

Vertical Restraints and Reputation of Networks: Evidence from Franchising

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Abstract :

The present article relies on agency theoretical arguments. It deals with potential free-riding at the downstream level in franchise networks. This behaviour is problematic for the upstream unit because it erodes the reputation of the chain. We study how the potential franchisees opportunism affects the structure of contracts, more precisely, the intensity of vertical restraints. The estimations come from a multisector French data base. The results are generally consistent with the analytical framework, but prove strongly contrasted depending on the provision studied. They also suggest that concerning the design of contracts between a producer and his distributors, agency costs are just one part of the explanation.

Keywords :

Vertical restraints, contracts econometrics, agency theory, free-riding, horizontal externality, brand name capital.

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1. Introduction

This article relates to the clauses of franchise contracts. However, the main purpose of this study exceeds the strict framework of franchising and relates more largely to vertical restraints.

Vertical restraints are defined as contractual provisions binding of the companies located at different levels from the chain of distribution: supplier and distributor or wholesaler and retailer. In spite of the great diversity of these devices, several categories can be distinguished. Thus P. Rey and F Caballero-Sanz (1996) differentiate the restrictions i) which relate to payment¹, ii) those which limit the rights of the distributor², iii) or the rights of the two parts³.

The attention paid to these agreements is justified by their importance in the current configuration of the modes of distribution, where the networks occupy a significant place. Moreover, the legitimacy of vertical restraints is the object of a recurring debate as regards the competition policy⁴.

The economic analysis of vertical restraints was mainly developed within the principal-agent paradigm. In this framework, the literature concerns their reasons and consequences⁵. In addition to the description of the potential anti-competitive effects, the literature shows that the constraints can play a positive role as palliatives for market failures, in a context of informational asymmetries.

An empirical evaluation of these results can be found in the econometric literature on franchise networks. Franchising relates to firms legally independent. The franchisor gives to franchisees the right to operate under his brand name in exchange of direct or indirect payments. These contracts use to enclose a set of vertical restraints.

The econometrics of franchising, in the framework of the agency theory, is developing since the end of 1980's. This literature focuses on the case of the United States⁶.

The relevance of the agency arguments to explain the organisational choices of the upstream firm concerning its network of retailers, is a major result of this empirical literature. Thus, the agency costs prove to be decisive in the three fields distinguished by T Pénard and al.. (2004) to characterize this literature: i) the choice "integration versus delegation" concerning the downstream units ; this is the main focus of the econometric literature on franchise networks ii) the advantages of dual distribution, i.e. of networks enclosing franchised and owned units iii) the design of contracts, in other words the nature of the clauses binding the franchisor to franchisees. This paper relates to this third question.

Its originality is at three levels. Firstly, we study the contractual design, not the statutory choice of networks. We analyze how the problem of potential free-riding among the retailers affects the structure of

¹ Non-linear prices, fees, royalties.

² For instance : price-ceiling, price-floor, forcing, exclusive dealing, tie-in.

³ Notably : exclusive territories.

⁴ On this point, one can refer to W.S. Comanor, P.Rey (1997) and with J.A. Kay (1990).

⁵ F Mathewson, R. Winter (1983; 1984; 1985b; 1986), P. Rey, J Tirole (1986a, 1986b) are major references in this literature.

⁶ With some exceptions: T Pénard and al.. (2003) for France, B Arrunada and al.. (2001), L Vazquez (2004) for Spain, E Pfister and al.. (2004) on international data for nine countries.

franchise contracts, i.e. the presence and the intensity of certain provisions. Secondly, the literature devoted to the contractual design mainly focuses on the following provisions: the franchise fee and the rate of royalties⁷. This article is in the line of the first empirical tests which, relating directly to the vertical restraints, are not interested exclusively in these monetary provisions. Lastly, this contribution draws the attention to a European case, starting from a multisector French data base.

The article is organized as follows. Section 2 discusses conditions of free-riding at the downstream level in franchise networks. Section 3 sets out the testable qualitative predictions. Section 4 describes the data and the empirical specifications. Section 5 contains the estimations. The results are generally consistent with the analytical framework, but prove strongly contrasted depending on the provision studied. Concluding comments are offered in section 6.

2. The analytical framework

The agency theory highlights various problems of coordination justifying the use of vertical restraints. The framework used is as follows: a manufacturer distributes his products by the intermediary of a single independent retailer, or a network of independent retailers. The producer (the principal) initiates the contract. In response to the problems of coordination, it imposes several restrictions which push the downstream unit (the agent) to adopt a behaviour in conformity with the interests of the vertical structure, or network. In this article we are interested in the potential free-riding concerning the retailers of a same network.

2.1 The origins of free-riding in franchise networks

Initially identified by L Telser (1960), the problem of parasitism between the units of a distribution network relates to the promotional effort of the retailers. By this term we indicate the various services provided by the distributors to make the product interesting: information preceding the sale (documentation, tests, demonstration, advertising, general atmosphere of outlets), the services facilitating the purchase (free delivery, credit...), after-sales services.

When several units distribute the same product, promotional effort of one member of the network can affect the activity of the other outlets. F.Mathewson and R.Winter (1984) analyze this "advertising externality" by which a proportion of the effort of one unit increases the demand for the others. This downstream horizontal externality is at the origin of a potential behaviour of free-riding. The typical example is that of the unit with discount prices, which on the other hand provides a minimal promotional service. A problem of parasitism arises when in the first place consumers get information from the retailer of the chain who provides a consequent promotional service, but then purchase in the discount store.

The horizontal externality makes emerge a problem of public good. In the case of a franchise network, the common good is the mark, or reputation of the network. Indeed, the use of a common mark by juridically

⁷ S. Norton, 1988 ; F. Lafontaine, 1992 ; A. Minkler et T. Park, 1994 ; J. Bercovitz, 1999 ; L. Vazquez, 2004.

autonomous units constitutes the core of the definition of business-format franchising⁸. The concepts of "brand-name capital" or "reputation of the network" mean that all the marks do not have the same value. When the network enjoys a good reputation, the mark is a pledge of quality for the consumers. However, when the value of the mark is high, the profits of an opportunist behaviour are it too. Because of the advertising externality, one franchisee can free-ride and enjoy the efforts of the others to promote the brand, without bearing the costs of them. The horizontal externality is responsible for a potential opportunism on the mark, all the more extremely as the brand is valuable.

