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Franchise Fees and Royalties: Theory and Empirical Results

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Abstract This is the first econometric study that explores which franchisors in Japan require royalties, what determines the royalty rates of those that require sales-based royalties, and what determines their franchise-fee amounts. Our findings are broadly consistent with the standard principal-agent view of franchise contracts, in which royalties heighten franchisor performance incentives. From an analysis of a broad sample of 278 franchisors in Japan, in 2001, we find that franchise contracts are more likely to include royalties if franchisor performance incentives are more valuable. The same conditions are associated with higher sales-based royalty rates and higher franchise-fee amounts.

Keywords Franchising · Fee structure · Empirical study · Moral-hazard

JEL Classification D86 · L14 · L22 · L81 · M21 · M31

1 Introduction

This is an empirical study of which franchisors in Japan are most likely to require royalties, what determines the royalty rates of those that require sales-based royalties, and what determines franchise-fee amounts. The focus is a sample of 278 franchisors in 2001, from a wide span of industries, with varying fee structures. Our findings are broadly consistent with the standard principal-agent view of franchise contracts,

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in which royalties heighten franchisor performance incentives but weaken franchisee performance incentives and also shift risk from the franchisees to the franchisor. Our empirical estimates point toward franchisor incentives as being more important than the other factors in determining royalty rates and franchise-fee amounts in Japan.

We find that franchise contracts in Japan are more likely to include royalties if franchisor performance incentives are more valuable. The same conditions are associated with higher sales-based royalty rates and higher franchise-fee amounts. On the other hand, indicators that franchisee performance incentives are more valuable or that franchisee outlet risk is greater have little effect on franchise contracts, or possibly even an anomalous effect. We also find evidence that franchise-fee amounts are set not only to appropriate economic rent but also to finance franchisor operations. Our main result is that franchise contracts in Japan fit the principal-agent framework in the sense that they are gauged to preserve franchisor incentives to maintain franchise value.

This is the first statistical analysis of franchise royalty rates and franchise fees in Japan.[1] We follow in the wake of numerous earlier studies for the US beginning with Lafontaine (1992) and continuing with Wimmer and Garen (1997) and Brickley (2002), and the recent study by Vazquez (2005) for Spain. We use many similar variables to the ones that have been used in the previous studies, and our findings overlap with theirs. At the outset let us note some differences between franchise contracts in Japan and elsewhere that motivate our study.

Fee structure is an important element of franchise contracts. It involves two distinct elements: In general, franchisors require franchisees to pay fixed franchise fees. These fees are paid only once at the beginning of the contract period. In addition, franchisors typically require franchisees to pay ongoing royalties throughout the life of their contracts. There is a remarkable difference in the fee structure between the US and Japan. Blair and Lafontaine (2005) show that in 2001 in the US 99.2% of franchisors set franchise fees, and 91.9% required sales royalties. In contrast, *Nihon no furanchaizu cheen 2003* (Japanese franchise chains 2003) published by Shogyokai (2003) reported that 89.7% of the franchisors set franchise fees, and 54.8% required royalties in 2001 in Japan.[2] While most US chains required royalties, only about half of the Japanese chains did.

Comparing the samples of the US and Japan, we think that it is neither a different definition of royalties nor a matter of a different mix of franchisors across industries that explains the wider use of royalties in the US. It reflects different laws and regulations. For example, Blair and Lafontaine (2005, p. 66) stated that in the US, "an important decision by the Supreme Court, *Siegel v. Chicken Delight* (1971), made it more difficult for business-format franchisors to earn revenues from sales of goods to franchisees at a markup. This likely encouraged a switch toward more royalty fees

[1] In Maruyama and Yamashita (2010) we analyzed the variation in the proportion of company-owned (franchisor-owned) outlets across franchise chains in Japan. In this paper, we do not treat this aspect. For other analyses of company-owned outlets see Norton (1988), Minkler and Park (1994), Scott (1995), Affuso (2002), Michael and Bercovitz (2009).

[2] The royalties include sales-based royalties (based on sales revenue), margin-based royalties (based on gross margin: sales minus cost of goods sold), and royalties per unit sold.

from the early 1970s onward." Also, Brickley (2002) examined how state franchise termination laws in the US affect franchise contracts.

In Japan, there are some cases in which the franchisor requires the purchase of specified inputs from the franchisor and charges the franchisee elevated prices on those inputs. In the antitrust law in Japan, tie-ins that unduly restrict the freedom of a franchisee to purchase products other than the principal product are prohibited under Article 10 of the Notification in Japan when they are imposed without justification (such as the need for uniformity of image, protection of the brand or quality). But the penalties for violation are small, and enforcement is lax. Franchise contracts in Japan have thus evolved in a more laissez faire environment than in the US and so afford a good opportunity to observe economic forces at work.

2 Fee Structures in Japanese Franchising

Our empirical study is based on a large sample of franchise chains from Shogyokai (2003). We use firm-level data for 572 franchisors that are involved in 33 industry sectors in Japan in 2001, including retailing (convenience stores, supermarkets, medicines/cosmetics, etc.), services (dry cleaning, hair salon/health & beauty, real estate agencies, etc.), and restaurants. The data were collected through a questionnaire that was mailed to franchise chains. We can summarize the structure of franchise fees and royalties as follows: Among the 572 franchisors, 513 charged franchise fees, 43 did not charge them, and 16 gave no explanation.

Table 1 summarizes the royalty structures of the 572 franchisors. These can be broadly separated into royalties per month and no royalties. Among the 305 franchisors that required royalties, 299 charged some form of percentage royalties. The preponderance [275 of the franchisors (92.0%)] charged sales-based royalties. Among the others, 24 franchisors (8.0%) charged margin-based royalties,[3] and the remaining six franchisors required variable payments charged as a fee per unit sold. Note that 252 franchisors did not require royalties at all. However among these, 149 franchisors did charge fixed monthly payments.

