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Plural form network financial performance: A complementary view between agency and critical resources theories

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Résumé :

Cet article étudie l'impact des ressources critiques (i.e celles, intangibles et humaines, qui fondent la valeur de l'entreprise) sur la gouvernance (i.e la proportion de points de vente en franchise), ainsi que l'impact conjoint des ressources critiques et de la gouvernance sur la performance des franchiseurs. La théorie de l'agence met l'accent sur les risques de "free-riding" et les coûts associés à la franchise dans un contexte de forts actifs intangibles et humains. La théorie des ressources critiques pointe, au contraire, les faiblesses de la pleine propriété des points de vente, et les avantages de la franchise, dans un tel contexte. Ces cadres théoriques conduisent à développer un jeu d'hypothèses, complémentaires ou contradictoires, qui sont testées sur un échantillon de franchiseurs européens cotés. Les résultats montrent que ces deux cadres théoriques se complètent dans l'explication de la gouvernance et de la performance financière des franchiseurs.

Mots clés : Franchise, gouvernance, capital humain, ressources critiques, performance.

Abstract :

This article examines the impact of critical resources (i.e. those, intangible and human, which found the firm's value) on the governance (i.e. the proportion of franchised outlets), and the joint impact of critical resources and governance on franchisors' performance. The agency theory focuses on the free-riding hazard and the costs associated with franchising in a context of high intangible and human assets. The critical resources theory highlights the weakness of ownership and the advantages of using franchising in a high intangible and human assets context. These theoretical frameworks lead to a set of complementary or contradictory hypotheses, which are tested on a sample of European publicly held franchisors. Results show that these two theoretical frameworks are complementary to explain the governance and financial performance of franchisors.

Keywords: franchise networks, governance, human capital, critical resources, performance.

INTRODUCTION

Franchising as a form of entrepreneurship is increasingly present in a variety of sectors. Most franchise networks adopt a dual distribution strategy, also referred to as the plural form organization, meaning that the network is made up of both franchised and company-owned units (Srinivasan, 2006). The study of plural form has increasingly gained importance in franchising research since its first announcement by Bradach and Eccles (1989).

Paradigms derived from organizational economics have been put forth to explain the franchisor's actions, in particular regarding the choice between franchised and company-owned outlets. Agency theory represents such a paradigm that relies on the notion of market imperfections. In this framework, agency costs influence the franchisor's choice between franchising and company ownership (Brickley and Dark, 1987; Caves and Murphy, 1976; Fama and Jensen, 1983; Lafontaine, 1992). Potential shirking by the agent is a widely discussed problem in the franchise literature (Rubin, 1978; Brickley and Dark, 1987). Salaried managers may not always put forth their best efforts and therefore may produce sub-optimal performance. In order to reduce this moral hazard, a firm may need to institute a costly monitoring system. Franchising addresses this problem by providing powerful incentives for the owner-manager of the franchised unit to perform well as the compensation of franchisees is directly tied to the performance of their outlets. However, agency theory accounts suggest some disadvantages of franchising as well, including potential underinvestment and free riding by franchisees (Bergen et al. 1992). Following this logic, the company ownership vs. franchising decision is likely to turn on the costs of operating under the two governance structures (Williamson, 1975).

The critical resources theory can also be used to explain the governance and performance of plural form networks. An increasingly large portion of the value of firms today has become attributable to intangible assets – including specialized human capital (competencies, knowledge, experience, etc. of employees) – that cannot be appropriated (Teece, 2000; Hall, 2001, Brynjolfsson et al., 2002). The critical resources theory is the only approach to the firm that recognises human capital as the asset decisive to its competitiveness. It establishes an original analysis of the human capital-intensive firm founded on team production, and suggests new foundations for corporate governance (Cézanne-Sintès, 2008). According to this perspective, corporate governance refers to a vision of the firm as a combination of specific and critical resources (Penrose, 1959; Prahalad and Hamel, 1990; Barney, 1991; Rajan and Zingales, 1998). Based on the critical resources view, franchising networks, which contain a

high level of intangible assets, need a specific governance system to be efficient. We assume that the plural form is such a governance system as it allows the development of trust (Bradach and Eccles, 1989) and cooperation, a specific governance implementation, and the emergence of information resources.

Compared to governance issues, performance issues have received little attention in the franchising context. In particular, it is not clear whether reliance on franchising (as opposed to company ownership) increases the financial performance of networks (Combs et al., 2004). In this study, we explore the impact of critical resources (intangible assets) on governance structure (proportion of franchised outlets) and the joint impact of critical resources and governance structure on the financial performance of franchise networks.

Based on the classic opportunism considerations and following Barthélemy (2008), we first argue that the more valuable the intangible assets (human capital, brand name, know how, etc.), the higher the potential for free riding by franchisees (Brickley and Dark, 1987). But, in contrast, the critical resources theory suggests that, like in other organizations, the network value relies more or less on intangible assets and complementarities. We thus propose that the more the intangible assets found the value of the franchise network, the more the network should expand through franchising. Hence, viewing plural form from agency theory gives rise to predictions that are contradictory to those based on the critical resources theory.