2.2 The consequences of the franchisees opportunism

Free-riding results in an insufficient level of promotional effort in the whole network. With final, the opportunism of the distributors degrades the common immaterial good, namely the reputation of the network. Parasitism thus has negative consequences for the retailers. It poses also a problem of vertical coordination. Within the framework of a decentralized vertical relation, the promotional effort of the downstream unit affects the profit of the upstream unit. This is "the basic vertical externality⁹ ». For a franchisor, the damage is due to the fact that the trade mark is a specific asset. Its value depends largely on the efforts of the franchisor such as the advertising for the whole network and the training of franchisees. In business-format franchising, the reputation of the brand represents the principal contribution of the franchisor with franchisees. However, this immaterial asset is vulnerable to the behaviours of the members of the network.

2.3 The means identified in the literature to reduce the distributors opportunism

The theoretical analysis of vertical restraints presents various solutions to limit the problems of free-riding within a network of retailers¹⁰.

A first possibility consists in using constraining provisions for homogenize the behaviours inside the network. Theoretical models study the impact of a resale price maintenance. This restriction eliminates

⁸ Only "business format" franchising is juridically defined at the European level. This system is based on the hiring of an immaterial good: the mark of the franchisor (cf article 1-3-b of rule 4087/88 of the European Community). The legislation of the United States also recognizes "traditional" franchising, in which the franchisor sells a final product to franchisees for resale. In business-format franchising, the franchisee is also a producer.

⁹ F.Mathewson and R.Winter (1984), J.Tirole (1988).

This paper is devoted to the consequences of the distributors potential opportunism. For this reason we focus on a unilateral design of the externality in the vertical relationship. See F Lafontaine (1992), S. Bhattacharyya and F Lafontaine (1995), B Arrunada et al.. (2001) for franchise contracts econometrics with a two-sided moral hazard.

¹⁰ F. Mathewson & R. Winter (1983a, 1984, 1985b, 1998), P. Rey & J. Tirole (1986a), H.P. Marvel & S. Mc Cafferty (1996), D.A. Butz & A.N. Kleit (2001).

opportunism by means of the prices. Placing the retailers under identical conditions of sale, it encourages to provide a good promotional service¹¹.

Potential opportunism appears to be a negative effect of the intra-brand competition. This is why another solution consists in limiting the intensity of competition. The clause of territorial exclusivity is interesting from this point of view. It confers to each retailer a geographical monopoly, which enables him to catch the results of its promotional efforts. This restriction, analyzed from a theoretical point of view, is also the object of econometric tests. The results of J Brickley (1999) support the assumption according to which this provision - and more generally, vertical restraints – is used to prevent the under investment of franchisees in the promotion of a mark. The econometric literature identifies other possibilities to reduce the potential opportunism of the distributors: i) to force the retailers to take part in the promotional effort of the network (by means of advertising fees; J Brickley 1999), ii) to facilitate the rupture of the vertical relation (by means of the provisions concerning the duration and the termination of the contract; J Bercovitz 2000, B Arrunada et al.. 2001), iii) overall, to limit the decisional capacities of franchisees (B.Arrunada et al.. 2001).

3. Testable predictions

The general prediction which rises from this analytical framework is as follows: the intensity of vertical restraints increases with the intensity of the potential free-riding problem. The latter depends mainly on two elements: i) the brand name value, ii) the downstream horizontal externality. Several provisions usually used in the systems of distribution hold our attention: the royalty rates on the total sales or on the benefit of the retailers (ROYALTY), the advertising fees (PUBLICITY), the duration of the contract (DURATION), the entry duties (ENTRY), the level of the initial investment required by the franchisor (INVESTMENT), the level of the personal capital contribution (CONTRIBUTION).

We analyze each of these provisions as a tool used by the upstream firm to prevent the the distributors opportunism.

3.1. To sanction the opportunist retailers

The duration of the contracts for the retail trade is the purpose of J. Brickley and al. (2003) and J. Bercovitz (2000).

J Brickley et al.. (2003) do not refer directly to the agency theory. Conversely, J. Bercovitz (2001) establishes a link between the duration of franchise contracts and the potential retailers free-riding. Indeed, when the duration is low, this clause presents a dissuasive character insofar as a cheating retailer can quickly be excluded from the network. However, the opposite relation is relevant: contracts of long duration force franchisees to remain in the network, which durably associates them the mark. Consequently they can have

¹¹ A "forcing" can have the same effects as a bottom price by pushing the distributors to increase the variables out-price, in other words the promotional effort (F. Mathewson et R. Winter, 1984 ; 1985b).

interest not to degrade the reputation of the network. For these various reasons, we formulate the following assumption:

H₁ : The duration of the contracts decreases when the risk of opportunist behaviours increases; but the opposite relation is relevant, therefore a priori, the sign of the relation is unspecified.

It will be noted that the provisions ENTRY, INVESTMENT and CONTRIBUTION can increase the cost of the sanction for the retailers. Indeed, the exclusion of the network represents a all the more strong sanction as the costs of entry - sunk costs - are high. For this reason, the following assumption is relevant:

H₂: The level of the entry duties, the initial investment and the personal capital contribution, associated contracts of low duration, increases with the risk of opportunist behaviours.

3.2. To force the promotional effort of the retailers

The clause PUBLICITY is studied as a palliative for the promotional effort potentially failing at the level of the outlet. This is why we formulate the following assumption:

H₃ : The presence of an advertising fee is more probable when the risk of opportunist behaviours is strong.

J Brickley (1999) has tested a similar assumption. Its results are consistent with the idea that the restrictions within franchise contracts increase with the level of externalities between the units of the same chain.

3.3. To restrict the gain of an opportunist behaviour

We study the clause ROYALTY compared to the statute of residual claimant. Indeed, this statute reinforces the interest of parasitism for franchisees: when the royalty is low, franchisee receives a significant part of its profit recovers, which supports the opportunist behaviours.