Table 2 shows the distribution of franchise fees and sales-based and margin-based royalties in Japan in 2001. The franchise chains are grouped into nine industries. As can be seen in Table 2, about 90% of all franchise chains set franchise fees as an initial one-time payment. The restaurant sector had the largest percentage of chains that adopted franchise fees (95.7%), followed by the service sector (89.5%), and the retailing sector (79.7%). Average franchise fees were 1.71 million yen (US$13,000) overall. This average was largest in the restaurant sector (1.76 million yen), followed by services (1.69 million yen), and retailing (1.50 million yen).[4]

[3] In the Profile of Franchising (2000), the IFA Educational Foundation and Frandata reported that in the US, among the 1,006 franchisors that required percentage royalties, 932 franchisors (92.6%) used sales-based royalties, while only six franchisors (0.6 %) used margin-based royalties, and the remaining franchisors used some other basis.

[4] For the distribution of franchise fees and sales-based royalties across industry sectors in the US, see Blair and Lafontaine (2005, pp. 56-61, and 62-69). In 2001, the median of franchise fees was $20,000 in the US; however it was $10,000 in Japan. It may be interesting to note that there is a great difference between them.

Table 1 Royalty structures in Japan

Royalties				305
Sales-based royalties			275	
Single rate		255		
Single rate (pure form)	234			
With fixed payment required	9			
With minimum payment required	8			
With maximum payment required	4			
Multiple rates		20		
Different rates among goods	12			
Rate is a function of sales	4			
Different rates among contract lengths	4			
Margin-based royalties			24	
Single rate		22		
Single rate (pure form)	21			
With minimum payment required	1			
Multiple rates		2		
Rate is a function of sales	2			
Royalties per unit sold			6	
No royalties				252
Fixed monthly payments			149	
Single fee		125		
Different fees among different outlets		17		
Different fees among contract lengths		7		
No monthly payments			103	
No explanation				15
Total				572

Source: Shogyokai (2003), *Nihon no furanchaizu cheen 2003* (Japanese franchise chains 2003)

Table 2 also shows that 48.1% of all franchise chains adopted sales-based royalties: 32.3% in retailing, 50.8% in service, and 58.9% in restaurants. In contrast, only 4.2% of all franchise chains adopted margin-based royalties. The convenience store chains are atypical in that more of them (65.4%) adopted margin-based royalties than adopted sales-based royalties (15.4%). Actually, convenience store chains account for more than two-thirds of all instances of margin-based royalties that are reflected in the table. That is, 17 of the 24 franchisors adopting margin-based royalties were convenience store chains.[5] The average sales-based royalty rate was about 5% overall. This average rate was largest in the service sector (8.8%), followed by the retailing sector (3.9%),

[5] Since 7-Eleven Japan adopted margin-based royalties in 1973, many rival convenience chains followed suit (see, for example, Lal et al. 2000; Jeon and Park 2002). It is interesting to examine why convenience stores so heavily use margin-based royalties in Japan. Some practitioners say that margin-based royalties are more equitable to both a franchisor and franchisees than are sales-based royalties. However, there is little empirical or theoretical analysis on this.

Table 2 Franchise fees and royalties in Japan

Sector	Number of chains	Franchise fees			Sales-based royalties			Margin-based royalties		
		% of the chains with franchise fees	Amount (¥ million)		% of the chains with sales-based royalties	Rate (%)		% of the chains with margin-based royalties	Rate (%)	
			Mean	SD		Mean	SD		Mean	SD
Retailing	133	79.7	1.498	1.011	32.3	3.9	3.5	14.3	30.6	11.1
Convenience stores	26	92.3	1.423	0.846	15.4	3.5	0.7	65.4	29.3	8.3
Retailing (food non-convenience)	16	75.0	1.001	0.771	25.0	2.3	1.9	6.3	20.0	0.0
Retailing (non-food)	91	76.9	1.609	1.079	38.5	4.2	3.7	1.1	60.0	0.0
Service	124	89.5	1.694	1.406	50.8	8.8	6.7	1.6	18.0	0.0
Automotive product and services	5	80.0	1.600	0.800	40.0	2.5	0.7	0.0		
Construction and cleaning services	67	86.6	1.736	1.651	40.3	7.2	4.7	0.0		
Educational products and services	41	95.1	1.511	1.002	63.4	12.3	8.2	4.9	18.0	0.0
Rental services	11	90.9	2.200	1.418	72.7	5.0	1.7	0.0		
Restaurants	231	95.7	1.755	1.399	58.9	3.6	1.7	0.0		
Miscellaneous	84	89.3	1.902	1.393	39.3	6.1	4.6	3.6	22.7	15.4
Total	572	89.7	1.710	1.331	48.1	5.1	4.5	4.2	28.4	11.6

Source: Shogyokai (2003), *Nihon no furanchaizu cheen 2003* (Japanese franchise chains 2003)

and the restaurant sector (3.6%).[6] The average rate for margin-based royalties was 28.4% overall and 29.3% for convenience stores.

3 Hypotheses

Our hypotheses are based on a principal-agent model of the franchise contract, in which franchisor effort and franchisee effort are both valuable, the franchisor is risk-neutral but the franchisee is risk-averse, and efforts are not directly observable but are correlated with franchisee sales or profit margins, which are observable. This framework is represented by an algebraic model that we include as an appendix. Here we sketch some of the main empirical implications of that model.

3.1 Moral-Hazard

In franchise contracts with no royalty payments, the franchisees fully appropriate the returns from their own efforts without the need for any monitoring by the franchisor. And this is optimal, if there are no risk-bearing considerations (for example if franchisor and franchisee are both risk neutral), and if franchisee profits do not depend on franchisor effort. In this instance the franchisor fully appropriates any economic rent through a franchise fee that is equal to the discounted present value of the expected franchisee profit, as noted by Lal (1990) and Romano (1994). But franchisor effort often is an important influence on franchisee profit. Franchisees generally expect that the franchisor will work to maintain the value of the trademark by advertising and promotion. If such franchisor efforts are not monitored by franchisees, this creates a franchisor moral-hazard problem (Rubin 1978). One way of addressing such a problem is to include in the contract a variable payment to the franchisor (i.e., royalties) based on outlet sales or gross margin, so that the franchisor has an enhanced incentive to exert effort in managing the overall system (Rubin 1978; Mathewson and Winter 1985; Lal 1990; Bhattacharyya and Lafontaine 1995). Therefore, we expect to observe:

Hypothesis 1: Where franchisor effort is more valuable, royalties are more likely.