A few empirical studies have examined the performance implications of governance decisions in the franchising context (Combs and Ketchen, 1999; Yin and Zajac, 2004; Barthélemy, 2008). For instance, Barthélemy (2008) shows that networks with a valuable brand name and tacit business practices tend to perform better when they have a low proportion of franchised outlets. In this study, our aim is to show that the impact of intangible assets value on financial performance is contingent upon the proportion of franchised outlets in networks. We extend prior studies in three ways. First, we enrich the theoretical background used and develop hypotheses from both agency theory and critical resources theory. Second, we use longitudinal data on financial performance and its determinants. Third, we conduct the study across European publicly held franchisors that have not been extensively studied yet.

The article is organized as follows. In the first section, we develop the theoretical background and define testable hypotheses. In the second section, we describe the data and the methodology used to test the hypotheses. In the third section, we present the results. Implications of the findings are discussed in the fourth section.

1. THEORY AND HYPOTHESES

1.1. Resources and governance

Franchisors should be aware and take into account the costs and benefits of franchising in their decision to franchise or own an outlet. The agency theory recognizes the benefits of franchising: compared to managers of company-owned outlets, franchisees have a strong incentive to work hard because their compensation is directly tied to the performance of their outlets. This should benefits to the franchisors. But within the agency theory framework, the franchisor-franchisee relationship is also characterized by major goal conflicts (Gassenheimer et al., 1996). Franchisees may be tempted to increase their short-term profitability by free riding on the efforts of the franchisor and other outlet managers. For instance, they may let quality standards slip, fail to supervise employees, or underinvest in local advertising (Brickley and Dark, 1987). Networks with valuable intangible assets may be particularly vulnerable to free riding. Indeed, the more valuable the intangible assets (human capital, brand value, know how, etc), the more opportunistic franchisees will benefit from providing a lower-quality product or service than customers typically associate with the franchise name (Michael, 2000; Norton, 1988). Franchisors can use opportunism-mitigating tools such as mystery customers and automated management information systems but they are costly to implement.

Therefore, following agency theory, the agency (free-riding) costs of franchising should increase compared to ownership when the intangible assets value is high. Hence, the impact of the franchisor's intangible assets value on the network's proportion of franchised outlets is likely to be negative.

H1a: There is a negative relationship between intangible assets value and the proportion of franchised outlets in a network.

This agency framework does not take into account the full benefits provided by the use of franchising in the plural forms networks in coordinating human assets and their complementarities. Following the critical resources view (Rajan and Zingales, 2000), we consider franchising in plural form networks as a governance mechanism, which highlights the importance of human capital as a determinant of the governance structure. Today, productive activity not only requires traditional production factors such as fixed capital but also competencies, human capital, organizational structures and procedures, and all the other resources described as intangible assets (Brynjolfsson et al., 2002, p.137). Human capital can

neither be appropriated by the firm nor by any of the firm's partners. Indeed, an agent cannot transfer its residual rights of control on its human capital to others through an incomplete contract, for an extended period (Grossman and Hart, 1986; Hart and Moore, 1990). Human capital is inalienable so that contracts for its management do not give the same residual rights of control as contracts relating to physical capital (Gibbons, 2005). The vision of the firm as a combination of physical assets, commonly owned, must be abandoned for an improved conception of the firm based on the specialization of assets that are decisive to the productive activity of the firm, notably human assets. Taking into account these considerations, the critical resources theory proposes an original vision of the nature and the boundaries of the firm, and suggests an original governance of the human capital-intensive organization. The critical resources theory develops a conception of the firm as a "nexus of specific investments" (Zingales, 2000, p. 1648) in human assets. On the basis of this renewed vision of the firm, the coordination of human assets and of their complementarities is at the core of the analysis of the human capital-intensive firm and establishes a re-consideration of the principles and mechanisms of the governance of the firm. This new perspective can be applied to franchising to analyze the relationship between the franchisor's intangible assets and governance structure (proportion of franchised outlets).

Rajan and Zingales (2001, p. 3) state that: "while ownership legally links an inanimate asset to a firm, complementarities economically link some person or unit that cannot be owned to the critical resource at the core of the firm". What Rajan and Zingales call "complementarities" are sources of value creation[1]. Thus the authors argue that when critical assets are animate, only a variety of mechanisms – as opposed to ownership - will create value. We argue below that franchising constitutes such a "variety of mechanisms". Hence, this critical assets view of control could be summarized by the following proposition: the more important the intangible human assets are, the more control rights should be transferred to the partners, and the more franchising should be used as a governance form.

A number of intangible assets and/or knowledge assets, which are more or less critical to the networks value, are generated and used in franchise networks (Windsperger and Yurdakul, 2007). The franchisor offers know-how, business format and brand name whereas the franchisee provides local market knowledge and motivated managerial expertise. When these resources are put together in the network, they induce - more or less depending on their critical nature - complementarities. These complementarities can arise from the generation of

[1] See Rajan and Zingales (2000, p. 19): "More precisely, a complementarity is said to exist when the unit and the firm can together create more value than they can going their own separate ways."

information and management resources specific to plural form as shown by Bradach (1998). They can also take the form of a first mover advantage, which in turn increases the brand value (Michael, 2003). In this dynamic context, franchisees enhance their value as differentiated human assets that use physical tools optimally. Indeed, on the basis of know how, knowledge, behaviour and the attributes that affect individual capabilities, i.e. adaptability, initiative, motivation, etc., franchisees represent specialized human capital that is essential for the firm to exploit growth opportunities. Hence, we argue that franchising in plural form networks is at the basis of some of the intangible value of the network, and recourse to franchising should allow networks to better tap potentially valuable intangible assets.

