The Dynamics of Contractual Design: Determinants of Contract Duration in Franchising Networks

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Contents

Abstract This paper deals with the contractual design in franchising networks. We investigate the determinants and the evolution of contracts duration on the basis of a multidisciplinary approach using law, management and economics. Taking into account the traditional explanation of franchise contracts duration in terms of specific investments, this paper focuses on the dynamics of contractual design. The empirical analysis is based on franchise French data, coupled with financial data.

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We use descriptive statistics and econometrics. A dynamic panel data model for contract length is estimated. Our results highlight specific dynamics and adjustment costs in the determination of contracts duration.

1 Introduction

1 year, 3 years, 6 years, 7 years, 9 years, 10 years, 12 years. These are the franchise contract lengths declared by the franchisors in the yearbook *Toute la franchise 2013* published by the French Federation of Franchising (FFF). The involved branded-networks are for example *La compagnie des glaces* (1 year), *Tryba* (3 years), *Repar'Stores* (6 years), *Yves Rocher, Adhap Service, De Neuville,* or *Casino Proximité* (7 years), *Del Arte* or *Troc.com* (9 years), *Vêt'Affaires*, or *Broche Doré e* (9 years), *Pizza Hut* or *Kyriad* (10 years), *Ibis Budget* (12 years). *McDonald's* offers a far longer contract, with a 20 years period. Some networks announce different lengths between the first contract and the following ones. This is the case of *Midas* declaring «10 years and then 5 years» or of *KFC*, which provides a longer duration after the second contract: «5 years, renewable for 5 years and then for 10 years». Finally, some networks provide flexible lengths, *Comfort*, declaring: «9 years with the possible termination of each party the 3rd and 6th year». Furthermore, the length of contracts can vary within the same network. Thus, *Cavavin* moved from a duration of 2 years in 1995, 5 years (1997–1999) and 7 years (since 2000); The *Papetheque* fluctuated from year to year between 5 and 7 years of contract term, while *Lina's* has used five different length over 18 years. As a comparison, Frazer et al. (2008) show that, in Australia, the initial duration of franchise contracts is from 1 to 50 years, with a median length of 5 years. This statistic applies to all sectors except motor vehicles. A 5 year term is used by 67 % of the franchisors, while the 10 year term is used by 17 % of the franchisors. This leads us to question the determinants of franchise contract duration and of the variability of this clause over time.

Franchise networks are chains of stores belonging to contractual networks based on a contract between two contractors, here the franchisor and the franchisee. The first has developed a unique expertise and tested a distinctive concept he wants to quickly duplicate on a territory relying on the resources of the franchisee. The second owns a business, and wants to exploit it enjoying the success of the franchise system: brand-brand, distinctive concepts, know-how and assistance (Boulay and Chanut 2010).

The franchise agreement, with an average duration of 7 years in France (FFF 2013), outlines the rights and obligations of both parties. In France, since the Civil Code of 1804, the contractual freedom is the principle, which includes the freedom to choose its trading partners. The *intuitu personae* plays a key role in the franchise agreement, together with the negotiation by mutual agreement regarding the content of the contract, subject to compliance with the provisions of public order (pre-contractual information requirements of Doubin law in France for example).

However, it is clear that the franchise contract is in practice often written by the franchisor and his advisors, before being submitted to the franchisee candidate. The contract reflects in a first place the franchisor's will and own interests (Buchan 2013). Then the franchisee will have the possibility to make the contract evolve on some clauses (e.g. the perimeter of the area of territorial exclusivity, when the network concedes exclusive territories to its franchisees) but he rarely has the power to change significantly the contract when the network exceeds a first threshold growth.[1] Especially as the network heads may be reluctant to deal with a multitude of different contracts. As Buchan (2013, p. 72) stresses, the franchisee accepts the franchisor's unwillingness to negotiate because "standardization reinforces the franchisor's mantra". Therefore, a franchise agreement is a standard form contract. A parallel can be drawn with adhesion contracts (also called pre-formulated standard contract) offered by traders to consumers, in which the consumer has the choice to purchase or not, but not to modify the contents of the contract written unilaterally by the company (Berlioz 1973).

One of the most important provisions of the franchise agreement is the contract length (Cochet and Garg 2008; Gorovaia 2013). Indeed, even if franchise usually involves a long-term relationship (sometimes decades), this relationship is punctuated by fixed-term contracts (CDD) which may be renewed at the end when both the franchisor and franchisee wish to continue their cooperation for new period. However, the renewal is not automatic. The jurisprudence of French courts is consistent on this point and refuses any renewal right to the franchisee and any compensation right for loss of customers in case of non-renewal by the franchisor.[2] As with any fixed-term contract, the contract cannot be terminated before its term, unless gross negligence of any party, for example in case of non-compliance expertise or non-payment of royalties by the franchisee.

The duration of franchise contracts is a main managerial issue for heads of franchise networks. In fact, this contractual device involves a triangle of actors: the banks, providing loans to the franchisees; the franchisees, who have to become efficient before the term of the contract; and the franchisors, who have to be attractive in the first steps of the network in order to get new franchisees. In addition, at this stage, the chosen duration cannot be too long, as the business concept and the type of required franchisees are not yet established. More generally for the franchisor, defining the appropriate duration may require a learning process. What is the proper length of franchise contracts? What are the determinants of this

[1] During the launching phase of a franchise network, the franchisor and the first franchisees together test and co-built several network elements (Boulay and Chanut 2010). It is then likely that the first franchisees have a real bargaining power on the content of the contract.

[2] See for example the judgment of the Commercial Court of Paris on 5 December 1997, against LVT SA Lafont and son and another, *Les relations franchiseur-franchisé: au-delà du droit, la recherche d'une parfaite moralisation*, *Petites affiches*, February 5 1999, No. 26, p. 16–18. For further references, see Boulay and Chanut (2010, p. 99).

contractual provision? The traditional explanation takes into account both sides investments: the franchisee finance specific investments of the outlet and pay an entrance fee to access the successful system of the franchisor. The franchisor also invests in the relationship, including training and transfer of know-how. The contract must allow both parties enough time to get a return on their investments.