To reduce the residual claimancy by means of a royalty is thus a means of decreasing the incentive of free-riding. This point of view implies the following assumption:

H₄: The presence of a royalty is more probable when the risk of opportunist behaviours is strong.

4. The Data

The data for the current study were collected in the directory published in 2003 by the French Federation of the Franchise. The information contained in this document comes directly from the networks, consulted at the end of the year 2002. Our sample is consisted of the 103 networks established on the French territory and members with the Federation.

4.1. Proxy variables

To proxy the potential free-riding we use two categories of variables (table 1).

Table 1- Proxy variables for the horizontal externality and the brand name capital

Proxies for the brand name capital	Proxies for the downstream horizontal externality
Training provided by the franchisor <u>Reference:</u> Lafontaine (1992)	Industry: Industry with « non repeat customers » attached to a brand name / Industry with « repeat customers » attached to a specific outlet. <u>References:</u> Caves et Murphy (1976), Brickley et Dark (1987), Brickley (1999)
Size of the network <u>References:</u> Lafontaine (1992), Vazquez (2004)	Geographical density of the outlets <u>References:</u> Brickley (1999), Bercovitz (2000)
International dimension	
Age of the network <u>References:</u> Lafontaine (1992), Arrunada et al. (2001)	

4.1.1. Repeated purchases in the same outlet: proxy variables for the externality

The horizontal externality is related to the non-repeated purchases in the same outlet. When for a particular brand the consumers supply themselves in various units, the externality is strong. In this case indeed, the retailers of a same network are regarded as equivalent by the consumers. This is why, the behaviour of one specific retailer has effects on the reputation of the whole network. To proxy the consumers loyalty by outlet, two variables are usually used in the econometrics literature of franchise contracts: i) the type of industry, ii) the geographical density of the outlets.

(i) Type of industry

The industrial proxy defined by R. Caves and W Murphy (1979), taken again by J Brickley and F Dark (1987), A. Minkler (1990), J Brickley (1999), distinguishes "the industries with a high externality" from "the industries with a low externality". It is relevant to consider that certain sectors receive an important proportion of non-repeat consumers per outlet. This will be more probably the case when the products are standardized. For this reason, the industries characterized by the importance of non-repeat consumers are considered as industries with a high externality (see table 3 and appendix n°2).

(ii) Geographical density of the outlets

In our data base, the potential market radius is an indication given by the upstream unit to the retailers who wish to integrate the network. It is an evaluation of the number of customers necessary so that the outlet is profitable. It thus does not act of a formal clause, but of information from the producer to potential insiders. We use this variable as an estimate of the geographical density of the outlets. As J Brickley (1999), and J Bercovitz (2000), we consider that the consumers are likely more to attend several units when they are geographically close. Thus the horizontal externality is stronger when the units of distribution are localised in the vicinity the ones of the others.

4.1.2. Franchisor's implication and extent of the network: proxies variables for the brand name capital

The proxies used for the brand name capital relate to the networks specifically. The specific investment of the franchisor is seized through the training provided to the franchisees. Its degree of implication reveals the value of the brand. In addition, we use variables which reflect the importance of the network: the size, the international dimension, the age of the network.

i) Training provided by the franchisor

The aim of the training provided by the franchisor is twofold: i) to improve the promotional effort of the downstream units, ii) to homogenize the network. Each one of them contributes to preserve, or to improve the reputation of the network. This proxy of the brand name capital was previously used by F. Lafontaine (1992).

ii) Size of the network

The size of the network corresponds to the number of retailers dividing the same mark. Like F. Lafontaine (1992), we use this variable as a proxy for the brand name capital. It is indeed relevant to consider that the more the mark is diffused, plus its reputation is strong.

iii) International dimension

In same logic, the units abroad constitutes a proxy for the brand name capital insofar as it reflects the extent of the network, and more precisely here its international dimension.

iv) Age of the network

The age of the network is a proxy for the brand name capital because i) the reputation is built with years, ii) the age of the network is a pledge of perennality of the mark. This variable was previously used in the same way by F Lafontaine (1992), B Arrunada and al.. (2001).

4.2. Descriptive statistics

Table 2 provides for the clause DURATION two series of descriptive statistics: the first line relates to the variable taken in quantitative form; the second line relates to the same variable in the form of classes. Two classes are made up around threshold the 5 years, which we determine starting with Ward's method on squares of the Euclidean distances¹² (appendix 4). We use a dummy variable for the provisions ROYALTY and PUBLICITY because of a problem of accessibility to information. More precisely, the available data on these variables are not homogeneous. Depending on the networks, information is provided in the form of bracket, percentage of sales or turnover, section of sales or turnover. However, the inclusion of these provisions is a relevant information for our analysis and justifies the treatment of these endogenous variables in the form of classes. The raw data for the provisions ENTRY, INVESTMENT, CONTRIBUTION are characterized by the extreme dispersion of these variables, because of a limited number of individuals (see histograms in appendix 1). We homogenize the base by removing for each regression the atypical individuals. Thus, in the regression on clause ENTRY we draw aside the five networks with duties higher than 69 K €. For this particular provision, this apply to the under-sector of the hotels. However, the low number of individuals concerned cancels the interest to introduce a dummy variable into the regression to catch the sector effect. A similar treatment is carried out for the variable CONTRIBUTION, since the essence of the population is concentrated on the low values. We preserve in the regression the networks whose personal capital contribution is lower or equal to 300 K €. Three atypical individuals correspond to the sector of the local supermarkets. Lastly, the three networks whose initial investment is higher than 900 K € are not taken into account in the regression on the clause INVESTMENT.

¹² J.H. Ward, 1963.