Franchising in plural form networks can be viewed as a governance device, which offers complementarities and control over critical (human) resources through a variety of mechanisms. Powell (1990) presents network forms of organization as "neither market nor hierarchy". Bradach and Eccles (1989) highlight the importance of trust between authority and price, which leads to plural form organizations. These mechanisms, which are specific to plural form networks, can be seen as a means to build complementarities based on the two mechanisms proposed by Rajan and Zingales: (1) granting access to resources and (2) favouring specialization. One form of building complementarities is to give franchisees ("human" assets of the firm at the local market) a privileged access to the enterprise's resources (e. g. concept, methods, outlets' results, information) by transferring residual decision and residual income rights. This access is a necessary condition for the investment in human capital at the outlet level. Simultaneously, the franchisor has to strengthen its authority over the use of the critical network resources. Critical resources are the brand name and the human capital assets at the local market. Favouring firm-specific specialization for the franchisee can promote the development of local human capital assets. Simultaneously, the more the franchisee's investments are network-specific, the more the franchisee's rent is tied to a continuing relationship with the network. For instance, this network specificity results from the use of the network information system, the socialization in the network (Bradach, 1998) and different transaction-specific investments of the franchisees as bonding device (Williamson, 1983). Therefore, franchise contracts may offer different arrangements to support investments in critical assets. But, beyond these differences, we can conclude that franchising in a plural form network will be better suited than company-ownership to retain and develop intangible (human) assets when these assets are critical (found the value of) to the network. Hence, networks with a high value of intangible human assets should exhibit a

high proportion of franchisee-owned units. This leads to the following hypothesis that is contradictory to the hypothesis H1a derived from agency theory:

H1b: There is a positive relationship between intangible assets value and the proportion of franchised outlets in a network.

We have to note that if these hypotheses are contradictory, the theoretical frameworks are not opposed. The theory of critical resources highlights the weakness of ownership and the advantages of using franchising in a high intangible and human assets context, while the agency theory highlights the potential free-riding costs. The trade-off between these two opposite effects should depend on the environment or contingent variables.

All else being equal, free riding hazards should increase with intangible assets value (Michael, 2000). However, the scope for free riding on valuable intangible assets may also depend on the extent to which quality can be guaranteed by the franchisor (Barthélemy, 2008). In retail-type networks, franchisors can easily guarantee quality because they supply products to outlet managers. It is comparatively more difficult for franchisors to guarantee quality in service-type networks. As a result, the potential for free riding on valuable intangible assets is likely to be higher in service-type networks than in retail-type networks.

Therefore, we expect the relationship between intangible assets value and the proportion of franchised outlets to be moderated by network-type (service vs. retail). More precisely, the relationship between intangible assets value and the proportion of franchised outlets should be weakened in service-type networks compared to retail-type networks.

H2: The interaction of intangible assets value and service-type franchising has a negative impact on the proportion of franchised outlets in a network.

Age is also an important determinant of governance structure. The resource scarcity view assumes that small chains adopt franchising to gain quick access to resources in order to grow fast (Michael 2003). However, once the franchisor has acquired sufficient resources over time, he will take over his franchisees' units to obtain tight control (Carney and Gedajlovic, 1991). This reasoning leads to the ownership redirection hypothesis, which states that a franchising network will ultimately become 100% company-owned, because the more powerful franchisor will convert previously franchisee-owned outlets to company-owned outlets over time when his resources constraints disappear (Oxenfeldt and Kelly, 1968). The critical resources view moderates this hypothesis and prevents a complete redirection hypothesis, as it argues that intangible resources are better exploited under plural form networks with a strong proportion of franchised units. The critical resources view does not contend that all intangible or human critical assets become more or less critical when the

network matures. But at least, the first mover advantage (Michael, 2003), which is one of the complementarities between the franchisor and franchisees, should become less critical as the network matures. The agency view could also strengthen the redirection hypothesis for high intangible assets networks, as the potential for free riding on valuable intangible assets is likely to be higher in well-established networks than in new ones.

As a consequence, we expect the relationship between intangible assets value and proportion of franchised outlets to be moderated by franchisor's age. According to the ownership redirection hypothesis and agency costs considerations, the relationship between intangible assets value and proportion of franchised outlets should be weakened for older networks compared to younger ones.

H3: The interaction of intangible assets value and franchisor's age has a negative impact on the proportion of franchised outlets in a network.

There are some inconsistent conclusions across the different studies with respect to the age of the network. Some papers (Castrogiovanni et al., 2006) find a positive effect of firm age, while others (Dant and Kaufmann, 2003; Dant et al., 2008) find a negative impact of firm age on the degree of franchised units within a network. The complex interactions of age, intangibility and franchise type could explain these non conclusive results. The point outlined by Srinivasan (2006) may also be at work: when most high potential markets are covered by a firm's existing distribution system and its expansion may be limited to smaller, remote markets, market-based channels could be more efficient.