However, most of the past empirical research regarding contract duration has focused on labor contracts. The study of the determinants of contract length is indeed a topic still little explored in the context of franchising. Moreover, practice shows that in the same network, the duration of contracts announced by the franchisor in the documentation to the franchise candidates[3] evolves over time. This raises the question of the factors explaining the variability of the duration of the franchise, while there is a little study of the evolution of the contractual design in the literature on franchise data. The present contribution is a step to fill these gaps.

Taking into account the traditional explanation of franchise contract duration in terms of specific investments, this paper focuses on the dynamics of contractual design. Is it possible to highlight specific dynamics in the determination of contracts duration? Do these dynamics involve different adjustment costs or a sector-based isomorphism? Is it possible to match the evidence with the notion of learning regarding the contractual design? These are the issues discussed in this empirical paper based on French data.

The rest of the paper proceeds as follows. After a review of the relevant literature, Sect. 2 presents the analytical framework of this study and formulates the research hypotheses. Section 3 develops the empirical analysis. Our original dataset couples franchise data from the French Federation of Franchising and financial data. The analysis is based on descriptive statistics and econometrics. We estimate a dynamic panel data model for contract length. The estimation results are discussed in Sect. 4.

2 Background

The transaction costs theory is the main framework that has been relied upon to explain contracts duration. The theory implies that contracts are longer when firms have highly specific investments, since the need to protect those investments is greater. They will be shorter, in contrast, when environments are more uncertain.

Thus, the economic theory suggests a trade-off between long and short-term franchise contracts. Long-term contracts are favorable to the franchisees as such

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[3] Franchisors' websites, listings in directories of franchise like the one published in France by the FFF (*Toute la Franchise, les textes, les chiffres, les réseaux*; annual publication) or inserts in the general and/or specialized press dealing with franchising (annual specific publication of *L'Express*, *L'officiel de la franchise* or *Franchise magazine* in France for example).

contracts give them more time to recover the investments. In addition, long-term contracts protect the franchisees from the potential franchisors' opportunism, in other words from the hold-up problem. On the other side, such contracts are less flexible and prevent the franchisors to adapt to the environmental changes.

In this section we present first an overview of the literature dealing with the determinants of franchise contracts duration. The analytical framework and testable propositions are then developed.

2.1 Overview of the Background Literature

In their book of major importance, Blair and Lafontaine (2005) underline the notion of investment as the key determinant of contracts duration. Franchisors need the franchisees to make significant investments. Such investments are only possible if the contract duration is long enough so that the franchisees expect to get some returns.

In the context of the transaction costs theory, and dealing with the British railway industry, Affuso and Newbery (2001), Yvrande-Billon (2003), test empirically the influence of specific investments on the duration of franchise contracts. On the basis of OLS estimates, Yvrande-Billon (2003) shows that contract duration, which determines the duration of the rental agreements, is not chosen by policy makers taking into account, even indirectly, a criterion of minimizing transaction costs. In the studied case, short-term contracts are used for the transactions that involve highly specific assets. This evidence is reverse to the prediction. It is consistent with Affuso and Newbery (2001)'s result, dealing with the same case, but using panel data. Here again, the hypothesis of adverse interaction between asset specificity and short contract lengths do not find an empirical support.

These results contrast with previous studies providing an empirical support for the transaction costs explanation, in a different context than franchising. Indeed, Joskow (1985, 1987) finds strong support for the hypothesis that differences in relationship-specific investments determine the duration of electric-utility/coal contracts. In the same way, Crocker and Masten (1988) shows that firms use longer-term contracts when they face a greater likelihood of hold-up, for example, when they have fewer buyer, seller, or transportation options.

Moreover, within the literature on franchise data, several studies provide evidence for the relevance of the explanation in terms of transaction costs. Brickley et al. (2006) analyze the factors affecting the duration of contracts using cross-sectional and time-series data. These authors show that contract duration is positively related to the amount of franchisees' investments, taking into account physical and human investments measured as weeks of training. In addition, they provide evidence that larger chains and franchisors with more years of experience tend to use longer contracts. The explanation proposed is that the more established franchisors face less uncertainty. Vázquez (2007) provides OLS estimates for contract length in the Spanish franchise sector, using primary data. As for Brickley et al. (2006), the results reveal that the length of franchise contracts increases with the contracting experience. The findings also suggest that franchisors reduce franchisees' concerns about hold-up with longer contract length. Dealing also with Spanish data, Garcia-Herrera and Llorca-Vivero (2010) develop evidence as a second step of their theoretical model for the optimal expected length of a franchise contract. The main outcome is that specific investments positively affect the duration of contracts. In addition, based on the equilibrium concept of the theoretical model, these authors suggest the existence of an adjustment procedure over time regarding the determination of the duration provision.

In a very recent contribution, Gorovaia (2013) investigates the determinants of contract duration in franchise networks by applying transaction costs, resource-based and relational governance perspectives. From German data on franchise, Gorovaia holds three conclusions. First, according to the transaction costs theory, specific investments positively impact the contract duration, while environmental uncertainty negatively impacts the contract duration. Second, intangible resources (intangible system-specific know-how and brand name assets) of the franchisor have a strong positive impact on franchise contract duration. Third, testing the relational governance perspective on contract duration in franchising, results support the argument that trust increases the positive impact of specific investments on contract duration and decreases the negative impact of environmental uncertainty on contract duration.

As with Garcia-Herrera and Llorca-Vivero (2010), the notion of dynamics in the contractual design, and more precisely of learning, is present with Brickley et al. (2006). Using the number of firms in the sector and the average years of franchising experience across all firms in the sector as proxies for the collective experience in a sector, these authors show that start-up franchisors operating in industries with a high experience tend to offer contracts with longer durations. Thus, one conclusion of this empirical work is that learning about optimal contract terms occurs across firms of the same industry. Learning regarding franchise contracts is specifically the focus of Cochet and Garg (2008). On the basis of primary German data, the paper analyses the evolution of formal contracts used by three chains from the restaurant, hotel, and retailing industries. Different contract versions employed by each franchisor over the years are studied, more precisely, time series of 12 versions since the first contract. The focus is on the main contractual clauses, including the duration of contracts. While, dealing with the monetary provisions, Lafontaine and Shaw (1999) concludes that franchise contractual terms are very stable over time, Cochet and Garg (2008) highlight some evolutions. The three case studies and descriptive statistics underline a learning process in designing contracts.

Despite these interesting results, the survey of the literature on franchise data shows that the evolution of the contractual design is a topic still little explored, especially regarding the duration provision.