Royalties that franchisees are obliged to pay to the franchisor afford an economic incentive for the franchisor to exert effort but a disincentive for the franchisee to exert effort. Intuitively, we can predict that increasing importance of franchisee effort relative to franchisor effort leads to the royalty rate being lowered by the franchisor. This gives the franchisee an enhanced incentive to exert effort. Therefore, we expect to observe:

Hypothesis 1a: Where franchisee effort is more valuable, the royalty rate is likely to be lower.

[6] According to Lafontaine (1992), the average rate of sales-based royalties in the US was 6.5% in 1986. This average rate is the largest in the auto service sector (9.2%), is about 6% in the retailing sector, and is 6.6% in the restaurant sector.

Hypothesis 1b: Where franchisor effort is more valuable, the royalty rate is likely to be higher.

We presume that franchisees are drawn from a competitive pool of candidates so that franchise-chain economic rent accrues to the franchisor. This means that the terms of the franchise contract are subject to the franchisee participation constraint. Exogenous factors that increase the value of a franchise lead to an increase in the franchise fee, given the royalty rate. If the same exogenous factors also lead to a lower royalty rate, this implies a further increase in the franchise fee. Accordingly, we assert the following.

Hypothesis 1c: Where franchisee effort is more valuable, the franchise fee is likely to be higher.

With the additional stipulation that franchisor effort contributes greater marginal value to the franchise than franchisee effort contributes, we also assert the following (see the appendix for proof):

Hypothesis 1d: Where franchisor effort is more valuable, the franchise fee is likely to be higher.

Previous literature makes similar predictions about Hypotheses 1a and 1b (Lafontaine 1992; Vazquez 2005), and Hypothesis 1c (Vazquez 2005). However, Vazquez (2005) makes opposite predictions about Hypotheses 1d.

3.2 Outlet Risk

It is widely presumed that franchisees are more risk averse than franchisors (e.g., Rubin 1978; Lafontaine 1992). Franchisees invest large proportions of their wealth in their franchises, which are often sole proprietorships. Franchisors are often publicly-held companies, whose owners hold diversified portfolios. In the algebraic model of the appendix, the franchisee is risk averse but the franchisor is risk neutral. In this setting, apart from any incentive effects, royalties enable efficient risk allocation between the franchisor and franchisees (Stiglitz 1974). According to this argument, if the franchisee is risk averse, then higher risk at the outlet level makes the franchisor more likely to add variable royalty payments in the contract, in addition to its fixed franchise fee.

Hypothesis 2: Where outlet risk faced by the franchisee is higher, royalties are more likely.

Only the adverse effect on franchisee incentives prevents setting the royalty rate at the highest feasible level consistent with the franchisee participation constraint. More realistically, the optimal royalty rate balances the marginal improvement in allocation of risk against the marginal effects on incentives to exert efforts. If the franchisee is risk averse and the franchisor is not, and the franchisee disincentive effects of royalties are significant, then greater outlet risk for the franchisee would lead the franchisor to choose a contract with a higher royalty rate and a lower fixed franchise fee. Therefore, we expect to observe:

Hypothesis 2a: Where outlet risk faced by the franchisee is higher, the royalty rate is likely to be higher.

Hypothesis 2b: Where outlet risk faced by the franchisee is higher, the franchise fee is likely to be lower.

For Hypotheses 2a and 2b, Lafontaine (1992), Sen (1993), and Vazquez (2005) make similar predictions.

3.3 Capital Constraint

Practitioners typically say that up-front franchise fees compensate for initial franchisor services such as site selection and training. In addition, according to the argument of imperfect capital markets, a franchisor is more likely to put higher up-front fees in its contracts if it is unable to raise the capital it needs (Caves and Murphy 1976). Therefore, we expect to observe:

Hypothesis 3: Where the franchisor is more capital constrained, the franchise fee is likely to be higher.

This hypothesis is examined empirically by many researchers (see Lafontaine 1992; Sen 1993).

4 Variables

4.1 Franchisee Moral-Hazard

Two components are related to the problem of moral-hazard: the importance of effort, and the cost of monitoring effort. The greater the importance of effort for franchise performance and the higher the cost of monitoring, the larger is the value of reducing moral-hazard. In previous literature, spatial factors have been used for measuring the difficulty in monitoring franchisee effort. Lafontaine (1992), Scott (1995) and Vazquez (2005) used geographic dispersion of outlets as a proxy for the cost of monitoring, and Brickley and Dark (1987) and Minkler (1990) used the distance between outlets and headquarters. We have no such data. We presume, in this paper, that there is a difficulty in monitoring franchisee effort in general, and focus our attention on measuring the importance of effort.

There have been several proxies for the importance of franchisee effort in previous literature, including measures of labor intensity (Norton 1988; Scott 1995), a franchisee's value added (Lafontaine 1992), outlet size (Norton 1988; Lafontaine 1992), and whether previous experience in the business is required (Lafontaine 1992). In this paper, we use three variables as proxies for the importance of franchisee effort. The first variable is the *franchisee's value added per outlet* as in Lafontaine (1992). Our measure of franchisee's value added is: [sales per outlet—(cost of goods sold per outlet + selling and administrative expenses per outlet)] / sales per outlet. Note that we construct this variable at the chain level. The similar measure used by Lafontaine (1992)

was on a sectoral basis. The second and third variables are measures of the outlet size, because larger outlets require greater franchisee managerial effort: the average annual *sales per outlet* (Norton 1988; Lafontaine 1992); and the *number of employees per outlet* in each chain (Lafontaine 1992; Scott 1995).

4.2 Franchisor Moral-Hazard

The previous literature has used several variables as proxies for the importance of franchisor effort. These include measures of effort to develop franchise packages (Lafontaine 1992; Thompson 1994), indications of franchisor-supplied initial training (Lafontaine 1992; Scott 1995), and indications of efforts at maintaining the value of the trade name (Lafontaine 1992). In this paper, we address the issues of developing franchise packages, maintaining the value of the trade name, and supplying management services. As in Lafontaine (1992), the cost of developing franchise packages is measured by the *proportion of company history before franchising* defined as the number of years spent in developing the business format prior to franchising, divided by the total number of years in business.