Table 2- The variables

Designation	Definition	Mean	St. error	Min	Max	Function
ROYALTY	Royalty rate 0 : no (18 networks) 1 : yes (85 networks)	0.83	0.38	0	1	Dependent variable
PUBLICITY	Advertising fee 0 : no (41 networks) 1 : yes (62 networks)	0.61	0.49	0	1	Dependent variable
DURATION	Duration of the contracts in the network 0 : ≤ 5 ans (49 networks) 1 : > 5ans (54 networks)	6.76 0.52	2.81 0.50	3 0	20 1	Dependent variable
ENTRY	Entry duties (K €)	14.881	12.666	0	69	Dependent variable
INVESTMENT	Initial investment required (K €)	205.49	201.57	20	900	Dependent variable
CONTRIBUTION	Personal capital contribution (K €)	77.41	53.14	15	300	Dependent variable
INDUSTRY	Industry (low / high externality) 0 : low externality (31 networks) 1 : high externality (72 networks)	0.69	0.46	0	1	Proxy for the externality
DENSITY	Number of potential consumers per outlet	70 387.25	74 339.33	1000	500 000	Proxy for the externality
TRAINING	Training of the retailers 0 : no training (27 networks) 1 : training when joining the network or all along the activity period (40 networks) 2 : training when joining the network and all along the activity period (36 networks)	1.08	0.78	0	2	Proxy for the brand name capital
SIZE	Size of the French network = Number of franchisees per network	160.05	174.12	5	980	Proxy for the brand name capital
AGE	Age of the network (number of years)	19.75	10.45	2	53	Proxy for the brand name capital
INTERNATIONAL	International dimension of the network 0 : no outlet abroad (38 networks) 1 : outlets abroad (58 networks) (7 no -answers)	0.60	0.49	0	1	Proxy for the brand name capital
STRUCTURE	Weight of the network within the sector = Turnover of the French network / turnover of the whole sector	0.11	0.142	0	0.847	Control variable

Table 2 presents the descriptive statistics of these variables such as they are used in the estimations. For each one of these provisions, the standard deviations are attenuated compared to the raw data, but remain high. The dummy variable INDUSTRY is coded 1 for industries with a strong potential externality, and 0 for the others (see table 3 hereafter and appendix 2 for the construction of this proxy). The variable TRAINING has three classes by construction. INTERNATIONAL is treated as a dummy variable taking into account the relevant information from an economic point of view, namely the international dimension of the network, or not. The variable STRUCTURE is introduced to control the influence of the weight of the network in the sector. Lastly, the correlation matrix (appendix 3, table 1) highlights the absence of major correlations between the explanatory variables. Thus the problem of the multicollinearity does not arise for the econometric tests.

The classification of the sectors presented in table 3 is carried out according to the reasoning developed in appendix 2.

Table 3 – Sectoral statistics
(103 networks)

	Average size of the networks	Number of networks per sector	Average turnover of the networks (M €)	Average number of potential consumer per network
HIGH-EXTERNALITY SECTORS				
Food	304	7	85.6	6714.3
Textiles/clothing/Accessories	146	17	78	68 235.3
Decoration /Home equipment	81.25	8	70.85	43 750
Leisure	63.16	6	28.8	60 000
Miscellaneous services for persons	75.7	3	70.11	91 666.7
Auto rentals and repairs	274.4	11	180.6	88 181.8
Hotels/Restaurants	179.8	19	341.2	66 973.7
LOW EXTERNALITIES SECTORS				
Food/Delicatessen	137.2	6	57.4	50 833.3
Specialized services for persons	168.2	16	91.31	61562.5
Building services for persons	86.2	6	72.5	155 833.3
Specialized services for enterprises	39.2	4	29.86	173 333.3

2. Econometric models and estimations

To test the impact of the potential free-riding on the clause DURATION, we consider the following model :

$$\begin{aligned}
 DURATION_i = c + & \alpha_1 INDUSTRY_i + \alpha_2 DENSITY_i + \beta_1 TRAINING_i + \beta_2 SIZE_i + \beta_3 AGE_i \\
 & \neq 0 \qquad \qquad \qquad \neq 0 \qquad \qquad \qquad \neq 0 \qquad \qquad \qquad \neq 0 \qquad \qquad \qquad \neq 0 \\
 & + \beta_4 INTERNATIONAL_i + \gamma STRUCTURE_i + \varepsilon_i \qquad \qquad \qquad [1] \\
 & \neq 0 \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad i = 1, \dots, 103
 \end{aligned}$$

with

α = parameter for the proxies of the horizontal externality

β = parameter for the proxies of the brand name capital

γ = parameter for the control variable STRUCTURE.

ε = term of error

i = network

The symbols $\neq 0$, < 0 or > 0 under the parameters indicate the predicted sign.

The estimates are presented in table n° 5.

Table 5 – Results of the regression for the clause DURATION

Variables	Coefficients	Standard error	Student value
Constant	6.022 ⁺⁺⁺	.787	7.646
Industry	1.586 ⁺⁺⁺	.443	3.574
Density	-.503 ^{E-06}	.252 ^{E-05}	-.199
Training	-.672 ⁺	.326	-2.063
Size	.351 ^{E-02}	.276 ^{E-02}	1.272
Age	-.401 ^{E-02}	.231 ^{E-01}	-.173
International	.298 ^{E-04}	.144 ^{E-02}	.021
Structure	.287 ^{E-02++}	.113 ^{E-02}	2.534
Results corrected for heteroskedasticity			
Fisher probability ¹³ = .00777			
Number of observations : 103			

+ Significant at the 10 % level ++ Significant at the 5 % level +++ Significant at the 1 % level

¹³ Critical probability provided by the Fisher's test which makes it possible to accept or to reject H0: R2 = 0. A low value of the probability means that the model is validated.

Three exogenous variables have a significant influence: INDUSTRY, TRAINING and STRUCTURE. The variable INDUSTRY is a proxy for the horizontal externality. The positive correlation reveals that the duration of the contracts is stronger in the sectors with high externality. For the proxy of the brand name capital TRAINING, the negative correlation means that the stronger the implication of the franchisor is, the more the contracts are of short duration. Lastly, the correlation is significant for the control variable STRUCTURE. The positive sign shows that the duration of the contracts increases with the weight of the network in the sector.