2.2 Analytical Framework and Testable Propositions

Taking into account the traditional explanations for franchise contracts length in the framework of the economic theory of contracts, and the past literature, we formulate several testable propositions in order to study the determinants of contract duration and its variations.

The first hypothesis derives from the transaction costs theory. As preceding works, we consider the expected influence of specific investments, defined as sustainable investments involved to achieve a specific transaction, and not re-deployable without costs. The contract length acts as an incentive device for the franchisee, as longer contracts protect him and avoid hold-up problems.[4] For this reason, we predict that:

Hypothesis 1 (H1) *The higher the franchisee's specific investment, the longer the contract length.*

The franchisor faces also opportunism risks from the franchisees, as highlighted by the wide literature on franchising in the framework of the agency theory. In their seminal theoretical contributions, Mathewson and Winter (1984, 1985), Tirole (1988), highlight a range of externalities in the relationships between producers and retailers: the producer cannot observe the sales effort of the retailer, while the retailer's actions affect the profit of the producer. In addition, a potential free-riding problem emerges between the retailers of a same branded-network.

Many empirical studies on franchise data emphasize the relevance of this analytical context (e.g. Combs et al. (2004), Castrogiovanni et al. (2006), Michael and Combs (2008), on US data, in addition with Barthélémy (2008), Arruñada et al. (2009), Chaudey et al. (2013), Perdreau et al. (2013), on European data). The presence of company-owned outlets in the network along with franchised units is then considered as a means to monitor the potential opportunist franchisees. This kind of control lowers the opportunism risks and should impact the contract duration, the franchisor being more willing to design long length contracts. For this reason, the following proposition can be formulated:

Hypothesis 2 (H2) *The higher the proportion of company-owned units in the network, the longer the contract length.*

From the same analytical context, we derive the proposition H3 considering as Arruñada et al. (2001), Chaudey and Fadairo (2007), that opportunism risks on the franchisees side are higher when the network size is larger:

[4] The hold-up problem results from an opportunistic behavior: a contractor tries to capture the value of investments made by the partner. In a situation of hold-up, one of the contractors does not get the full marginal return on its investment.

Hypothesis 3 (H3) *The larger the network size, the shorter the contract length.*

Finally, we introduce a proposition specifically focused on the evolution in the choice of contract length, considering that the potential observed dynamics depends on environmental conditions (specific features of the network, or sector-based isomorphism):

Hypothesis 4 (H4) *The contract length dynamics depends on the environmental conditions.*

Different environments should drive to different dynamics in the contract length adjustments. If in a sector, some factors—which might not be directly observable in our data—favor individual learning, then we should observe that adjustments costs in this environment are quite low, and that network specific variables significantly drive the change in the contact provision.

On the other side, if the environment conceals forces that prevent individual learning, we should observe high adjustment costs in the contract length dynamics. Then, few network specific variables should impact the contract length. Therefore, such context should favor isomorphism or vicarious learning.

By environments, we do not only refer to the sectors, but also to other distinctive features that can discriminate between networks, and influence the dynamics of contract length.

Thereafter, we refer to the relative performance or value of the network (compared to the sector) and to the level of risk (compared to the sector) as two factors that could impact contract length dynamics. We argue that outperforming networks could offer a more favorable environment for individuals learning, as adjustment costs might be lower (as a cause or consequence of the high performance), and stakeholders less reluctant to change.

The same holds for risky networks, and we argue that risky networks may be a fertile environment for individual learning: changes may happen more often in this case and thus, adjustments costs should be lower compared to non-risky networks.

3 Empirical Implementation

The empirical investigation is based on panel data regarding the period 1995–2003. The original dataset matches two kinds of data: franchising data provided by the French Federation of Franchising (FFF), and financial data from the French dataset DIANE.

We voluntarily restricted our observations to French networks to exclude foreign master franchises from the analysis and ensure comparability between networks. We used the following data provided by the FFF in his annual yearbook: contract duration; minimum investment required for an outlet; total number of outlets (whether Franchised or company owned) in France; percent of the outlets owned by the franchisor in France; Age of the franchisor. The matching of the FFF data with the financial and accounting Diane database provided two more variables: economic return on investment and turnover of the franchisor. We referred to the French industrial classification NAFrev2 for the sector of the franchisor (at the two digit level). We recoded industrial sectors because we had too few “retail” sectors at this level and too many “services” sectors. We created five broad sectors, two from the retail (general retail; clothes and leather retail) and three from the services (Hotels and Restaurants; services to individuals linked to aesthetic; other services).

Our initial dataset include 1,428 firm-years observations from 159 French networks. Data availability reduced the sample to 589 firm-years observations from 138 networks. Finally, as our model estimation used lagged variables and first differenced variables, we “lost” networks with less than 2 successive years in this step. Hence our final sample includes 512 firm-years observations from 131 networks. We provide hereafter descriptive statistics for this sample.

3.1 Statistical Analysis

Statistical analysis enables to highlight the features of the evolution in the designing of franchise contracts regarding the duration provision. Table 1 presents summary statistics for the variations in the duration of franchise contracts.

Table 1 shows that the variations of contract duration between *t* and *t−1* are quite rare. The broad feature is that in 92 % of the cases (firm-years) the duration does not change from one year to another. In addition, at the firm-years level, when a variation is observed in contracts duration between 2 successive years, this variation is quite small: contract length is only increased or reduced by 1 year or, the more often, 2 years, and very rarely more.