1.2. Resources, governance and performance

The hypotheses regarding the impact of the resources and governance on the franchisor's performance are directly derived from the previous analysis. A high level of intangible assets should result in high financial return[2]. But, the critical resources theory states that high intangibles should also lead to high proportion of franchised units to be fully leveraged. On the other hand, agency theory points out the costs of franchising when intangible assets are high. Therefore, the impact of intangible assets value on franchisor's performance is likely to be contingent on the proportion of franchised outlets in the network. Specifically, following agency theory, the cost of mitigating free riding hazards should prevent networks with a high proportion of franchised outlets from fully tapping potentially valuable intangible assets.

[2] This should occur at least in accounting measures of financial performance. Indeed, accounting does not record all intangible assets on the balance sheet.

H4a: The interaction of intangible assets value and the proportion of franchised outlets has a negative impact on network performance.

On the other hand, the critical resources theory argues that ownership is a weakly efficient form of governance when the firm's value is strongly based on intangible assets. The intangible resources of the firm, especially its human component, will be better leveraged by franchising in a plural form network. This leads to the following contradictory hypotheses:

H4b: The interaction of intangible assets value and the proportion of franchised outlets has a positive impact on network performance.

Once again, these contradictory hypotheses stem from the fact that the theoretical frameworks –although not contradictory by themselves- focus on different issues. The critical resources theory focuses on the weakness of ownership governance when human and intangible assets are critical to the firm, whereas agency theory highlights specific (free-riding) costs of franchising when intangible and human assets are high in the network. The question of what effect will prevail is context dependent.

As Barthélemy (2008) notes, the scope for free riding on valuable intangible assets may depend on the extent to which quality can be guaranteed by the franchisor. In retail-type networks, franchisors can easily guarantee quality because they supply products to outlet managers. It is comparatively more difficult for franchisors to guarantee quality in service-type networks. As a result, the potential for free riding on valuable intangible assets is likely to be higher in service-type networks than in retail-type networks.

These arguments suggest a complex interaction between intangible assets value, proportion on franchised outlets, and network-type. Specifically, the impact of the interaction between intangible assets value and the proportion of franchised outlets on network performance should be weakened for service-type networks compared to retail-type networks. Consistent with Hitt et al. (2001) and Barthélemy (2008), this hypothesis was modeled as a three-way interaction among intangible assets value, proportion of franchised outlets, and service-type franchising on network performance.

H5: The interaction of intangible assets value, proportion of franchised outlets, and service-type franchising stage has a negative impact on network performance.

Parallel to the sector, age is once again an important variable to consider because it could influence the relationship between intangible assets value and proportion of franchised outlets

on performance. The critical resources view doesn't allow us to derive a hypothesized impact of age on the relationship between intangible assets and the proportion of franchised units on performance. However, we can argue that the network is more dependent on critical resources in the early stages of development. The resource scarcity arguments, which initially founded the advantages of franchising (Caves and Murphy, 1976), assume that small young chains adopt franchising to gain quick access to resources in order to grow fast. As franchise networks become mature, they get easier access to resources, and the need for franchising should decrease. These arguments could offer a track indicating that resources criticality decrease with the network's age. Yet, the resource scarcity theory doesn't deal with only critical (human, intangible) resources at work in the critical resources view[3]. At least one complementarity that arises from franchising and that makes the franchisees human capital critical to the network could lower with age: the first mover advantage studied by Michael (2003). Once the network reaps the benefits of first mover advantage, the franchisee's human capital could be less critical to the network value. But complementarities that arise from the generation of information and management resources specific to plural form as shown by Bradach (1998) remains. Hence, the positive relationship between intangible assets, proportion of franchised units and performance postulated by the critical resource theory could be age decreasing, but it should remain positive.

The agency theory view is more straightforward as the potential for free riding on valuable intangible assets is likely to be higher in well-established networks than in new ones. Hence, age should strengthen the negative relationship between intangible asset value, proportion of franchised outlets and performance. Overall, the positive impact of intangible assets and proportion of franchised outlets on performance predicted by the critical resources theory could be lowered and the negative one predicted by the agency theory could be strengthen as age increases. This leads to H6.

H6: The interaction of intangible assets value, proportion of franchised outlets and franchisor's age has a negative impact on network performance.

However, Srinivasan (2006) argues that when most high potential markets are covered by a firm's existing distribution system and its expansion may be limited to smaller, remote markets, market-based channels could be more efficient. This could lower the franchisor's age negative impact for old franchisors.

[3] The resource scarcity arguments mention managerial resources but also include financial resources.

2. METHODS AND MEASURES

2.1. Data collection and sample

The empirical setting for this research is business-format franchising in Europe. Franchising is defined as "a business form essentially consisting of an organization (the franchisor) with a market-tested business package centred on a product or service, entering into a continuing contractual relationship with franchisees, typically self-financed and independently owner-managed small firms, operating under the franchisor's trade name to produce and / or market goods or services according to a format specified by the franchisor" (Curran and Stanworth, 1983, p. 11).

Franchising networks are expanding in Europe. The latest figures provided by the European Franchise Federation (2008) show that there are no less than 9,750 franchising networks in Europe. In this study, the focus is on publicly held franchisors in Europe in order to use market-based measures of the franchisors' intangible value.