In a similar way with [1], we define the equations to be estimated for the provisions ENTRY, INVESTMENT and CONTRIBUTION.

$$\begin{aligned}
 ENTRY_{is} = c + & \alpha_1 INDUSTRY_{is} + \alpha_2 DENSITY_{is} + \beta_1 TRAINING_{is} + \beta_2 SIZE_{is} + \beta_3 AGE_{is} \\
 & > 0 & < 0 & > 0 & > 0 & > 0 \\
 & + \beta_4 INTERNATIONAL_{is} + \gamma STRUCTURE_{is} + \varepsilon_{is} & & & & & [2] \\
 & > 0 & & & & &
 \end{aligned}$$

$is = 1, \dots, 49$ for the networks with contracts duration ≤ 5 years
 $is = 1, \dots, 49$ for the networks with contracts duration > 5 years

With is = network of a subsample regarding contracts duration (\leq or > 5 years).

The regression for the clause ENTRY on the subsample of networks with contracts duration ≤ 5 years is not significant (Fisher probability = 0.795). The model tested on the other subsample (networks with contracts duration > 5 years) is not significant when the atypical individuals are excluded from the sample (Fisher probability = 0.950). It becomes so since the five hotel networks are re-enclosed. Thus, the sector effect plays a decisive part:

Table 6 - Results of the regression for the clause ENTRY

(Networks with contracts duration > 5 years . Sub-sample enclosing the under-sector of the hotels)

Variables	Coefficients	Standard error	Student value
Constant	-5451.608	29241.907	-.186
Industry	24238.217	15306.352	1.584
Density	-130	.931 ^{E-01}	-1.400
Training	-16419.599 ⁺	9619.717	-1.707
Size	-120.016	80.835	-1.485
Age	3819.319 ⁺	2178.5106	1.753
International	-19.194	25.144	-.763
Structure	66.941 ⁺⁺	23.605	2.836
Results corrected for heteroskedasticity			
Fisher probability = .03919			
Number of observations : 54			

+ Significant at the 10 % level ++ Significant at the 5 % level +++ Significant at the 1 % level

The analysis of these results have to be qualified, bearing in mind the sector effect. The estimations highlight the significant influence of the following variables: TRAINING, AGE, STRUCTURE. Within the networks with contracts duration > 5 years, the more the franchisor provides training the more the entry duties are low. This result is surprising. On the contrary, the correlation corresponds to the predicted sign for the proxy AGE : within the sub-sample with contracts duration > 5 years, the more the network is old, the more the entry duties are high. The influence of the control variable STRUCTURE is again significant, and positive : the more the weight of the network is important in the sector - in term of turnover- the more the entry duties are high.

$$\begin{aligned}
 INVESTMENT_{is} &= c + \alpha_1 INDUSTRY_{is} + \alpha_2 DENSITY_{is} + \beta_1 TRAINING_{is} + \beta_2 SIZE_{is} + \beta_3 AGE_{is} \\
 &> 0 &< 0 &> 0 &> 0 &> 0 \\
 &+ \beta_4 INTERNATIONAL_{is} + \gamma STRUCTURE_{is} + \varepsilon_{is} &&&&& [3] \\
 &> 0 &&&&&
 \end{aligned}$$

$is = 1, \dots, 47$ for the networks with contracts duration ≤ 5 years
 $is = 1, \dots, 53$ for the networks with contracts duration > 5 years

The regression for the provision INVESTMENT is significant for the both sub-samples, with the following results :

Table 7 – Results of the regression for the clause INVESTMENT

SUB-SAMPLE - CONTRACTS DURATION ≤ 5 years				SUB-SAMPLE - CONTRACTS DURATION > 5 years		
Variables	Coefficients	Standard error	Student value	Coefficients	Standard error	Student value
Constant	223.936 ⁺⁺⁺	78.686	2.846	-136.390	286.968	-.475
Industry	-2.944	57.355	-.051	-99.514	106.957	-.930
Density	-.130 ^{E-02}	.101 ^{E-02}	-1.289	.179 ^{E-02}	.126 ⁻⁰²	1.419
Training	-74.212 ⁺	44.639	-1.662	204.608 ⁺	102.459	1.997
Size	.387	.335	1.153	-.700 ^{E-01}	.472	-.148
Age	-.404	1.681	-.241	- 8.494	11.720	-.725
International	-.773 ^{E-02}	.121	-.064	-.223	.282	-.791
Structure	.534	.327	1.632	.757 ⁺⁺⁺	.165	4.586
Results corrected for heteroskedasticity						
Fisher probability = .051 Number of observations : 47				Fisher probability = .056 Number of observations : 53		

+ Significant at the 10 % level ++ Significant at the 5 % level +++ Significant at the 1 % level

The variable TRAINING has a significant influence on the level of the initial investment required by the franchisor. With the sub-sample with contracts duration > 5 years, the positive correlation corresponds to the predicted sign: the more the franchisor is involved, the more the level of the initial investment required is high. However, the inverse correlation is observed with the sub-sample with contracts duration ≤ 5 years. Within this sub-sample, the control variable STRUCTURE has a significant influence, with positive sign: the more the weight of the network is important in the sector - in term of turnover- the more the initial investment required is high.

$$\begin{aligned}
CONTRIBUTION_{is} = c + & \alpha_1 INDUSTRY_{is} + \alpha_2 DENSITY_{is} + \beta_1 TRAINING_{is} + \beta_2 SIZE_{is} + \beta_3 AGE_{is} \\
& > 0 & < 0 & > 0 & > 0 & > 0 \\
& + \beta_4 INTERNATIONAL_{is} + \gamma STRUCTURE_{is} + \varepsilon_{is} & & & & & [4] \\
& > 0 & & & & & is = 1, \dots, 49 \text{ for the networks with contracts duration } \leq 5 \text{ years} \\
& & & & & & is = 1, \dots, 51 \text{ for the networks with contracts duration } > 5 \text{ years}
\end{aligned}$$

As with equation [3] the regression is significant for the both sub-samples :

