycle. Quasi-rents are (imperfectly) proxied here by the return on sales, the standard profitability measure in the industry.

In the presence of more important agency problems the quasi-rents flow must be larger to dissuade dealers from opportunistic behavior. Table 7 provides some support for this hypothesis in one instance: higher-price dealerships have higher profitability, as measured by their return on sales (ROS). The coefficient is also economically relevant, as a standard deviation change in the price (around \$13,000) leads to a six-point increase in ROS. The other coefficients in which our study is interested are insignificantly different from zero, although their signs are as we would expect from the theory. First, profitability increases with horizontal externalities, as measured by the size of the dealership network. Second, it decreases with the age of the network.¹⁶

4.4 Complementarities

We have argued that all elements of the contract respond to the same factors. It might be argued that the contract is a system of interdependent choices, so that not only are all elements of the contract likely to respond to the same factors, but the inclusion of some element (e.g., more asymmetric completion) may either require or preclude that of some other element (e.g., more or less monitoring). To provide a preliminary test of this idea, Table 8

16. Caution must be used in interpreting these results. First, the short length of the panel limits the usefulness of the discussion, as the cycle could have different effects on different networks. Moreover, identifying ROS as an indicator of quasi-rents is also problematic. An alternative hypothesis would attribute differences in ROS to differences in human capital of dealers. However, the nature of service provision in this industry leads us to believe otherwise. Managing the production of the standardized, high-volume services typical of dealerships of low quality brands requires no less human capital than managing the production of the more personalized, low-volume services characteristic of higher end brands.

Table 7. Dealership Network Profitability

| | Dummy 1993 | Dummy 1995 | Average Car Price | Dealers In Network | Log Age of Network | Asia | Europe | Intercept | R ² (N) |
|----------------------------|-----------------------|----------------------|----------------------|--------------------|---------------------|---------------------|--------------------|----------------------|--------------------|
| Return on Sales, 1993–1995 | -0.3129** (0.0198) | 0.4343** (0.0201) | 0.032** (0.0104) | 0.0002 (0.0002) | -0.0233 (0.0162) | | | 0.6142** (0.0464) | 0.9662 (50) |
| | -0.3129** (0.02) | 0.4343** (0.0203) | 0.0288** (0.0109) | 0.0002 (0.0002) | -0.0262 (0.0199) | -0.0272 (0.0302) | -0.007 (0.0304) | 0.6501** (0.0577) | 0.9655 (50) |

Three-year panel for the available returns on sales.

*Significant at 10% level; **Significant at 5%.

Standard errors within parentheses.

presents the unconditional correlations between each pair of decision variables. These unconditional correlations are all positive with the exception of those between the realized quasi-rents and the rest of the variables, suggesting that a change in any contractual variable is related with a change in the same direction of any of the others. While Table 8 is consistent with the existence of complementarities between contractual decision variables, it cannot help to reject the hypothesis that each contractual choice is unrelated to any other choice. Comovements in all the contractual variables may simply respond to movements in the same underlying variable. As we have seen in previous sections, it is indeed the case that all of these variables respond to similar considerations.

Two methodologies have been used by the literature to solve this problem.¹⁷ Some authors, starting with Arora and Gambardella (1990), have tested whether the practices are correlated, conditional on the observables. Others, notably Ichniowski, Shaw, and Prennushi (1997), directly estimate a production function and then test whether the interactions between practices are positive.

We follow the first approach because we do not have sufficient information to confidently estimate a production function for the networks, nor do we have a sufficiently narrow definition of output. The downside of the conditional correlation measures is that, if there are variables that are unobserved to us but observed to the firm which favor the use of some practices, we will have upward-biased estimates of the conditional correlation. It will appear that different practices are complementary when, in fact, they are simply moving together as a result of the impact of a third variable unknown to us.

Table 9 presents the conditional correlations between the different measures of discretion. They have been calculated as the correlations between the residuals of the contract regressions, the monetary incentive Tobits, and the profitability panel. Since the estimation of the monetary incentive equations relies on nonlinear MLE methods, we use the generalized residuals proposed by Bourieroux et al. (1987).

Controlling for common sources of variation reduces the covariation from the one that could be observed in Table 8. This suggests that part of the covariation that could be observed was the consequence of a common response of the different contractual elements to the same problem, namely the risk of moral hazard. The evidence points, however, to the existence of interdependencies between some elements of the system. In particular, Table 9 points to complementarities between completion and termination rights, and between monitoring and incentive intensity.

17. See Athey and Stern (1998) for an excellent discussion of the issues at stake. The computationally intensive method they propose to go around this problem is, however, not applicable to our case given the small size of our dataset.