The initial sample of publicly held franchisors is built on information collected from various organizations (national franchise associations, franchise magazines) via their websites. Whether or not the largest franchisors in Europe[4] were publicly held was also checked. A sample of 80 publicly held franchisors was thus obtained. Some of these franchisors were subsidiaries of publicly held firms. When the franchising activity was a marginal activity in the firm, it was not retained in the sample. Although they are listed on a stock exchange in Europe, some networks are non-European and have only a small part of their activities in European markets; they have been deleted from the database as well. Other data limitations, especially concerning the number of outlets, reduce the final sample to 40 franchisors. The model is estimated using panel data on 40 publicly listed European franchising networks in the 1998-2007 period, resulting in 236 firm-year observations (40 firms x the number of years of observation for each firm). The focus is on the European market at a multi-industry-level, contrary to previous studies, which have mainly analysed the US market in one specific industry. Data were obtained from various sources. Financial and accounting data were obtained from the Worldscope database. The data on the number of units and employees were obtained from the firms' annual reports and several franchising websites. In some cases, franchisors were contacted directly by email and/or by telephone to complete our information. Some firms entered after 1998 or exited before 2007, reducing the number of firm years. The average number of firm years was 5.9 (minimum = 1 year; maximum= 10 years). Most data

[4] As listed at: http://www.franchiseeurope.com/top500/).

stem from French franchisors, as there are 148 observations from 28 franchisors in France. There are also 20 observations from 3 UK franchisors, 18 observations from two German franchisors, 16 observations from three Italian franchisors, 10 observations from Belgium, 9 from the Netherlands, 8 from Spain, and 7 from Denmark (only one firm concerns the latter countries). Industry classification schemes of Datastream were adopted. Firms in the sample are distributed across 13 industries. Clothing is the first one, with 64 observations, followed by mass distribution and special retail, with 37 and 38 observations respectively, restaurants, with 30 observations, do-it-yourself stores, 21 observations, and hotels, 10 observations. All other sectors (medical, real estate, travel, financial services, material, audio and video product and education) have less than 10 observations.

2.2 Variables and Measures

It is assumed that franchising has the same legal definition throughout the selected European countries even though in some of them franchising can be defined differently (Dant et al. 2008). The proportion of a network's franchised units to the total number of its units in its distribution system is used as the indicator of its plural form (franchise proportion). This is a continuous measure bounded between 0 (only owned units) and 1 (only franchised units). Following an instrumental approach (Jones 1995), the network's performance is measured at the franchisor level by its industry-adjusted return on assets. Industry-adjusted return on assets is the return on assets of each company in the sample minus the industry's median return on assets[5].

A relative stock market valuation measure of human capital intangibles proposed by Pantzalis and Park (2009) is used. The excess value of a franchisor's human capital (EVHC) "i" is measured as the natural log of the ratio of firm's market value of common equity (V) per employee (EMP) to the industry's median (m) value of market value of common equity per employee:

$$EVHC_{i,t} = \ln\left[\left(\frac{V}{EMP}\right)_{i,t} \Big/ \left(\frac{V}{EMP}\right)_{m,t}\right]$$

[5] Datastream database provides, for each firm, related companies for comparison purposes. These related companies are defined according to their industry. For one franchisor in our sample (Bang and Olufsen, audio and video product, group code "CNELE" in Datastream), Datastream does not provide related companies in the EU. For this company, performance and human capital measures are adjusted with the median of the total sample of related companies.

Following Pantzalis and Park (2009), it is assumed that EVHC reflects the market's assessment of the quality of the human capital employed by the franchisor. EVHC is used as a continuous variable.

Age is an imperfect proxy of life cycle stage but this variable, which is easily available, is often used in franchising literature regarding franchise proportion and/or performance (Barthélemy 2008; Lafontaine and Shaw 2005; Perrigot et al. 2009). Franchisor's age is the number of years since its incorporation. As the impacts of age could be non-linear, we also include transformations of age in the model (natural log of age).

We also include the franchisor's size (natural log of total assets) and sales growth (growth of net sales on the last 3 years) as control variables. Table 1 contains the descriptive statistics and Table 2 presents the correlations matrix of the measures. The correlations are within acceptable limits (highest correlation = 0.347 between size and age).

Table 1. Descriptive statistics (n=236)

Variable	Mean	Std. Dev.	Min	Max
Roaadj (%)	-1.810	7.832	-53.29	44.73
franch prop	0.512	0.325	0	.999
EVHC	0.047	1.505	-5.306	4.082
age	42.589	25.614	4	109
size	12.792	2.0312	9.096	17.747
salesgrowth	11.811	46.003	-32.04	558.27

Table 2. Correlations matrix (n=236)

	roaadj	taux_f~h	khum	age	size	
roaadj	1.0000					
franch prop	-0.0232	1.0000				
EVHC	0.2712	0.3305	1.0000			
age	-0.1503	-0.0040	-0.0607	1.0000		
size	0.0460	0.0211	0.1080	0.3467	1.0000	
salesgrowth	0.0799	-0.0723	-0.1065	-0.1870	-0.0813	1.0000

3. RESULTS

We first test the hypotheses considering the impact of intangible human capital on franchise proportion. For these models, all the regressions are estimated using a cross-section random effect, as a Hausman test showed that this specification was better than fixed effect[6]. We then

[6] A Breusch-Pagan Lagrange Multiplier furthermore confirms that the random effect is well suited for these models. Besides, we control for heteroskedasticity which might be a concern in our data by estimating a Huber /White/sandwich variance/covariance matrix of estimators in linear model which is robust to heteroskedasticity. Finally, we also perform a Woolridge test for serial correlation. This test does not reject the null hypothesis of no

turn to the models regarding performance, for which a cross-section fixed effect was better suited[7].