Table 1 Distribution of changes in contract duration (duration t – duration t-1)

	Overall		Between		Within
Changes of contract duration	Freq.	Percent	Freq.	Percent	Percent
−5	1	0.20	1	0.76	20.00
−4	4	0.78	4	3.05	27.92
−2	4	0.78	4	3.05	27.50
−1	4	0.78	4	3.05	21.25
−0.5	1	0.20	1	0.76	50.00
0	475	92.77	130	99.24	92.77
1	3	0.59	3	2.29	23.33
2	12	2.34	11	8.40	26.97
3	2	0.39	2	1.53	18.33
4	2	0.39	2	1.53	20.00
5	3	0.59	3	2.29	56.67
7	1	0.20	1	0.76	50.00
Total (N = 131)	512	100.00	166	126.72	78.92

If we turn to the "between" part of the Table 1 (columns 4 and 5), we get the picture at the firm level. We see that 8.40 % of firms have ever known a 2 years change in their contract duration (but this change represents only 2.34 % of the observations as firms that change do not change every year). The within percent tell us the fraction of the time a firm has the specified value of change in contract duration. For example, conditional on a firm aver having a change of 2 years in contract duration, 26.97 % of its observations have a change of 2 years. In other words, a firm that experienced a change of two 2 years in contract duration, had experienced this change a little more than a quarter of the time (26.97 % > 25 %). Those networks that experienced a 3 years change, exhibit this change only in 18.33 % of their observations, whereas those that experienced a 5 year changed, had known this experience about one-half the time. Hence this last column is not easy to interpret, but it gives a measure of the "stability" or "frequency" of each "change" in the networks that experienced this change. At first glance, statistics show that contract durations seldom change, and when they change, they change over a tight range (from −2 year to +2 years). This may not be surprising: to guarantee fairness and prevent conflict franchisors have to ensure that all franchisee are considered in the same way. This imply that franchisor can change a little contract duration for new contract with few costs, but may entail large reorganization and legal costs if he wants to change all the contract duration (included the incumbent contract) for all the franchisees.

To get further, a first interesting question to deal with is to examine if the networks affected by a length variation do change only once, or several times over the studied period (Table 2).

The data show that networks that change their contracts during the period (1995–2003) do it in most cases once only (almost 67 % of the cases). However, 33 % of them do vary more than once the duration term of their contract: 19 % twice, 12 % three times; very few networks change the length more than three times (less than 3 % of the networks change the contract length four times).

Based on these results, another interesting issue is to study in which way the networks involved by a variation of contract length differ from the others. Table 3, panels (a) and (b), compare these networks on some statistics. The first column

Table 2 Number of duration changes in each network

	Overall		Between		Within
	Freq.	Percent	Freq.	Percent	Percent
Franchisors that did not change (n = 89)	347	100.00	89	100.00	100.00
Franchisors that did change (n = 42)					
1 (once)	111	67.27	28	66.67	100.00
2 (twice)	32	19.39	8	19.05	100.00
3	17	10.30	5	11.90	100.00
4	5	3.03	1	2.38	100.00
Total	165	100.00	42	100.00	100.00

reports the *t statistics* for the null hypothesis that the mean of the variable is equal between Panel A and Panel B. The data in each group are not assumed to have equal variances. Descriptive statistics show that the networks that changed their contract duration are a bit less old than the others (15 *vs.* 18 years old on average). This difference is the only one significant at the 5 % level. In addition, the two kinds of networks don't show clear differences regarding the mean size: networks that have changed their contract duration over the period seem slightly smaller in terms of units franchised in France (79 *vs.* 82), but show a slightly higher outlet ownership rate which may largely offset the difference. None of these differences are significant. More surprisingly, networks having experienced a variation in contract duration require a higher initial investment. The difference is significant only at the 10 % level. Networks having experienced a variation in contract duration also require a higher initial contribution from their franchisees than networks with no variation of the contract length, but the difference is not significant. On these variables the "within" variance, that is the component of the variance specific to each network or temporal variance is far more important in the group with variations than with the other group. This result means that when the networks change the duration, they also modify other elements of the contract. More often, the other clauses affected are the amount of the initial investment and of the contribution required from the franchisees. This result may suggest that the networks involved are in learning or at least changing phase.

A third interesting issue is whether the variations are in the same or in opposite directions; in other words, the question is as follows: does the observed dynamics involve a progression, or back and forth movements?

A closer look at the networks changing more than once their contract duration, allows a first diagnosis (see Fig. 1). The variations are often erratic around what seems to be a target value. Sometimes, we observe a one-shot choice with correction (a 5 years length for several years, then 9 years duration, and then again a return to 5 or 6 years duration). For only few networks (e.g. *Cavavin*), we observe a trend in the contract duration.

Let's note that, in our dataset, the contract duration reported by the franchisor is the duration regarding the last franchisee(s) entered into the network. Thus it is not an average or a target duration. Indeed, for the network of fast-food restaurants *Quick*, the listed franchisor in his annual statement ever reported "a minimum 9 years" contract on all the period (1995–2003). However, during the same period, actual contract duration rises from 9 to 10 years.

Finally, Table 4 highlights differences among sectors. The mean of the average changes per year ranges from about 4 % (services others; retail clothes and leather sectors) to 10 % and more (hotels-restaurants; services aesthetic). Contract duration and minimum investment also present great differences among sectors.

Descriptive statistics show that nearly one third of the networks (42 networks among 131) have changed their duration over the period. Those who have changed generally did it once (2/3 of the cases), but may have changed more than once (1/3 of the cases). Changes generally don't show a clear move toward shorter or longer contract, but rather a way (with reverts) towards a target duration.

Table 3 Summary statistics for networks changes vs. no-change

Variables		Mean	Std. dev.	Min	Max	Observations
Panel (a) Franchise networks with NO CHANGE of contract duration during the period						
Age	Overall	17.7781	14.4746	1	84	N = 347
	Between		14.1612	1.5	79.6	n = 89
	Within		1.7021	14.2781	22.2781	T-bar = 3.89
Contract duration	Overall	5.6455	2.0481	2	12	N = 347
	Between		2.148532	2	12	n = 89
	Within		0	5.6455	5.6455	T-bar = 3.89
Number of franchisees in France	Overall	82.1902	98.54202	0	540	N = 347
	Between		87.86094	0	428.8333	n = 89
	Within		21.44291	−43.643	234.6902	T-bar = 3.89
Initial investment in K€	Overall	157.2721	200.2759	15.2449	2,439.184	N = 347
	Between		279.6955	19.2085	2,439.184	n = 89
	Within		70.52383	−160.15	750.815	T-bar = 3.89
Minimum investment from franchisee K€	Overall	67.2367	45.3519	2.2867	289.6531	N = 311
	Between		42.01869	5.4881	241.1347	n = 84
	Within		17.57233	−36.943	173.9511	T-bar = 3.70
Ownership rate	Overall	0.2811	0.2695	0	1	N = 347
	Between		0.2686	0	1	n = 89
	Within		0.0922	−0.3589	0.7761	T-bar = 3.89
Panel (b) Franchise networks with CHANGES of contract duration (at least once in the period)						
Age t-test No_change_mean = Change_mean t = 2.4549	Overall	15.2303*	8.8377	1	43	N = 165
	Between		9.2744	1.5	39.5	n = 42
	Within		1.8328	11.7303	19.7303	T-bar = 3.92
Contract Duration t-test No_change_mean = Change_mean t = 0.4752	Overall	5.5424	2.4026	1	11	N = 165
	Between		2.3215	2	10	n = 42
	Within		1.0473	2.0424	9.0424	T-bar = 3.92