We use two variables for the importance of franchisor's effort to maintain the value of the trade name: the *number of outlets*; and the number of *years in business*. The reason is that trade name value increases as the number of outlets displaying it increases, and trade name value is higher for well-established franchisors.

We use two variables as indicators of the importance of franchisors' supplying of management services. The first variable is whether or not the franchisor requires the franchisees to report their financial conditions. We set a dummy variable at 1 for franchisors that require monthly financial reports from franchisees (*requirement of financial reporting*). It is difficult for a franchisor to provide appropriate management services without accurately determining the management status of the franchisees. By imposing management reporting requirements, the franchisor can understand the franchisee's management status and supply appropriate management service efforts based upon this.

The other variable that is related to the importance of franchisor effort at supplying management services is the requirement of cash transfer of daily sales revenue to the franchisor. We set a dummy variable at 1 for franchisors that require daily transfer of cash receipts from their franchisees (*requirement of daily transfer of cash receipts*). The requirement for cash transfers is similar to management reporting in that it acts as important information for understanding the management status of the franchisee and for carrying out management service. In addition, in cases where the requirement for cash transfers is imposed, a shared accounting system between the franchisor and franchisee is created, and efforts such as operating this are carried out by the franchisor.[7]

[7] As suggested by a referee, there is an alternative hypothesis that cash transfer and report on financial conditions reduce the costs of monitoring franchisees' effort. That is, if detailed reports are received regularly, then the franchisor can better monitor the franchisee (and better deal with potential franchisee moral-hazard). This will in turn decrease the reliance on royalties.

4.3 Outlet Risk

The outlet risk faced by a franchisee is measured either by some indicator of sales variability (the variation in sales per outlet in each sector) or by the failure rate (the percentage of outlets that are terminated in a particular period of time). Some previous empirical studies use variation in sales per outlet as an indicator of risk (Martin 1988; Norton 1988; Lafontaine 1992, 1993; Vazquez 2005). Several also use the average proportion of discontinued outlets in the sector as a measure of risk (Lafontaine 1992, 1993; Vazquez 2005). We have no such data. It has been stressed in the literature that variation of annual sales is not a good proxy for the level of risk born by franchisees (see for instance Lafontaine and Bhattacharyya 1995, in particular their Sect. 3). However, a better measure of outlet risk is generally not available (Lafontaine and Slade 1997). In this paper, we use the *coefficient of variation of annual sales per outlet* in 1999–2001 as a proxy for outlet risk.

4.4 Capital Constraint

The franchisor capital constraint reflects the amount of capital that is required and the cost of capital. As indicators of the amount of capital that is required, we use the amount of *capital required* to open an outlet and the *growth in the total number of outlets* in the chain, as in Lafontaine (1992). The capital used to open an outlet (the initial investment and the cost of the store's initial inventory and supplies, etc.) is usually shared between a franchisor and a franchisee, so the greater the amount required per outlet and the greater the number of new outlets, the greater the possibility of shifting capital costs from franchisor to franchisees. The growth in the total number outlets is measured as the difference in the number of total outlets in 1999 and 2000. Our variable indicating the cost of capital is the number of *years in business* (Lafontaine 1992; Sen 1993), because more established firms tend to have lower costs of capital.

4.5 Control Variables

The proportion of company-owned outlets is an important indicator of whether the franchisor would be tempted to shirk on system-wide efforts. This is, of course, related to franchisor moral-hazard.[8] That is, it is possible to think that if the proportion of company-owned outlets is lower, then franchisor moral-hazard becomes more significant for franchisees. On the other hand, the franchisor can commit itself not to shirk by increasing the proportion of company-owned outlets when franchisor moral-hazard seems to be significant for franchisees. That is, alternatively we can think that if the franchisor moral-hazard is more significant, then the proportion of company-owned outlets will be increased.[9] Therefore, we will control for *proportion of company-owned outlets* in our empirical analysis.

[8] This is suggested by the editor.

[9] This was significant in our previous analysis (Maruyama and Yamashita 2010).

Table 3 Summary statistics (probit regression)

Variable	Mean	SD	Min	Max
Existence of royalties	0.604	0.490	0.000	1.000
Proportion of company history before franchising	0.363	0.281	0.000	0.952
Number of outlets (thousand)	0.307	0.761	0.002	7.734
Years in business (hundred)	0.259	0.184	0.030	1.330
Requirement of financial reporting	0.730	0.445	0.000	1.000
Requirement of daily transfers of cash receipts	0.176	0.382	0.000	1.000
Coef. of variation of annual sales per outlet	0.097	0.141	0.000	0.954
Proportion of company-owned outlets	0.259	0.261	0.000	0.990
Retail dummy variable	0.234	0.424	0.000	1.000
Service dummy variable	0.169	0.375	0.000	1.000
Restaurant dummy variable	0.475	0.500	0.000	1.000

For the analysis of royalties, we use dummy variables to control for industry categories.[10] This is because, as shown in Sect. 2, there are significant differences across industries both in the proportion of chains that employ sales-based royalties and in the royalty rates. However, because there is little variation across industries in the amount of franchise fees, we do not use dummy variables for the analysis of franchise fees.

Tables 3 and 4 show the descriptive statistics for all the variables used in our estimation.[11] The source for all of the variables is Shogyokai (2003). All observations are at the level of the franchisor company. The dataset includes about half of all franchisors in Japan but seems to be a representative sample in the sense that the distribution of franchisors across industries matches those reported by the Japan Franchise Association in 2001, based on a Chi-Square test for difference in means (Chi-square = 4.099 and degree of freedom = 3).

5 Empirical Estimates

5.1 Specification

To test our hypotheses we estimate three regressions: The first is a probit regression in which the dependent variable is equal to one if the franchisor requires royalties (sales-based royalties, margin-based royalties, or royalties per unit sold), and equal to zero otherwise. The other two regressions are OLS estimates explaining the

[10] Those sectors are retailing, services, restaurants, and miscellaneous.