Table 8 – Results of the regression for the clause CONTRIBUTION

Variables	SUB-SAMPLE - CONTRACTS DURATION ≤ 5 years			SUB-SAMPLE - CONTRACTS DURATION > 5 years		
	Coefficients	Standard error	Student value	Coefficients	Standard error	Student value
Constant	80.239 ⁺⁺	30.952	2.592	-234.722	181.088	-1.296
Industry	-18.660	40.225	-.464	-110.565	82.207	-1.345
Density	.139 ^{E-03}	.160 ^{E-03}	.867	.820 ^{E-03}	.629 ⁻⁰³	1.304
Training	-52.973	36.307	-1.459	224.740 ⁺⁺	74.505	3.057
Size	.419 ⁺	.237	1.765	.260	.267	.973
Age	-1.722	1.371	-1.255	- 6.055	7.346	-.824
International	-.101 ^{E-01}	.441 ^{E-01}	-.229	-.325 ^{E-01}	.137	-.236
Structure	.544 ⁺	.301	1.805	.634 ⁺⁺⁺	.128	4.946
Results corrected for heteroskedasticity						
Fisher probability = .018				Fisher probability = .003		
Number of observations : 49				Nombre d'observations : 51		

+ Significant at the 10 % level ++ Significant at the 5 % level +++ Significant at the 1 % level

The regression for the clause CONTRIBUTION is significant on the both sub-samples. However, it should be noted that the significant variables differ according to the sub-sample. Thus, in the networks with short contracts, the sample size influences in a positive way the level of the personal capital contribution required. In the networks with contracts duration > 5 years, it is the degree of involment of the franchisor in term of training which has an impact on the clause CONTRIBUTION. In both cases the control variable is significant and of positive sign: the more the network occupies an important weight in the sector -in term of turnover- the more constraining the personal capital clause is.

The probit equations for the provisions PUBLICITY and ROYALTY are given by [5] and [6]:

$$\begin{aligned}
Prob(PUBLICITY_i = 1 / X_i) = c + & \alpha_1 INDUSTRY_i + \alpha_2 DENSITY_i + \beta_1 TRAINING_i + \\
& > 0 & < 0 & > 0 \\
& \beta_2 SIZE_i + \beta_3 AGE_i + \beta_4 INTERNATIONAL_i + \gamma STRUCTURE_i + \varepsilon_i & & & & & [5] \\
& > 0 & > 0 & > 0 & & & i = 1, \dots, 103
\end{aligned}$$

The estimate of the probit model [5] gives the following results:

Table 9 –Estimates of the probit model for the clause PUBLICITY

Variables	Coefficients	Standard error	Student value
Constant	.977 ⁺⁺	.444	2.197
Industry	-.463	.298	-1.552
Density	-.523 ^{E-06}	.185 ^{E-05}	-.282
Training	.495 ^{E-01}	.175	.282
Size	-.460 ^{E-03}	.892 ^{E-03}	-.516
Age	-.244 ^{E-01+}	.135 ^{E-01}	-1.808
International	-.161 ^{E-03}	.539 ^{E-03}	.300
Structure	2.066 ⁺	1.260	1.640
χ^2 probability = .365 ^{E-01}			
Number of observations : 103			

+ Significant at the 10 % level ++ Significant at the 5 % level +++ Significant at the 1 % level

The negative correlation concerning the variable AGE is on the other from the predicted sign. It means that the older the network is, the weaker is the probability that it imposes an advertising fee. The variable structure has again a significant influence: the more the network is important in the sector –in term of turnover-, the stronger is the probability that it imposes an advertising fee.

$$\begin{aligned}
 Prob (ROYALTY_i = 1 | X_i) = c + & \alpha_1 INDUSTRY_i + \alpha_2 DENSITY_i + \beta_1 TRAINING_i + \\
 & > 0 & < 0 & > 0 \\
 & \beta_2 SIZE_i + \beta_3 AGE_i + \beta_4 INTERNATIONAL_i + \gamma STRUCTURE_i + \varepsilon_i & [6] \\
 & > 0 & > 0 & > 0 & i = 1, \dots, 103
 \end{aligned}$$

The estimate of the equation [6] for the clause ROYALTY is not significant. For this reason we carry out a selection of the variables step by step downward. Only the model including the proxies of the horizontal externality proves to be significant. The variable INDUSTRY exerts an opposite influence with the predicted sign: the fact of exerting in a sector with high externality decreases the probability that the network imposes a royalty. Conversely, the impact of the geographical density of the outlets corresponds to the predicted sign: when the distributors are not located in the vicinity the ones of the others, the probability that the franchisor imposes a royalty decreases.

Table 10 – Estimates of the probit model for the clause ROYALTY

Variables	Coefficients	Standard error	Student value
Constant	1.912 ⁺⁺⁺	.439	4.351
Industry	-.907 ⁺⁺	.415	-2.186
Density	-.364 ^{E-05+}	.207 ^{E-05}	-1.761
χ^2 probability = .210 ^{E-01}			
Number of observations : 103			

+ Significant at the 10 % level ++ Significant at the 5 % level +++ Significant at the 1 % level

6. Conclusion

This article confronts the agency explanation of vertical restraints with empirical data in French franchising networks. In the theoretical analysis, the degree of constraint imposed by a supplier to his retailers finds an explanation in the potential opportunism of the distributors. This behaviour erodes the reputation of the network.

The econometric models constructed on the basis of these theoretical explanations are significant. However, beyond this overall conclusion, the results appear strongly contrasted (see appendix 6). Indeed, the explanatory variables whose influence is significant vary depending on the contractual provisions. The correlations corresponds partly only to the predicted signs. The proxy variable TRAINING is characterized by its systematically significant influence (put aside in the probit models). These results suggest that the degree of the franchisor's implication as regards training of the downstream units strongly influence the contents of the contracts. The control variable STRUCTURE is also systematically significant and of positive influence (except for the clause ROYALTY). This result means that the powerful networks impose more constraining contracts. It moderates the explanation in term of agency costs. This conclusion returns to the ambiguous statute of vertical restraints as regarded by the competition policy. In addition, one will note the link between the contractual design and the performance of networks (see results of table 3, appendix 5). Lastly, the tests for the provisions ENTRY, INVESTMENT and CONTRIBUTION highlight a strong difference in behaviour whether one reasons for the networks characterized by low contracts duration or not. This investigation on sub-populations, as well as the intuition confirmed in table 1, appendix 5 according to which the inclusion of an advertising fee in the contract is a corollary of the introduction of a royalty, opens the way to econometrics focussing on the complementarity between the provisions of contracts. From this point of view, the contract would be considered either clause by clause, but as a whole of interactive elements (P. Milgrom and J Roberts 1990, B Holmström and P. Milgrom 1994).