Number of Franchisees in France	Overall	79.6060	117.9687	0	600	N = 165
t-test No_change_mean = Change_mean	Between		118.8654	4	587.5	n = 42
t = 0.2438	Within		18.3653	14.1060	190.1061	T-bar = 3.92
Initial Investment in K€	Overall	230.6394	526.3223	1.5244	6,097.961	N = 165
t-test No_change_mean = Change_mean	Between		582.6759	2.7440	3,515.48	n = 42
t = −1.7319	Within		291.4285	−2,351.8	2,813.12	T-bar = 3.92
Minimum investment from Franchisee K€	Overall	78.6035	113.8263	1.5244	1,219.592	N = 152
t-test No_change_mean = Change_mean	Between		108.5536	4.0653	662.5461	n = 42
t = −1.1860	Within		68.9328	−478.442	635.6496	T-bar = 3.61
Ownership rate	Overall	0.3108	0.2807	0	1	N = 165
t-test No_change_mean = Change_mean	Between		0.2640	0	0.8506	n = 42
t = −1.1346	Within		0.1243	−0.2083	0.7274	T-bar = 3.92

H0: Mean (Panel a) – mean (Panel b) = 0

$*p < 0.05$; $**p < 0.01$; $***p < 0.001$

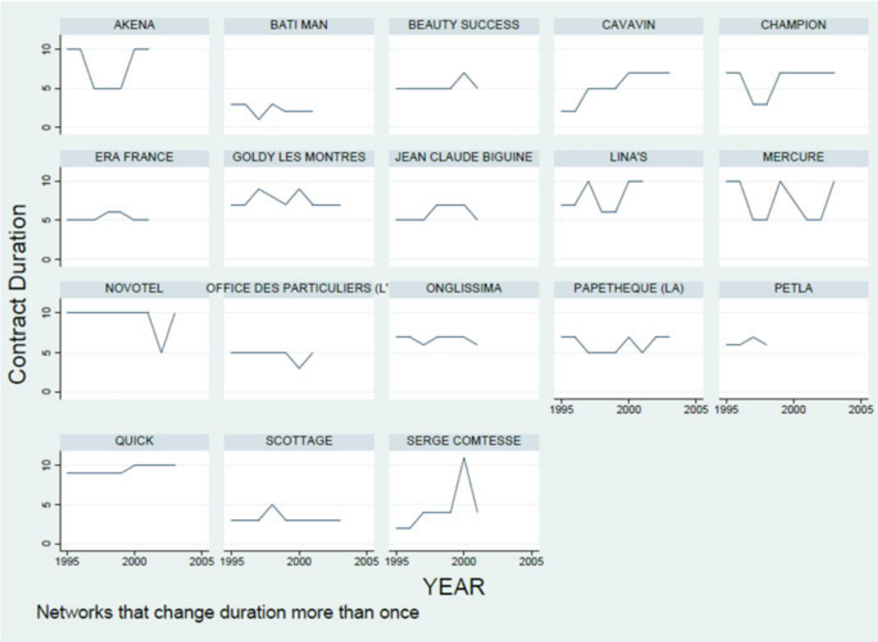

Fig. 1 Contract duration graph. Networks that change more than once

It is interesting to note that networks with changes in contract duration present some specific features: they are younger and require higher investments and higher initial investments from the franchisees. These features might be, at least partially, sector-based effects. Indeed sector-based differences clearly appear regarding the contract duration and the minimum investment. Overall, we can feature the contract duration determination as a dynamic process, influenced by several variables or sector affiliation. In the next section we try to feature this dynamic process in an econometric model.

3.2 Econometric Analysis

3.2.1 Methodology

In our econometric model, we assume, as prior studies, a targeted (*versus* random) contract duration in level. But the process followed by contract duration is also dynamic by nature: contract duration in the moment depends on its duration in the previous periods. In other words, it seems more realistic to assume the existence of adjustment costs in the determination and especially changes of contract duration. Hence our model integrates both static and dynamic components.

Table 4 Sector-based statistics

		Mean	Std. dev.	Min	Max	Observations
Sector 1: Retail general	Average changes by year	0.0503	0.1029	0	0.4444	N = 238 n = 54 T-bar = 4.40
	Contract duration	5.46	1.98	2	10	
	Minimum investment	177.31	170.79	30.48	914.69	
Sector 2: Retail clothes and leather	Average changes by year	0.0431	0.0856	0	0.25	N = 102 n = 26 T-bar = 3.92
	Contract duration	4.49	1.33	1	7	
	Minimum investment	81.42	42.08	22.86	198.18	
Sector 3: Hotel restaurants	Average changes by year	0.0999	0.1366	0	0.4285	N = 77 n = 19 T-bar = 4.05
	Contract duration	7.84	2.40	3	12	
	Minimum investment	579.17	1,017.95	15.24	6,097.96	
Sector 4: Services, others	Average changes by year	0.0363	0.0753	0	0.2857	N = 109 n = 25 T-bar = 4.36
	Contract duration	5.71	2.11	2	10	
	Minimum investment	112.90	146.86	1.52	762.24	
Sector 5: Services, cosmetic beauty salons	Average changes by year	0.1393	0.1366	0	0.4285	N = 64 n = 15 T-bar = 4.26
	Contract duration	4.84	1.57	2	11	
	Minimum investment	89.89	47.24	22.86	213	

The targeted contract duration (static component) is determined by:

$$y^*_{i,\ t} = \beta X_{i,t} + \gamma_i + \delta_t + \varepsilon_{i,t} \tag{1}$$

Where:

X: vector of independent variables
γ: dummy for firm *i*
δ: dummy for time *t*
ε: error term

Integrating the dynamic process, we are interested in estimating:

$$y_{i,t} - y_{i,t-1} = \alpha\left(y^{*}_{i,\ t} - y_{i,t-1}\right) \tag{2}$$

Where α is a (inverse) measure of the adjustment costs. If these costs are 0 (i.e. $\alpha = 1$) the adjustment is immediate, if costs are high (α near to 0) the adjustment is very slow.