[11] When we look hard at the minimum and the maximum values for each variable, there are no anomalous variables except for (sales-based) royalty rate: 45% (max). It seems that this higher royalty rate is likely to be based on gross margins or profits rather than sales. However, when we examine this franchisor, we know that this is the sales-based royalty. This chain provides educational products and services with satellite communication, which is a low overhead business and can earn normal profits. Thus, we chose to include this franchise observation in our analyses.

Table 4 Summary statistics (OLS regression)

Variable	Mean	SD	Min	Max
(Sales-based) royalty rate (%)	4.939	4.968	0.500	45.000
Franchise fee (¥million)	2.012	1.615	0.000	10.000
Franchisee's value added per outlet	0.503	0.154	0.056	0.900
Sales per outlet (¥million)	55.153	57.841	1.046	430.596
Number of employees per outlet	10.504	9.344	1.000	65.000
Proportion of company history before franchising	0.364	0.282	0.000	0.887
Number of outlets (thousand)	0.186	0.291	0.002	1.540
Years in business (hundred)	0.237	0.148	0.030	1.030
Requirement of financial reporting	0.822	0.384	0.000	1.000
Requirement of daily transfers of cash receipts	0.178	0.384	0.000	1.000
Coef. of variation in sales per outlet	0.105	0.151	0.000	0.954
Capital required (¥million)	24.247	23.877	0.300	133.600
Growth in the total number of outlets	0.248	0.647	−0.455	5.667
Proportion of company-owned outlets	0.328	0.270	0.000	0.929
Retail dummy variable	0.110	0.314	0.000	1.000
Service dummy variable	0.178	0.384	0.000	1.000
Restaurant dummy variable	0.602	0.492	0.000	1.000

sales-based royalty rate and the franchise-fee amount. We deviate from previous studies in estimating separate probit and OLS equations explaining the existence of a royalty stipulation and explaining the (sales-based) royalty rate. Previous studies estimate the two together using a Tobit specification (Lafontaine 1992; Wimmer and Garen 1997; Brickley 2002; and Vazquez 2005). The reason we deviate from this is that in our data the alternatives to a sales-based royalty are multiple, not simply the absence of any royalty stipulation but also a margin-based royalty or a royalty per unit sold. We have not found a tractable way of incorporating these wider alternatives into a latent-variable specification resembling Tobit, so we proceed by estimating separate equations using probit and OLS.

In the probit regression equation explaining the existence of royalties, the independent variables (and their presumed directions of influence based on hypothesis) are indicators of importance of franchisor effort (+, H1), an indicator of franchisee outlet risk (+, H2), and control variables. Complete and consistent information for the probit estimate was available for 278 of the initial 572 franchisors.

In the OLS equation explaining the sales-based royalty rate, the independent variables are indicators of importance of franchisee effort (−, H1a) and importance of franchisor effort (+, H1b), our indicator of franchisee outlet risk (+, H2a), and control variables. In the OLS equation explaining the franchise-fee amount, we include indicators of importance of franchisee effort (+, H1c) and importance of franchisor effort (+, H1d), our indicator of franchisee outlet risk (−, H2b), and control variables, and also include variables indicating stringency of franchisor capital constraint (+, H3). In this equation the franchise-fee amount is the actual amount per franchisee outlet.

Using instead the franchise-fee amount per unit of retail sales per outlet yielded similar estimates (which we do not report). Complete and consistent information for the regressions explaining sales-based royalty rate and franchise-fee amount was available for 118 of the initial 572 franchisors.

In our framework, the franchise-fee amount and sales-based royalty rate are each influenced by many of the same factors. Our specification embraces the view, common in the literature, that these factors are all exogenous. But we also explored the possibility that franchise-fee amount and royalty rate are interdependent in the sense that a system estimate would be required for efficient estimation of structural equations. Because the industry dummy variables are in the royalty rate equation but not in the franchise-fee amount equation, and variables indicating stringency of franchisor capital constraint are in the franchise-fee amount equation but not the royalty rate equation, the system is potentially identified. Consequently, we include the franchise-fee amount as a regressor in the equation explaining the royalty rate and vice versa, but neither is statistically significant, either in the OLS estimates that we report nor in the instrumental variable estimates that we do not report (which were very similar). Hausman specification tests (Hausman 1978) favor the OLS estimators, and those are the ones that we report.

5.2 Estimates

The results of estimation are in Tables 5, 6, and 7. In those tables, coefficient estimates in conformity with hypothesis (correct sign and statistically significant) are indicated by "O" and those in contradiction of hypothesis (incorrect sign and statistically significant) are indicated by "X". The Table 5 estimates of the probit regression explaining existence of royalties, the Table 6 estimates of the OLS regression explaining sales-based royalty rate, and the Table 7 estimates of the OLS regression explaining franchise-fee amount all support the franchisor moral-hazard explanation of franchise contract stipulations. But the OLS regressions (Table 6) contradict the franchisee moral-hazard explanation, in that higher *franchisee value-added per outlet* is associated with higher sales-based royalty rates. We have no explanation for this result but note its contradiction of the franchisee moral-hazard hypothesis (Hypothesis 1a). The franchise-fee amount regression estimate (Table 7) supports the franchisor capital constraint explanation for franchise fees. None of the regression estimates support or contradict the franchisee risk-bearing explanation for franchise contract stipulations. We next comment on each of the regression estimates.