Table 8. Complementarities (I): Unconditional Correlations

| | Completion Rights | Monitoring Rights | Termination Rights | Level Sales Discount | Range Sales Discount | Level Service Discount | Range Service Discount | Quasi-Rents ^a |
|--------------------------|----------------------|----------------------|-----------------------|-------------------------|-------------------------|---------------------------|---------------------------|--------------------------|
| Completion Rights | 1 | | | | | | | |
| Monitoring Rights | 0.8422* | 1 | | | | | | |
| Termination Rights | 0.9178* | 0.8234* | 1 | | | | | |
| Level Sales Discount | 0.2246 | 0.3838 | 0.2858 | 1 | | | | |
| Range Sales Discount | 0.3177 | 0.6228* | 0.3795 | 0.6336* | 1 | | | |
| Level Service Discount | 0.6399* | 0.6351* | 0.4825* | 0.0567 | 0.1602 | 1 | | |
| Range Service Discount | 0.5822* | 0.5937* | 0.5272* | 0.0528 | 0.309 | 0.7906* | 1 | |
| Quasi-Rents ^a | -0.0339 | 0.2911 | -0.0972 | 0.1076 | 0.5187* | 0.0673 | -0.0511 | 1 |

*Correlation statistically significant at 5% level.

^aAs proxied by the return on sales of the 16 networks for which profitability data were available.

Table 9. Complementarities (II): Conditional Correlations

| | Completion Rights | Monitoring Rights | Termination Rights | Level Sales Discount | Range Sales Discount | Level Service Discount | Range Service Discount | Quasi-Rents ^a |
|--------------------------|-------------------|-------------------|--------------------|----------------------|----------------------|------------------------|------------------------|--------------------------|
| Completion Rights | 1 | | | | | | | |
| Monitoring Rights | 0.1002 | 1 | | | | | | |
| Termination Rights | 0.5329* | 0.0599 | 1 | | | | | |
| Level Sales Discount | -0.37 | 0.1536 | -0.2492 | 1 | | | | |
| Range Sales Discount | -0.304 | 0.6244* | 0.0189 | 0.6511* | 1 | | | |
| Level Service Discount | 0.3015 | 0.3598 | -0.1185 | 0.0838 | -0.0031 | 1 | | |
| Range Service Discount | 0.1245 | 0.3056 | -0.0359 | 0.0868 | 0.1319 | 0.8221* | 1 | |
| Quasi-Rents ^a | -0.2417 | 0.3981 | -0.3335 | -0.0396 | 0.3826 | -0.0652 | -0.1655 | 1 |

The correlations are of generalized residuals of Tobit models for sales and service discounts, constructed as suggested by Bourrieroux et al. (1987), and of the panel regressions for the return on sales.

*Correlation statistically significant at 5% level.

^aAs proxied by the return on sales of the 16 networks for which profitability data were available.

The evidence on the positive conditional correlation between completion and termination rights may suggest that manufacturer discretion in termination, a dimension of enforcement, is present when the manufacturer also has more scope for decision making. The result is consistent with the fact that determining obligations without corresponding mechanisms to enforce these obligations is mindless. To the extent that second-party enforcement plays the main role in these relations, more manufacturer completion rights, which establish dealer obligations, require more self-enforcement rights.

Also, the second column of Table 9 suggests that more monitoring intensity covaries with more incentive intensity, as measured by either any of the monetary discounts or by termination rights. Only in one case is this correlation significant at the 95% level,¹⁸ but four of the correlations would be significant at the 85% level. This is consistent with what the theory would lead us to predict. As moral hazard increases, incentive provision needs to be stronger, and this implies that monitoring intensity must increase.¹⁹

We find the results illuminating. First, there is evidence consistent with the hypothesis that the whole system, with the possible exception of the quasi-rents, is designed to solve a similar set of problems. Second, we find evidence of some complementarities between the different instruments, in particular between completion and termination rights, and between monitoring and discounts.

5. Conclusion

This article has studied empirically the allocation of rights and monetary incentives in franchising contracts between manufacturers and car dealers. These contracts do not actually specify the performance that the parties commit to delivering. Instead, the contracts substantially restrict the decision rights of dealers, and grant manufacturers extensive rights to “complete” the contract, specifying the terms of the performance required from dealers, as well as rights to enforce such terms, by monitoring, rewarding, and sanctioning them, which converts the manufacturers in a sort of quasi-judicial instance.

We find that this assignment of rights and incentives is consistent with efficiency considerations. When the cost of dealer moral hazard is higher and the risk of manufacturer opportunism is lower as a consequence of his reputation, the manufacturer enjoys greater discretion in both determining the desired performance from the dealers in their network and in using mechanisms such as monitoring, termination, and monetary incentives to ensure this performance is provided.

18. The evidence on this relation is, however, weakened by the fact that the sale discount equations present the lowest (pseudo-) R^2 in our whole analysis. It is easy to argue that if we had been able to explain more fully the variation in the range of sale discounts, the coefficient would have been eliminated.

19. Note that two of the three monitoring rights that present some variation in the data are rights to inspect variables that are relevant to the provision of sales-related discounts: the right to inspect dealer accounting data and the right to audit dealer accounting.