Once developed, the model aims to estimate:

$$y_{i,t} = (1 - \alpha)y_{i,t-1} + \alpha\beta X_{i,t} + \gamma_i + \delta_t + \varepsilon_{i,t} \tag{3}$$

Panel data analysis allows studying the dynamic process at the firm level, but the classical fixed or random effect models lead to inconsistent and biased estimations when there is, as in our model, a lagged independent variable. The problem stems from the correlation between the error terms and the lagged variable. Arellano and Bond (1991) developed a dynamic model that addresses this problem and that is thus suitable for our data. Their model uses instrumental variables that take into account the endogeneity of the lagged variable. Furthermore, the use of instrumental variables for the independent variables addresses two problems encountered even in a static model. First a simultaneity bias: contract duration and some variables (e.g. minimum investment or other contract terms) may be simultaneously determined. This leads to a violation of the hypothesis regarding the exogeneity of the regressors. Second, measurement errors in the variables may exist. Arellano and Bond propose to estimate the Eq. (3) in first difference, and to use all the lagged variables twice or more as instruments when the number of firms is important compared to the number of years. The use of first differences eliminates the firm specific fixed effect and prevents the problem of correlation between independent variables and firm specific unobservable effect. Nevertheless, a problem of correlation between the error term and the dependent variable (including the lagged independent variable) remains. For this reason, they use instrumental variables. To improve estimation efficiency, they develop this approach with the Generalized Method of Moments (GMM). This model allows controlling for heteroskedasticity between firms, autocorrelation of error terms, and simultaneity bias and measurement errors.

As linear GMM estimators, the Arellano-Bond and Blundell-Bond estimators have one- and two-step variants. Although the two-step estimation is asymptotically more efficient, the reported two-step standard errors tend to be severely downward biased (Arellano and Bond 1991; Blundell and Bond 1998). To compensate, the command used in Stata (xtabond 2) makes available a finite-sample correction to the two-step covariance matrix derived by Windmeijer (2005). This can make the two-step (robust) variant more efficient than the one-step (robust) variant, especially for the GMM system. Hence we present the result with the two-step estimations, but, in our case, the one-step estimations provide the same results.

The consistency of the GMM estimator is based on the hypotheses of no order two autocorrelation in the errors of the equation in first differences and on the hypothesis that the instruments are valid. Arellano and Bond suggest two tests where the rejection of the null hypothesis confirms the specification of the model: an autocorrelation test (for the order 2 residuals) and a Sargan test of over-identification of the restrictions. As the Sargan statistic is not robust to hetero-skedasticity and autocorrelation, which may be present (and are controlled for) in our model, we turn to the Hansen J statistic, which is the minimized value of the two-step GMM criterion function and is robust. The Stata software goes further and reports difference-in-Hansen statistics, which test for whether subsets of instruments are valid.

Regarding the status of our variables, the age and size variables, as well as the years and the sector dummies are considered as exogenous. On the other hand, the lagged dependent variable, the minimum investment and the ownership rate are considered as endogenous. The endogenous variables are instrumented by their lagged values and the exogenous variables. We had two more exogenous variables: the economic return and the turnover of the franchisor because of their exogenous nature, and because they were available for almost all the networks in our sample.

The estimation results are presented in the following section.

3.2.2 Estimation Results

The dynamic panel data model is estimated on the full sample, and then on several subsamples to take into account: the influence of the sector (retail *versus* services), the influence of the franchisor's profitability, and the influence of the risk level in the network.

This analysis by sectors or subsamples is based on the idea that difference in adjustments cost should refer to different dynamics and different learning processes. Sectors, subsamples, or more generally fields where adjustment costs of contract duration are low, may favour experiential learning as franchisors can learn by doing. Conversely, subsamples or fields where adjustment costs are high should correspond to fields where isomorphism or vicarious learning is rather at work. Also, if isomorphism is at work in a field of firms, all the firms adopt the same contract duration whatever their peculiarity and we should observe few significant firm specific variable effect on contract duration. Where experiential learning is at work, we may more easily observe significant effects.

A natural approach of fields is the sectors, with specific features regarding contract duration (Table 5). But the number of franchisors is rather low in some sector, so we group sectors in two broad sectors to estimate our model: "retail" sector (i.e. "general retail sector" and "clothes and leather retails") versus "service" sector.

We also take into account the profitability and the risk to characterize the different types of firms. The risk associated with a franchisor depends on the franchisor's choices i.e. on its business model. However, it depends on the environmental conditions too. We introduce the risk in the analysis in an attempt to catch the different environmental (or risky) conditions that the firms face.

Table 5 Dynamic panel-data estimation results (two-step system GMM)[a]

Contract duration	(1) Full sample	(2) Subsample Retail	(3) Subsample services	(4) Subsample outperforming franchisors	(5) Subsample underperforming franchisors	(6) Subsample of low-risk networks	(7) Subsample of high-risk networks
L1 (lagged dependant variable)	0.6101588** (0.1896608)	0.8774043*** (0.0778649)	0.7126835*** (0.1440229)	0.4855137*** (0.105121)	0.9740582*** (0.0507695)	0.6342376** (0.2148856)	0.7784511*** (0.080209)
lnAGE	−0.3102429 (0.2034135)	−0.2189402 (0.1181081)	−0.1717413 (0.2037212)	−0.5551596** (0.1990005)	−0.0478325 (0.0664666)	−0.3354642 (0.264733)	−0.2169905 (0.1195588)
INVESTMENT	−0.0007605 (0.0005323)	−0.0010999* (0.0003138)	0.0004208 (0.0007966)	−0.0009062* (0.0004801)	−0.0000703 (0.0001814)	−0.0002822 (0.0006769)	0.0008353 (0.0007093)
lnSIZE	0.0732763 (0.1079878)	0.0452514 (0.0577405)	0.1344587 (0.1256904)	0.1745681 (0.148112)	0.0185044 (0.036043)	0.0383887 (0.1336003)	0.1454174 (0.1101177)
OWNED UNITS RATE	−0.720746 (0.7153008)	−0.2865824 (0.3598731)	0.8553512 (1.391885)	−0.7667076 (−.4808187)	−0.1003476 (0.2481125)	0.3936308 (1.137365)	0.6961619 (1.031312)
YEAR dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
SECTOR dummies	Yes			Yes	Yes	Yes	Yes
SECTOR_2		−0.2083095 (0.1369429)					
SECTOR_3			0.8000495 (0.7466883)				
SECTOR_4			0.2108639 (0.4505029)				
_cons	2.927935 (1.64491)	1.516646* (0.7029128)	0.936183 (0.7939221)	3.989699** (1.069674)	0.2313479 0.4575284	3.020414** 1.854111	0.86121 0.838636
Prob > F	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Standard errors in brackets