3.1. Resources and governance

The results of the regression relating proportion of franchised outlets to human capital value, interaction and control variables are shown in Table 3. Although linear regressions yield the same results as Tobit regressions, we report Tobit results because our dependent variable (proportion of franchised outlets) is truncated between 0 and 1. The age variable, as control and interaction variable, yields non-significant results, but a transformation of age to its natural logarithm significantly improves the regression[8].

Whatever the models, control variables show that age is positively linked and size negatively linked to the proportion of franchised outlets, although this impact is not systematically significant. The sales growth's coefficient is not significant.

Models I and II include variables that refer to hypotheses 1 and 3. The models show a significant positive relationship between the human capital value and the proportion of franchised outlets. This result indicates that franchisors, even if there are agency (free-riding) costs associated with human capital, choose a governance structure that is conform to the critical resources theory analysis. Hence, H1b is corroborated whereas H1a is rejected.

Our theoretical analysis suggests that over time the negative relationship between the human capital value and the proportion of franchised outlets predicted by the agency theory should be stronger and the positive one predicted by the critical resources theory should be lower. The negative and significant coefficient of the interaction between the age and human capital variable confirms this analysis. H3 is corroborated. The effect of age on the relationship between human capital and franchise proportion is negative in a non linear way. It is negative for young firms and it almost stabilizes as age increases (ln transformation).

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serial correlation at the 5% confidence level. But as the null hypothesis would be rejected at the 10% confidence level, serial correlation might also be of concern with our data. However, given our small number of observations, we do not turn to dynamic panel data.

[7] Models of performance also need to control for heteroskedasticity but do not show any problem of serial correlation.

[8] The study of Castrogiovanni (2006) justify a non linear relationship between age and franchise proportion.

Table 3: Results of regression analysis of proportion of franchised outlets (n=236)

Variable	Proportion of franchised outlets			
	I Linear random effect	II Tobit random effect	III Tobit Random effect	IV Tobit Random Effect
Cst	0.558* (0.322)	0.565** (0.273)	0.286 (0.279)	0.670** (0.326)
EVHC	0.198** (0.101)	0.197*** (0.73)	0.044** (0.020)	0.337*** (0.106)
Ln(AGE)	0.140 (0.106)	0.137** (0.063)	0.199*** (0.066)	0.118 (0.080)
EVHC*Ln(AGE)	-0.047* (0.028)	-0.047** (0.020)		-0.078*** (0.028)
Service Franchise			0.048 (0.119)	-0.327 (0.451)
EVHC*Service Franchise			-0.030 (0.030)	-0.075 (0.185)
EVHC*Service franchise*ln(AGE)				0.001 (0.054)
Size	-0.038 (0.025)	-0.038** (0.194)	-0.034* (0.020)	-0.039* (0.020)
Salesgrowth	-0.0002 (0.0003)	-0.0002 (0.0002)	-0.0003 (0.0002)	-0.0002 (0.0002)
	Wald chi2(5)=15.94 Prob>chi2=0.0070	LR chi2(5)=23.12 Prob>chi2=0.0003	LR chi2 (6)=20.1 Prob>chi2=0.003	LR chi2(9)=31 Prob>chi2=0.0003

*** p<0.10, ** p<0.05, *** p<0.01, robust standards errors are in parentheses**

So far, results do not show strong evidence of free-riding costs as agency theory and critical resources theory lead to the same conclusion regarding the age's effect. Hypothesis H2 designates the network-type (service vs. product) as a means to detect such costs. Free-riding costs should be more important in service-type networks, so that the positive effect of human capital on the proportion of franchised outlets should be lower in these networks. Models 3 and 4 introduce a service-type dummy as an interaction variable in a 2 ways effect (with human assets in Model 3) and a 3 ways effect (with human assets and age in Model 4). In each model, the network-type interaction variable has the expected negative sign, but it is not significant. Hence, results do not corroborate H2. Overall, results indicate that the networks' governance design is consistent with the critical resources theory. The more the franchisor's value is human assets- based, the more it franchises.

3.2. Resources, governance and performance

Fixed effect cross-section panels models were used to test the impact of governance structure and human capital on performance. Contingency relationships were tested by including

interaction effects between human capital, franchise proportion, age or sector. Results are summarized in Table 4.

As a basis for comparison, Model I includes the variables without interaction effect. Results show that there is a positive relationship between human capital and performance. Although not hypothesized, results also show a significant negative relationship between franchise proportion and performance. This direct negative coefficient is contradictory to the results reported by Barthélemy (2008)[9]. The coefficient of age is positive and significant. This result could be explained by a "survivor bias", i.e. weaker franchisors disappear so that older franchisors are those that outperform their counterparts, and may not reflect causality. Finally, coefficients of the control variables (size and sales growth) are not significant.