The use of all instruments seems to respond to the same considerations, as the same variables influence with the same signs the use of the different instruments. After controlling for common sources of variation, part of the covariation disappears, but significant interactions are still observed between instruments. In particular, we find complementarity both between contract completion and termination rights and between monitoring and incentive intensity.

An important aspect of the logic of the contractual and organizational design structure we observe does not conform to the idea of a contract as a set of vertical restraints usual in the literature (e.g., Mathewson and Winter, 1985). Instead, the contract design assigns a set of rights to manufacturers that allow them to behave as an internal judge in what is, after all, a relationship between two independently owned businesses.²⁰

What, in our view, the existing theory fails to consider is the ability of the parties to choose between the use of internal or external mechanisms of contract completion and enforcement. The main actors in the economic transactions, the manufacturer and the dealer in this case, have a remarkable informative advantage with respect to third parties, judges included. Our evidence suggests that when the party with the better information reaches a position of impartiality (safeguarded by reputation or expectations of repeated contracting), the contractors decide that that party should act as a court of first instance. As such, the task of this party is to define *ex post* those obligations that are hard to define *ex ante*, fitting the content of the exchange to the changes that have taken place, distributing unexpected losses and gains, evaluating if each one has fulfilled or not its obligations, and even imposing sanctions for breach of contract.²¹

Our analysis has focused intentionally on examining the logic of these self-enforcement mechanisms, such as they are articulated in the contracts. This does not mean that legal and judicial institutions play no role. On the contrary, the contracts are partly constrained by mandatory rules, and termination decisions are often litigated. Investigating the effect of these constraints on the contracts is a matter that we plan to undertake in future, cross-country research.

Appendix: Data Sources and Descriptive Statistics

The analysis included the contracts of Alfa Romeo, Audi, BMW, Chrysler, Citroën, Daewoo, Fiat, Ford, Honda, Hyundai, Jaguar, Lancia, Mazda, Mercedes, Mitsubishi, Nissan, Opel, Peugeot, Renault, Rover, Seat, Skoda,

20. A recent survey by Masten (2000) rightly points out this tension: economic theories of contracting, for the most part, give little explicit attention to enforcement issues; the presumption being that the courts will make sure that (subject only to verifiability constraints) whatever terms contracting parties arrive at are fulfilled.

21. This quasi-judicial role is not necessarily played by manufacturers. Large retailers also act as courts of first instance in their relationship with suppliers. For an analysis of a similar, if less formalized arrangement, see Arruñada (2000).

Table A1. Descriptive Statistics of Independent Variables

| | Observations | Mean | Standard Deviation | Minimum | Maximum |
|--------------------|--------------|---------|-----------------------|---------|---------|
| Average Car Price* | 23 | 3.174 | 1.935 | 1.648 | 10.587 |
| Dealers in Network | 23 | 109.348 | 65.417 | 17 | 231 |
| Log Age of Network | 23 | 2.697 | 0.885 | 0.693 | 4.357 |
| Asia | 23 | 0.348 | 0.487 | 0 | 1 |
| Europe | 23 | 0.478 | 0.511 | 0 | 1 |

*Measured in millions of pesetas.

Table A2. Unconditional Correlation

| | Average Car Price | Dealers in Network | Log Age of Network | Asia | Europe |
|--------------------|----------------------|-----------------------|-----------------------|---------|--------|
| Average Car Price | 1 | | | | |
| Dealers In Network | -0.4388 | 1 | | | |
| Log Age of Network | 0.0455 | 0.636 | 1 | | |
| Asia | -0.2528 | -0.4135 | -0.6319 | 1 | |
| Europe | -0.0333 | 0.324 | 0.6332 | -0.6992 | 1 |

Table A3. Descriptive Statistics of the Return on Sales

| Variable | Observations | Mean | Standard Deviation | Minimum | Maximum |
|----------|--------------|--------|-----------------------|---------|---------|
| ROS 93 | 17 | 0.3518 | 0.0436 | 0.24 | 0.41 |
| ROS 94 | 17 | 0.6647 | 0.0646 | 0.5 | 0.77 |
| ROs 95 | 16 | 1.1 | 0.0770 | 0.93 | 1.23 |

Table A4. Unconditional Correlation

| | ROS 93 | ROS 94 | ROS 95 |
|--------|--------|--------|--------|
| ROS 93 | 1 | | |
| ROS 94 | 0.8327 | 1 | |
| ROs 95 | 0.7809 | 0.7371 | 1 |

Suzuki, Toyota, Volkswagen, and Volvo. In 1994 these manufacturers produced 99.3% of the total number of automobiles sold in Spain (Ministerio de Justicia e Interior, 1995). We complemented these contracts with 48 in-depth interviews with experts in the sector. Among these experts were the general secretaries of the trade group of manufacturers and dealers, ANFAC and FACONAUTO, respectively, 23 franchisees of different brands, and 23 managers of the distribution networks of the manufacturers.

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