*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$

[a]The different tests are presented in Appendix

The profitability refers to the success of the franchisor's business model. As a measure of the franchisor's success, it also reflects the value of the concept or of the brand. We include this latter variable in the analysis, considering that a brand with a high value may entail different relationships between the franchisors and the franchisees, and hence that it may affect the determination and the dynamics of contract duration. Franchisors are grouped in subsamples based on their profitability (resp. risk) in comparison to the sector median profitability (resp. risk). Franchisors are classified as "outperforming" if their average profitability (i.e. return on investment) on the period is above their sectorial median profitability, and they are classified as "underperforming" otherwise. Franchisors are classified as high risk and low risk in the same way, with a measure of the risk as the standard deviation of profitability for each franchisor over the period.

The statistics confirm the validity of the dynamic nature and the specification of the model. The order 2 auto-correlation test AR (22) rejects the hypothesis of autocorrelation. We also report tests of over-identifying restrictions, that is, of whether the instruments, as a group, appear exogenous. These tests never reject the null hypothesis of exogeneity of the instrumental variables—in level or difference—(see Appendix).

The results show a quite high and significant coefficient for the lagged variable, which confirms the existence of adjustment costs in contract duration for the French franchisors. The coefficient estimated is $(1-\alpha)$ and not α, hence a higher estimated coefficient means higher adjustment costs. We may consider the adjustment process as a trade-off between transactions costs associated with the move towards target duration and the cost of being in a disequilibrium state. If the disequilibrium costs are much larger than the moving costs, the estimated coefficient should be close to 0 [$(1-\alpha)$ close to 0 and α close to 1]. For the global sample, this is clearly not the case: the estimated coefficient is rather high, reflecting disequilibrium costs not so high compared to changing costs, and hence a "slow movement" (or scarce changes) toward the target duration.

This coefficient does not vary much among subsamples, except for the outperforming franchisors subsample. Indeed contrasting outperforming and underperforming networks, the estimated coefficient range—from about 0.5 (outperformers) to almost 1 (underperformers). Although adjustment costs are high for franchisors, it seems that for outperforming networks these costs are lower and adjustment occur faster, whereas underperforming networks incur very high adjustment costs. One interpretation could be that in outperforming networks, the franchisor enjoys the support of franchisees. It is easier to change contractual provisions in this context than in underperforming networks where stress and tensions may impede changes. Low adjustment costs should provide a favorable environment for experiential learning. For outperforming firms, we indeed observe some variables with significant estimated coefficients: age and investment have a negative impact on contract duration. As outperforming firms mature, they tend to reduce their contract duration. For these outperforming firms, this negative impact may reflect a good reputation effect: with a high reputation, franchisor of the network doesn't have to offer longer contract to attract and keep franchisees.

As these firms enjoy relatively low adjustments costs, they can adapt their contract length once they firmly establish their reputation and performance. More surprisingly these firms lower their contract duration when they require higher initial investments. This relationship is contrary to that expected by the transaction cost: with higher specific investment at stake, contract duration should decrease.

This last result could lead to a different interpretation. It is possible that the high profitability is not exogenous but the result of a greater adaptability of some networks. In this case, we must reverse the interpretation: networks would not have less adjustment costs because they are performing, but networks would be more efficient because they succeed in adjusting their provisions. In the same logic, these networks succeed in reducing risk, being more adaptable to their environment. In future extensions, we should control for the endogeneity of the performance variable to refine the estimates and the interpretation of results.

Finally, we note that the Age variable never has a significant influence (except for the outperforming franchisors). The observation is the same for the Size which seems to have no impact on the contract duration.

Discussion and Concluding Comments

Dealing with the dynamics of contractual design, this empirical paper addresses the following issues: is it possible to highlight specific dynamics in the determination of contracts duration? Do these dynamics involve different adjustment costs or a sector-based isomorphism? Is it possible to match the evidence with the notion of learning regarding the contractual design?

Several hypotheses are derived from the analytical framework and relate the contract length and its dynamics to the franchisee's specific investment, the proportion of company-owned units in the network, the network size, and the environmental conditions.

Using French panel data, the empirical investigation is based in a first step on descriptive statistics, which reveal three major features. (1) Networks with and without changes in contract duration have different characteristics. (2) When changes in contract duration are observed, different movements are possible: successive discrete events or continuously trends. (3) The contract duration changes are different across sectors.

Our econometrical estimations confirm the existence of a dynamics in the determination of the contracts duration. The general hypothesis to test this dynamics is that the contract observed in a network depends on the duration in the previous time periods. The significant influence of the lagged variable (L1), whatever the subsample, confirms the existence of this dynamics.

The adjustment cost to reach the target value for the contract duration allows to consider two cases: if the cost is high for a network, this means that the network tends to act like the other networks (isomorphism or vicarious learning): if the cost is low, each network experiment itself (individual or

(continued)

experiential learning). Our results show that the adjustment cost is high in the case of French networks (high coefficient of L1). This observation is confirmed for the full sample and also for the different studied subsamples, except for underperforming networks that adjustment costs are twice lower than outperforming networks. Finally we can conclude that the logic of isomorphism is more relevant for the French case.

Several limitations and implications for future research can be highlighted.

First, this paper deals with the period (1995–2003). It would be interesting to reproduce the study in order to include the 10 following years. We have the data. These need to be exploited now.

Another limit of the present paper may be related to the fact that the study networks are all members of the *French Federation of Franchising* (the data source). It is relevant to think that these are the most mature networks. Even if it seems here that the age do not impacts the contract length, it may be that in the very first period of a new network (take-off), the variability of the length is more important, and the franchisee's bargaining power higher.