Hypotheses 4a (4b) predict a negative (positive) relationship between the interaction of human capital and franchise proportion on franchisors' performance. Model II includes an interaction between human capital and franchise proportion to test these hypotheses. A likelihood ratio test shows that model II fits the data significantly better than model I at a 10% level. Hence, including the interaction term slightly improves the model explaining franchisors' financial performance. This provides support for the contention that the performance of franchisors is contingent on the 'fit' between governance structure and resources. Results show a negative and slightly significant coefficient for this interaction. Hence, the higher the franchisor's human capital, the more franchising negatively impacts its financial performance. H4a, which stems from agency theory, is corroborated against H4b. Following agency theory and our analysis, free riding costs could explain this negative impact. As franchisor's human capital gets higher, the costs of mitigating free riding hazards may prevent networks with a high proportion of franchised outlets from fully tapping potentially valuable intangible assets[10]. Coefficients of the other variables are qualitatively the same as in Model I.

[9] Barthélemy (2008) used a different measure of performance which is a mix of financial performance (Return on assets) and profitability (Return on sales). Moreover, his regressions are only cross-sectional , so our results are not directly comparable.

[10] One must not misinterpret this result. This doesn't mean that franchisor's human capital could have a negative impact on its performance for a high proportion of franchised outlets. Actually, when we assess the marginal (direct and indirect) effect of a variation of human capital on performance over the 'response surface' of franchise proportion, results still exhibit a positive and significant effect of human capital whatever the level of franchise proportion, but this effect is decreasing with franchise proportion.

Table 4 : Results of regression analysis of adjusted return on assets (n=236)

Variable	Adjusted return on assets			
	I Without interaction	II tests H4	III tests H6	IV tests H5
Cst	18.459 (39.756)	23.457 (39.356)	30.227 (43.008)	24.380 (41.847)
EVHC	4.528*** (1.019)	6.657*** (1.534)	10.095*** (2.731)	5.856*** (1.784)
Franch. Prop.	-6.114** (2.628)	-9.065*** (2.793)	-23.975*** (6.978)	-6.398*** (2.252)
AGE	0.746** (0.285)	0.691** (0.283)	0.457 (0.295)	0.762** (0.313)
EVHC*Franch. Prop.		-3.625* (1.881)	-8.282** (3.482)	-1.094 (2.191)
EVHC*AGE			-0.072 (0.079)	
Franch. Prop.*AGE			0.374*** (0.125)	
EVHC* AGE* Franch. Prop.			0.104 (0.109)	
Service Franchise				†
EVHC*Service Franchise				1.731 (4.281)
Franch. Prop. *Service franchise				-10.712 (11.611)
EVHC*franch. Prop. * Service Franchise				-4.923 (5.067)
Size	-3.858 (3.535)	-3.904 (3.515)	-3.694 (3.833)	-4.205 (3.803)
Salesgrowth	0.021 (0.024)	0.019 (0.023)	0.018 (0.023)	0.021 (0.024)
	F(5,39)=5.30 Prob>F=0.001	F(6,39)=5.19 Prob>F=0.000	F(9,39)=4.04 Prob>F=0.001	F(9,39)=3.27 Prob>F=0.005
Likelihood ratio tests		I nested in II LR chi2(1)=2.85 Prob>chi2=0.091	II nested in III LR chi2(3)=3.50 Prob>chi2=0.320	II nested in IV LR chi2(3)=2.15 Prob>chi2=0.541

*** p<0.10, ** p<0.05, *** p<0.01, robust standards errors are in parentheses**

† coefficient of a dummy variable can not be estimated in a fixed effect model.

Noting that the potential for free riding on valuable intangible assets is likely to be higher in service-type networks than in retail-type networks, H5 postulates that the coefficient of the interaction of intangible assets value, proportion of franchised outlets, and service-type franchising should be negative. Model IV tests for this hypothesis through a 3 way interaction effect between human capital, franchise proportion and the service-type dummy variable. The likelihood ratio test shows that the inclusion of the network-type dummy and its interactions with other variables does not improve significantly the model compared to Model II.

Moreover, if the human capital and franchise proportion coefficients remain significant in this model, none of the interactions terms are significant. Hence, H5 is not corroborated. Results do not show evidence of higher free-riding costs in service-type network compared to product-type networks. The interaction effect between human capital and franchise proportion is not significant for product-type network (coef=-1.094, standard error=2.191, p=0.621), but a Wald test reveals that it is not significant either for service-type network (coef=-6.017, p=0.117). Actually, the low significance of the results and the likelihood ratio test even questioned the relevance of the distinction between service-type and product-type networks in the explanation of their performance. These results shortcoming may be explained by the limited size of our sample[11].