5.2.1 Existence of Royalties

The results of the probit regression explaining the presence or absence of royalties are shown in Table 5, which reports the coefficients and marginal effects. The marginal effects are calculated holding the continuous variables at their means and the discrete variables at zero. The marginal effect of each discrete variable is for change of the variable from 0 to 1. The left-hand columns of Table 5 describe estimates for all industry categories, and the right-hand columns are for restaurant franchisors only

Table 5 Probit regression: likelihood that franchise contract includes royalties

Independent variables	Hypothesis (expected sign)	Dependent variable = 1 if franchisor requires royalties, otherwise = 0							
		All franchisors				Restaurant franchisors only			
		Coefficient	Marginal effect	z-value	Conformity with hypothesis	Coefficient	Marginal effect	z-value	Conformity with hypothesis
Importance of franchisor effort									
Proportion of company history before franchising	H1(+)	−0.401	−0.150	−1.10		0.321	0.118	0.58	
Number of outlets	H1(+)	0.278	0.104	1.42		0.131	0.048	0.48	
Years in business	H1(+)	−0.006	−0.002	−0.01		−0.972	−0.356	−1.23	
Requirement of financial reporting	H1(+)	0.579***	0.222	3.08	**O**	0.556*	0.211	1.95	**O**
Requirement of daily transfers of cash receipts	H1(+)	0.985***	0.306	3.48	**O**	0.941*	0.272	1.71	**O**
Franchisee outlet risk									
Coef. of variation in sales per outlet	H2(+)	0.126	0.047	0.19		−1.783	−0.653	−1.57	
Control variables									
Proportion of company-owned outlets		1.636***	0.612	4.15		1.836***	0.672	3.13	
Retail dummy variable		−0.195	−0.074	−0.65					
Service dummy variable		0.802**	0.259	2.53					
Restaurant dummy variable		0.229	0.085	0.85					
Constant		−0.812***		−2.67		−0.402		−1.17	
Goodness of fit									
Number of observations		278				132			
LR chi2		69.22				32.17			
Prob > chi2		0.000				0.000			
Pseudo R2		0.186				0.185			

***, and **, and * indicate coefficients that are significant at the 0.01, 0.05, and 0.1 levels, respectively

Table 6 OLS regression: sales-based royalty rate

Independent variables	Hypothesis (expected sign)	Dependent variable = sales-based royalty rate		
		Coefficient	t-value	Conformity with hypothesis
Franchise fee		0.041	0.15	
Importance of franchisee effort				
Franchisee's value added per outlet	H1a (−)	10.061***	3.28	**X**
Sales per outlet	H1a (−)	−0.005	−0.59	
Number of employees per outlet	H1a (−)	−0.014	−0.28	
Importance of franchisor effort				
Proportion of company history before franchising	H1b (+)	1.664	0.97	
Number of outlets	H1b (+)	2.769*	1.76	**O**
Years in business	H1b (+)	−0.673	−0.19	
Requirement of financial reporting	H1b (+)	1.540	1.42	
Requirement of daily transfers of cash receipts	H1b (+)	0.598	0.57	
Franchisee outlet risk				
Coef. of variation in sales across outlets	H2a (+)	−0.362	−0.12	
Control variables				
Proportion of company-owned outlets		−0.521	−0.31	
Retail dummy variable		2.465	1.34	
Service dummy variable		4.716***	3.09	
Restaurant dummy variable		−0.372	−0.26	
Constant		−2.793	−1.01	
Goodness of fit				
Number of observations			118	
Chi-squared			4.74	
Prob > Chi-squared			0.000	
Adjust R-squared			0.309	

***, and **, and * indicate coefficients that are significant at the 0.01, 0.05, and 0.1 levels, respectively

(which are a large fraction of the total sample, 37.8% of all the franchisors in 2001, according to the statistics issued by the Japan Franchise Association). The estimates of the probit equation for restaurant franchisors are similar to those for the pooled sample. We report the results with continuous variables not in logarithms. The results with logarithmic transformation of all the continuous variables were very similar to the ones that we report.

The coefficients on two of the variables indicating importance of franchisor effort, *requirement of financial reporting* and *requirement of daily transfer of cash receipts*, are positive and significant at the one percent level, which is consistent with

Table 7 OLS regression: franchise-fee amount

Independent variables	Hypothesis (expected sign)	Dependent variable = Franchise-fee amount		
		Coefficient	t-value	Conformity with hypothesis
Sales-based royalty rate		0.762	0.24	
Importance of franchisee effort				
Franchisee's value added per outlet	H1c (+)	0.749	0.68	
Sales per outlet	H1c (+)	0.006*	1.67	**O**
Number of employees per outlet	H1c (+)	−0.005	−0.27	
Importance of franchisor effort				
Proportion of company history before franchising	H1d (+)	1.828***	3.00	**O**
Number of outlets	H1d (+)	0.001**	2.12	**O**
Requirement of financial reporting	H1d (+)	0.794**	2.05	**O**
Requirement of daily transfers of cash receipts	H1d (+)	−0.126	−0.34	
Franchisee outlet risk				
Coef. of variation in sales across outlets	H2b (−)	−1.200	−1.09	
Franchisor capital constraint				
Capital required	H3 (+)	0.015	1.48	
Growth in the total number of outlets	H3 (+)	0.076	0.29	
Years in business	H1d (+) H3 (−)	−0.044***	−3.64	**O**
Control variables				
Proportion of company-owned outlets		0.094	0.16	
Constant		0.588	0.73	
Goodness of fit				
Number of observations			118	
Chi-squared			2.75	
Prob > Chi-squared			0.001	
Adjust R-squared			0.163	

***, and **, and * indicate coefficients that are significant at the 0.01, 0.05, and 0.1 levels, respectively

Hypothesis 1 (where franchisor effort is more valuable, royalties are more likely). These results support the franchisor moral-hazard explanation for royalties, which previous literature has not.

We used *requirement of financial reporting* and *requirement of daily transfer of cash receipts*, as proxies for the importance of franchisor efforts. But, alternatively, might these stipulations be necessary for the franchisor to calculate royalties, even if franchisor moral-hazard is not the motivation for the royalties? That is, a franchisor that requires royalties on sales will want to know quite precisely what those franchisee sales are. The issue of franchisees' misreporting outlet-level sales is of great

importance to franchisors. Thus those who set royalties are more likely to require financial information and cash transfers for the purposes of preventing such misreporting. But, in our data, chains that do not impose a requirement for cash transfers despite imposing royalties comprise 46% of the total. In addition, 11% of the chains do not impose management reporting despite imposing royalties. It seems from this that franchisors that require royalties do not necessarily also impose management reporting and cash transfer requirements.