As we do not have access to primary data, the duration announced by the franchisor, studied here, may be different from the final negotiated contract length. The contract length in primary data may differ depending on the commercial property that the franchisees have to pay. For example, the contract duration may be longer in towns like Aix en Provence where commercial properties are expensive.

It would be interesting to complete our statistical and econometrical work with a qualitative study based on semi-directive interviews with franchisors, franchisees and also with experts providing advice and counsel that help designing contracts. Such qualitative approach would enable to understand in depth how are determined the duration of contracts and its variations.

Appendix: Tests for the Estimations Models

NB: in all the following models, the instruments used are:

Instruments for first differences equation
Standard
Difference of (SECTOR2 SECTOR3 SECTOR4 SECTOR5 YEAR_1996
YEAR_1997 YEAR_1998 YEAR_1999 YEAR_2000 YEAR_2001
YEAR_2002 YEAR_2003 RETURN TURNOVER ln(AGE)
Ln(SIZE))
GMM-type (missing=0, separate instruments for each period unless collapsed)
Lag2.(CONTRACT LENGTH Investment ownership_rate)

Instruments for levels equation
Standard
constant
SECTOR2 SECTOR3 SECTOR4 SECTOR5 YEAR_1996
YEAR_1997 YEAR_1998 YEAR_1999 YEAR_2000 YEAR_2001
YEAR_2002 YEAR_2003 RETURN TURNOVER ln(AGE)
Ln(SIZE)
GMM-type (missing=0, separate instruments for each period unless collapsed)
Difference of Lag.(CONTRACT LENGTH Investment ownership_rate)

Model 1: Dynamic Panel-Data Estimation Results for the Full Sample (Two-Step System GMM)

Arellano-Bond test for AR (1) in first differences: Pr > z = 0.031
Arellano-Bond test for AR (2) in first differences: Pr > z = 0.871
Hansen test of overid. Prob > chi2 = 0.586
Difference-in-Hansen tests of exogeneity of instrument subsets:
GMM instruments for levels
Hansen test excluding group: Prob > chi2 = 0.488
Difference (null H = exogenous): Prob > chi2 = 0.581
Hansen test excluding group: Prob > chi2 = 0.361
Difference (null H = exogenous): Prob > chi2 = 0.692

Model 2: Dynamic Panel-Data Estimation Results for the Subsample Retail (Two-Step System GMM)

Arellano-Bond test for AR (1) in first differences: Pr > z = 0.040
Arellano-Bond test for AR (2) in first differences: Pr > z = 0.769
Hansen test of overid. Prob > chi2 = 0.720
Difference-in-Hansen tests of exogeneity of instrument subsets:
GMM instruments for levels
Hansen test excluding group: Prob > chi2 = 0.741
Difference (null H = exogenous): Prob > chi2 = 0.531
Hansen test excluding group: Prob > chi2 = 0.766
Difference (null H = exogenous): Prob > chi2 = 0.493

Model 3: Dynamic Panel-Data Estimation Results for the Subsample Services (Two-Step System GMM)

Arellano-Bond test for AR (1) in first differences: Pr > z = 0.081
Arellano-Bond test for AR (2) in first differences: Pr > z = 0.901
Hansen test of overid. Prob > chi2 = 0.601
Difference-in-Hansen tests of exogeneity of instrument subsets:
GMM instruments for levels
Hansen test excluding group: Prob > chi2 = 0.451
Difference (null H = exogenous): Prob > chi2 = 0.645
Hansen test excluding group: Prob > chi2 = 0.540
Difference (null H = exogenous): Prob > chi2 = 0.547

Model 4: Dynamic Panel-Data Estimation Results for the Subsample of Outperforming Franchisors (Two-Step System GMM)

Arellano-Bond test for AR (1) in first differences: Pr > z = 0.042
Arellano-Bond test for AR (2) in first differences: Pr > z = 0.526
Hansen test of overid. restrictions: Prob > chi2 = 0.690
Difference-in-Hansen tests of exogeneity of instrument subsets:
GMM instruments for levels
Hansen test excluding group: Prob > chi2 = 0.583
Difference (null H = exogenous): Prob > chi2 = 0.636
Hansen test excluding group: Prob > chi2 = 0.360
Difference (null H = exogenous): Prob > chi2 = 0.817

Model 5: Dynamic Panel-Data Estimation Results for the Subsample of Underperforming Franchisors (Two-Step System GMM)

Arellano-Bond test for AR (1) in first differences: Pr > z = 0.162
Arellano-Bond test for AR (2) in first differences: Pr > z = 0.461
Hansen test of overid. Prob > chi2 = 0.917
Difference-in-Hansen tests of exogeneity of instrument subsets:
GMM instruments for levels
Hansen test excluding group: Prob > chi2 = 0.869
Difference (null H = exogenous): Prob > chi2 = 0.762
Hansen test excluding group: Prob > chi2 = 0.801
Difference (null H = exogenous): Prob > chi2 = 0.834

Model 6: Dynamic Panel-Data Estimation Results for the Subsample of Low-Risk Networks (Two-Step System GMM)

Arellano-Bond test for AR (1) in first differences: Pr > z = 0.124
Arellano-Bond test for AR (2) in first differences: Pr > z = 0.218
Hansen test of overid. restrictions: Prob > chi2 = 0.326
Difference-in-Hansen tests of exogeneity of instrument subsets:
GMM instruments for levels
Hansen test excluding group: Prob > chi2 = 0.313
Difference (null H = exogenous): Prob > chi2 = 0.388
Hansen test excluding group: Prob > chi2 = 0.451
Difference (null H = exogenous): Prob > chi2 = 0.274

Model 7: Dynamic Panel-Data Estimation Results for the Subsample of High-Risk Networks (Two-Step System GMM)

Arellano-Bond test for AR (1) in first differences: Pr > z = 0.115
Arellano-Bond test for AR (2) in first differences: Pr > z = 0.224
Hansen test of overid. restrictions: Prob > chi2 = 0.675
Difference-in-Hansen tests of exogeneity of instrument subsets:
GMM instruments for levels
Hansen test excluding group: Prob > chi2 = 0.629
Difference (null H = exogenous): Prob > chi2 = 0.567
Hansen test excluding group: Prob > chi2 = 0.341
Difference (null H = exogenous): Prob > chi2 = 0.797

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