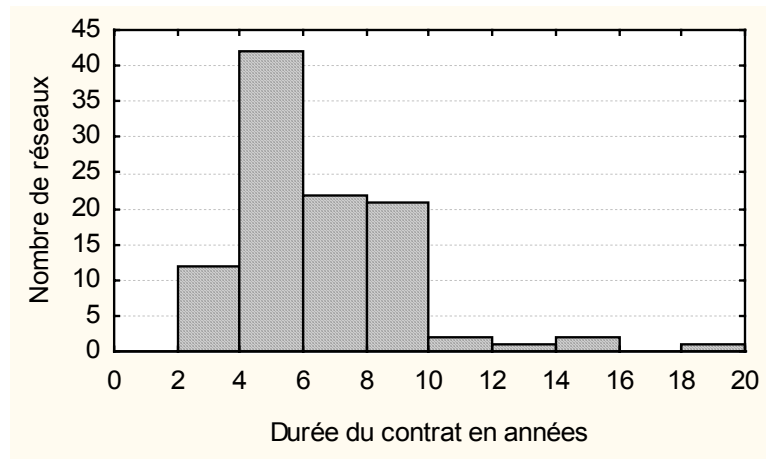
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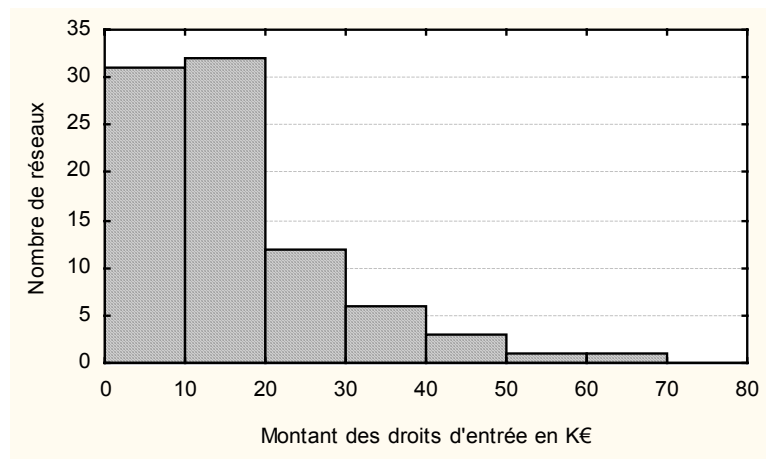
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APPENDIX 1 – HISTOGRAMS

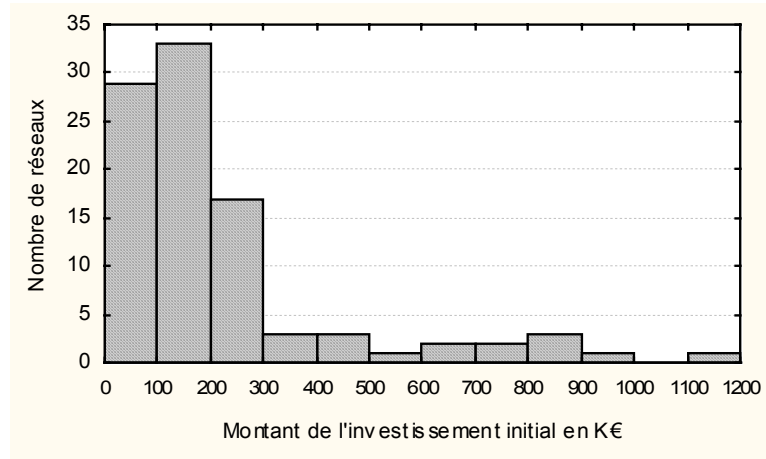
Histogram 1 - Distribution of the networks according to the duration of contracts



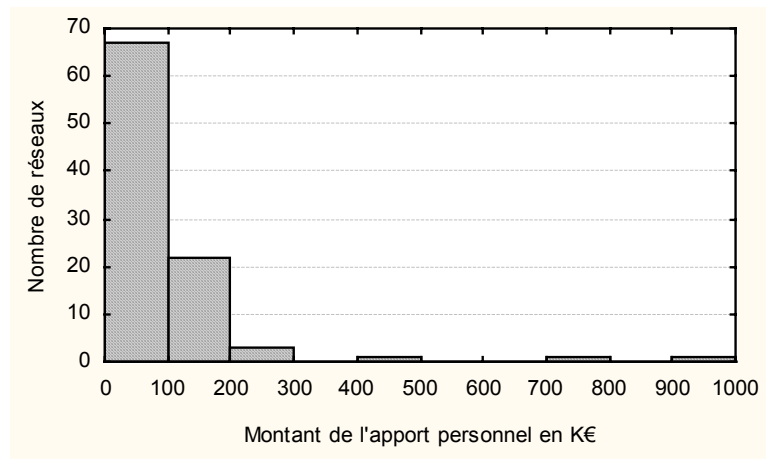
Histogram 2 - Distribution of the networks according to the amount of the entry duties



Histogram 3 - Distribution of the networks according to the amount of the initial investment



Histogram 4 - Distribution of the networks according to the amount of the personal contribution



APPENDIX 2 – CONSTRUCTION OF THE PROXY VARIABLE INDUSTRY

The networks of the food sector are classified as "industry with a high potential externality" when their products are standardized (baker's and confectioner's shop). Conversely, the networks offering of the top-of-the-range products, associated a service personalized with the sale, are classified among low externality industries (wines, biological products).

This logic is taken again for the textile clothes industry where the ready-to-wear networks (textile, clothing, accessories) are regarded as high externality industries.