Furthermore, if contrary to our presumption, the *requirement of financial reporting* and *requirement of daily transfer of cash receipts* are devices to deter franchisee moral-hazard, then franchisors should be more likely to make these stipulations where franchisee effort is important. We attempted to estimate such relationships using a multinomial probit specification (explaining existence of royalty, requirement of financial reports, and requirement of cash transfers), but the estimated coefficients were not significant. This is a further indication that we are correct to associate *requirement of financial reporting* and *requirement of daily transfer of cash receipts* with franchisor efforts rather than with franchisee moral-hazard issues.

5.2.2 Sales-Based Royalty Rate

The OLS estimates of the sales-based royalty rate equation are in Table 6. The coefficient of *number of outlets* is positive and significant, which supports Hypothesis 1b (where franchisor effort is more valuable, the royalty rate is likely to be higher). Consistent with this same hypothesis, the *requirement of financial reporting* and *requirement of daily transfer of cash receipts* are both positive, but neither is statistically significant. Again, the importance of franchisor effort is seen to be an influence on franchise contract stipulations.

The coefficient of *franchisee's value added per outlet* is positive, which contradicts Hypothesis 1a (where franchisee effort is more valuable, the royalty rate is likely to be lower). We have no explanation for this anomalous result.

The coefficient on the dummy variable for service franchisors is positive, meaning that service franchisors are likely to have higher sales-based royalties than do others. The coefficient on this dummy is also positive in the Table 5 probit regression, meaning that service franchisors are more likely than are others to collect royalties. The two results may have a common explanation. The greater likelihood of requiring royalties and the higher sales-based royalty rates of service franchisors may be because, compared to others, they are less able to appropriate economic rent by selling goods to franchisees at a markup (Rao and Srinivasan 1995).

5.2.3 Franchise-Fee Amount

The results of OLS estimate explaining franchise-fee amount is in Table 7. The coefficient of *sales per outlet* is positive and significant, which is consistent with Hypothesis 1c (where franchisee effort is more valuable, the franchise fee is likely to be higher).

The coefficients of *proportion of company history before franchising*, of *number of outlets*, and of *requirement of financial reporting* are all positive and significant, which supports Hypothesis 1d (where franchisor effort is more valuable, the franchise fee is

likely to be higher). Again, variables that are associated with franchisor moral-hazard seem to be related to franchise contract stipulations.

The coefficient of *years in business* is negative and statistically significant, which is consistent with Hypothesis 3 (where the franchisor is more capital constrained, the franchise fee is likely to be higher). Also consistent with this hypothesis, the coefficients of *capital required* and *growth in the total number of outlets* are both positive, but neither is statistically significant.

5.3 Comparison with Previous Studies

Taken altogether, our regression analysis of franchisor contracts in Japan suggests that franchisor moral-hazard considerations have a measurable influence on the existence of royalties and on the sales-based royalty rates and franchise-fee amounts. Furthermore, franchise fees seem gauged not only to appropriate economic rent but also to finance franchisor operations. Franchise fees and royalties do not seem much related to considerations of franchisee risk-bearing or incentives. Much of this overlaps with the results of previous studies.

One of the more recent empirical studies of franchise contracts is the Vazquez (2005) analysis of franchisors in Spain. An earlier influential study of franchise contracts in the US is Lafontaine (1992). Both of these studies, like this one, use the number of outlets as a variable that indicates the importance of franchisor effort and find that it is positively related to the royalty rate and the franchise-fee amount. Different from our finding, each finds that variables that are associated with the importance of franchisee effort (value added per outlet, Lafontaine 1992; number of employees per outlet, Vazquez 2005) are inversely associated with the royalty rate, as franchisee moral-hazard considerations might imply. Like our study, they also find no evidence that outlet risk has a measurable influence on franchise contract stipulations. Finally, like our study, these others uncovered some anomalies.

6 Conclusion

In the standard principal-agent view of franchise contracts, which is the basis for our analysis, royalties heighten franchisor performance incentives but weaken franchisee performance incentives and also shift risk from the franchisees to the franchisor. Our empirical estimates point toward franchisor incentives as being more important than the other factors in determining royalty rates and franchise-fee amounts in Japan. Franchisee performance incentives and risk-bearing costs here seem to have little effect on Japanese franchise contracts, or possibly even anomalous effects. But all of these inferences depend on our empirical variables being correlated with the unobservable factors that the principal-agent framework highlights.

Many of the variables that we use as proxies for importance of franchisor effort and franchisee effort—outlet risk, and the stringency of the franchisor's capital constraint—are also used by previous investigators of franchise contracts. For example, the number of outlets and the proportion of franchisor company history before franchising are proxies for the importance of franchisor effort. Value-added per outlet,

sales per outlet, and the number of employees per outlet are proxies for the importance of franchisee effort. Coefficient of variation in sales per outlet is a proxy for the potential risk exposure. The number of years that the franchisor has been in business is a proxy for the stringency of the franchisor's capital constraint. To these we add two original variables as further proxies for the importance of franchisor effort: whether the franchisor requires franchisees to submit monthly financial reports, and whether the former requires daily transfer of cash receipts. Like others before us, we have raised arguments in support of all of these proxy variables. But we admit that the proxy variables are not wholly satisfactory, so our inferences are tentative.

Our estimates uncovered that franchisors in Japan's service sector tend to have higher sales-based royalty rates than do others. That alone is an indication that there are industry-specific influences on franchise contracts that the other variables do not capture. Better empirical measures of relevant factors and more detail about the franchise contracts themselves, including stipulations about contract renewal fees, advertising fees, and so on, may be the way to sharpen our inferences. These issues remain for future study. We hope our empirical work will encourage further development in this direction.