Finally, agency theory and critical resources theory converge regarding the effect of age on the impact of human capital and franchise proportion on performance. This convergence leads to H6, which states that age should lower the (already negative) impact of the interaction of human capital and franchise proportion on performance. Model III tests this hypothesis through a 3 way interaction effect between human capital, franchise proportion and age. Let's note that the likelihood ratio test once again questioned the relevance of age as a contingency variable, as model III does not fit the data significantly better than model II. In this regression, human capital (franchise proportion) still exhibits a direct positive (respectively negative) impact on performance, but the direct impact of age, although still positive, is not significant anymore. Age has an indirect positive impact on performance through its interaction with franchise proportion: the age variable moderates the negative impact of franchise proportion on performance. But the 3 way interaction effect between age, franchise proportion and human capital is not significant. Hence, results do not corroborate H6: age does not moderate the interaction effect of human capital and franchise proportion on performance. There are several possible explanations for this result. First, our sample includes only publicly held franchisors. This franchisors' population is quite aged (average age over 42), and probably well established compared to the total population of franchisors[12]. Now, these features could weaken the agency and critical resources arguments regarding the effect of age. These arguments rest on a differentiation between well established and new franchisors to support the age effect: new franchisors should suffer less from free-riding than well established ones, resources may be more critical for new franchisors than for well established ones. If our

[11] Our sample includes only 68 observations from 12 service-type networks.

[12] In comparison, Barthélémy (2008) reports an average log(age) of only 1.22 (age=17) in his sample of French privately held franchisors.

sample includes to few "new" or not well established networks, the age variable may not significantly play its interaction effect. Secondly, even if agency and critical resources theories converge in arguing that age should lower the relationship between human capital, franchise proportion and performance, other explanations predict an opposite effect, especially for well established networks. Srinivasan (2006) argues that when most high potential markets are covered by a firm's existing distribution system and its expansion may be limited to smaller, remote markets, market-based channels could be more efficient. Thus, Srinivasan's argument supports a positive impact of the interaction between age and franchise proportion on performance, irrespective of the level of human capital. Our results (see Model 3) are consistent with such an effect that could overwhelm the 3 way interaction effect between age, human capital and franchise proportion.

4. Discussion and Implications

Overall, our results confirm that there is a fit between resources and governance (franchise proportion) and that the performance of franchisors is dependent upon this fit. More precisely, regarding the resources-governance dyadic, our results indicate that franchisors act in a way that is consistent with the critical resources theory. The more the franchisors assets are human value based, the more they franchise (H1b corroborated). Furthermore, this relationship is age decreasing, especially for "young" networks (H3 corroborated). Even if this latter result is also consistent with the agency theory argument, the results do not clearly reflect the free-riding costs associated with franchising in a high human assets context in the resources-governance dyadic (H2 not corroborated). But results detect evidence that is consistent with free-riding costs in the resources-governance-performance relationship. The more the franchisors assets are value based, the more free-riding costs in franchising are potentially high and the more franchising exhibits a negative impact on franchisors's performance (H4a corroborated). A possible alignment of these results would be that in a high human capital context, franchisors increase franchising until a point where benefits from franchising (retention and development of critical human assets) equals its (free-riding/agency) costs. The results of the models explaining performance are consistent with this story as the free-riding costs detected by the negative interaction effect between franchise proportion and human capital don't overwhelm the total positive effect of human capital on performance.

These results complement and extend previous results. The study leads to managerial implications but also calls for further extensions. First, our results complement the financial

performance issue of franchise networks that has received little attention. Regarding a recent study on this subject by Barthélémy (2008), our study adds to the theoretical framework and provides answers to some of his claims. Indeed, our study enriches theoretical grounds in providing an original critical resources framework to explain governance and performance issues in the franchise context. This framework complements the traditional agency or resources based arguments and provides arguments consistent with empirical observations. Furthermore, it introduces human (intangible) assets as a determinant of governance structure (franchise proportion). This is an answer to the claim of Barthélemy for integrating other resources (than brand name) relevant in the franchise context. Although close to brand name, human capital is wider, and unlike brand name, it proves to be a significant determinant of franchise proportion. The present study is also the first one, in our best knowledge, to use panel data analysis in the field of governance and financial performance of franchise network.

Our study does not explain where the critical (value creating) human assets come from, but it may lead to managerial implications. Above all, results show that resources matter in determining franchise proportion. Franchisors with a high human assets component should exhibit a high franchise proportion to retain and develop these valuable resources. But these franchisors should also be aware of the free-riding costs induced by franchising in a high human assets context. On the contrary, franchisors with a low human assets component will exhibit higher performance with a low franchise proportion. Furthermore, consistent with Srinivasan (2006), the results also show that a higher franchise proportion may improve performance as age increases, which may confirm the efficiency of franchising for well-established franchisors when most high potential markets are covered by a firm's existing distribution system. Thus, in a dynamic context where the human critical assets level changes, franchisors must find the trade-off between costs and advantages and adapt their franchise proportion.

Finally, although the study presents new insights in the governance and performance issues in franchise networks, it also presents some limitations that must be addressed in future research. First of all, the size of the sample is a matter of concern. Although covering the total population of publicly held franchisors in Europe for which data are available, the sample remains small. This may be detrimental to the results significance, as shown by the non significant results when we differentiate between franchisors on the basis of the network-type (service vs. product). In particular, this is detrimental to an in depth data analysis and robustness check. For example, our framework and our results indicate that human assets and franchise proportion jointly impact the performance. This suggests that we may suspect

endogeneity between human capital and franchise proportion. Endogeneity problems may biase the results, especially in the explanation of franchise proportion. Dynamic panel data analyses should help to control for these potential bias, but such analyses require a larger sample. Extension of the study to the US publicly held franchisors, or extension (with different measures) to privately held franchisors should allow us to overcome these limitations.

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