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Appendix: Franchise Contract under Two-Sided Moral-Hazard

As a theoretical background for our hypotheses, we will consider the simplest possible model of a franchise contract between a franchisor and a single franchisee, and provide theoretical results for the effects of the importance of franchisor and franchisee efforts and outlet risk on the amount of franchise fees and royalties. Lafontaine and Slade (1996) develop a model of single-sided moral-hazard for franchisee effort. We will add franchisor efforts in their model. The retail demand function is given by

$$q = \theta_1 e_1 + \theta_2 e_2 + \varepsilon_1,$$

where e_1 is a franchisor effort, e_2 is a franchisee effort, and ε_1 is an external random disturbance of demand with mean 0 and variance σ_1^2. The parameters θ_1 and θ_2 indicate the importance of franchisor and franchisee efforts, respectively. The franchisor's cost of effort is given by

$$C_1 = \frac{e_1^2}{2}.$$

The franchisee's cost consists of a fixed initial cost f and the cost of ongoing effort:

$$C_2 = f + \frac{e_2^2}{2}.$$

The franchisor offers the franchisee a linear contract, which consists of ongoing sales-based royalties that take the form of a per-unit-sales commission, $(1-t)$, that satisfies the condition $0 \leq t < 1$, and an initial fixed franchise fee F. For simplicity, we assume that the retail price is exogenous and normalized to 1 as in Lafontaine and Slade (1996).

The franchisee's income is given by

$$\pi^D = (1-t)\, q - F - f - \frac{e_2^2}{2},$$

and the expected income is given by

$$E\left(\pi^D\right) = (1-t)\left(\theta_1 e_1 + \theta_2 e_2\right) - F - f - \frac{e_2^2}{2}.$$

We assume that the franchisee is risk averse. The utility function of the franchisee is given by

$$U = -\exp\left(-r\pi^D\right).$$

The certainty-equivalent income of franchisee is given by

$$\begin{aligned} CE &= E\left(\pi^D\right) - \frac{r}{2} Var\left(\pi^D\right) \\ &= (1-t)(\theta_1 e_1 + \theta_2 e_2) - F - f - \frac{e_2^2}{2} - \frac{r}{2}(1-t)^2\sigma_1^2. \end{aligned}$$

We assume that the franchisor is risk neutral. The expected income of franchisor is given by

$$E\left(\pi^U\right) = t(\theta_1 e_1 + \theta_2 e_2) + F - \frac{e_1^2}{2}.$$

Suppose that there is a moral-hazard problem for both parties. This situation is known as a two-sided moral-hazard. In this case, the risk-neutral franchisor chooses the variables t, F to maximize the franchisor's expected profit

$$\max_{t,F} \; E\left(\pi^U\right),$$

subject to the franchisee's participation constraint

$$CE \geq k, \text{ where } k \text{ is a reservation utility,}$$

and the franchisee's incentive-compatibility constraint

$$e_2 = \underset{e_2}{\text{argmax}}\ CE,$$

and the franchisor's incentive-compatibility constraint

$$e_1 = \underset{e_1}{\text{argmax}}\ E\left(\pi^U\right).$$

Then the equilibrium solutions are given by

$$t^* = \frac{\theta_1^2 + r\sigma_1^2}{\theta_1^2 + \theta_2^2 + r\sigma_1^2}, \tag{1}$$

$$F^* = \frac{\theta_2^2\left(2\theta_1^4 + \theta_2^4 + r\sigma_1^2\left(2\theta_1^2 - \theta_2^2\right)\right)}{2\left(\theta_1^2 + \theta_2^2 + r\sigma_1^2\right)^2} - f - k, \tag{2}$$

$$e_1^* = \frac{\theta_1\left(\theta_1^2 + r\sigma_1^2\right)}{\theta_1^2 + \theta_2^2 + r\sigma_1^2},$$

$$e_2^* = \frac{\theta_2^3}{\theta_1^2 + \theta_2^2 + r\sigma_1^2}.$$

It can easily be seen that $0 < t^* < 1$.

When franchisor effort is more important than franchisee effort ($\theta_1 > \theta_2$), the solutions (1) and (2) yield the following comparative statics:

$$\frac{\partial t^*}{\partial \theta_1} = \frac{2\theta_1\theta_2^2}{\left(\theta_1^2 + \theta_2^2 + r\sigma_1^2\right)^2} > 0,$$

$$\frac{\partial t^*}{\partial \theta_2} = -\frac{2\theta_2\left(\theta_1^2 + r\sigma_1^2\right)}{\left(\theta_1^2 + \theta_2^2 + r\sigma_1^2\right)^2} < 0,$$

$$\frac{\partial t^*}{\partial \sigma_1^2} = \frac{r\theta_2^2}{\left(\theta_1^2 + \theta_2^2 + r\sigma_1^2\right)^2} > 0,$$

$$\frac{\partial F^*}{\partial \theta_1} = \frac{2\theta_1\theta_2^2\left(r\sigma_1^2\left(\theta_1^2 + 2\theta_2^2 + r\sigma_1^2\right) + \theta_2^2\left(\sqrt{2}\theta_1 + \theta_2\right)\left(\sqrt{2}\theta_1 - \theta_2\right)\right)}{\left(\theta_1^2 + \theta_2^2 + r\sigma_1^2\right)^3} > 0,$$

$$\frac{\partial F^*}{\partial \theta_2} = \frac{\theta_2^4\left(3\theta_1^2 + \theta_2^2\right) + 3\theta_2^4 r\sigma_1^2 + 2\left(\theta_1^2 + r\sigma_1^2\right)^2(\theta_1 + \theta_2)(\theta_1 - \theta_2)}{\left(\theta_1^2 + \theta_2^2 + r\sigma_1^2\right)^3} > 0,$$

$$\frac{\partial F^*}{\partial \sigma_1^2} = -\frac{r\theta_2^2\left(3\theta_2^4 + \left(\theta_1^2 + r\sigma_1^2\right)\left(\sqrt{2}\theta_1 + \theta_2\right)\left(\sqrt{2}\theta_1 - \theta_2\right)\right)}{2\left(\theta_1^2 + \theta_2^2 + r\sigma_1^2\right)^3} < 0.$$

We therefore have the following:

Remark 1 (1) Increases in the importance of franchisee effort (θ_2) lead to lower royalties and higher franchise fees; (2) Increases in the importance of franchisor effort (θ_1) lead to higher royalties and higher franchise fees; and (3) Increases in the risk of retail sales $\left(\sigma_1^2\right)$ lead to higher royalties and lower franchise fees.

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