Among industries with high externality are also classified the following sectors: decoration-equipment of the house, which do not provide custom-made but a standardized products; leisures, which gathers superstores of toys; Miscellaneous services for persons, sector which use self-service. The sectors of auto rentals and hotels represent the typical case of high externality industries (Brickley 1999): being associated to voyage, they attract an important proportion of non-repeat consumers. The networks of automobile repair are characterized by the speed of the interventions with standardized procedures and automobile parts. For this reason we also classify we them among the high externality industries.

Lastly, all the networks of specialized services are classified as low externality industries for the following reasons: specialized services for persons offer a personalized service (hairdressing salons - esthetics), just like the specialized services for enterprises (advertising, communication); the building services for persons provides custom-made products.

APPENDIX 3 – CORRELATION MATRIX

Table 1 – Correlation matrix for explanatory variables

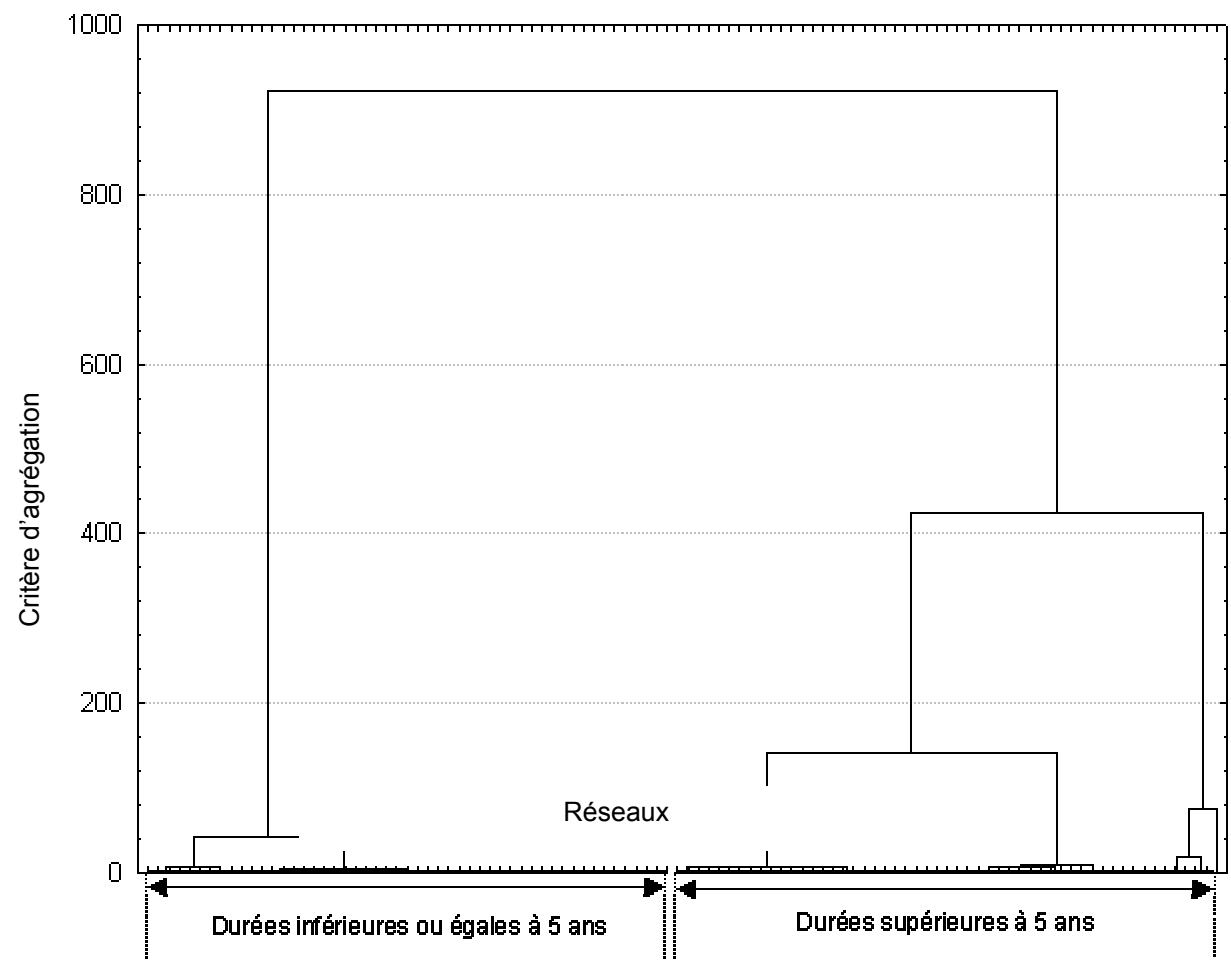
	INDUSTRY	DENSITY	TRAINING	SIZE	AGE	INTERNATIONAL	STRUCTURE
INDUSTRY	1						
DENSITY	-.165	1					
TRAINING	-.086	.061	1				
SIZE	.067	-.230	.099	1			
AGE	-.072	.034	-.142	.250	1		
INTERNATIONAL	.002	-.069	.106	.151	.059	1	
STRUCTURE	-.063	.062	.054	.311	.203	-.057	1

Table 2 – Correlation matrix for the provisions

	ROYALTY	PUBLICITY	DURATION	ENTRY	INVESTMENT	CONTRIBUTION
ROYALTY	1					
PUBLICITY	.372	1				
DURATION	.284	.160	1			
ENTRY	.331	.303	.657	1		
INVESTMENT	-.276	-.078	.010	-.065	1	
CONTRIBUTION	.097	.093	.368	.503	-.008	1

APPENDIX 4- CLASSIFICATION OF THE NETWORKS FOR CONTRACTS DURATION

(Ward's method)



APPENDIX 5 – COMPLEMENTARY ESTIMATIONS

Table 1 - Estimates of the probit model for the clause PUBLICITY

(enclosing the provision ROYALTY as explanatory variable)

Variables	Coefficients	Standard error	Student value
Constant	-.589	.314	-1.872
Royalty	1.030 ⁺⁺⁺	.344	2.989
χ^2 probability = .209 ^{E-02}			
Number of observations : 103			
Marginal effect	.392	.117	3.351

+ Significant at the 10 % level ++ Significant at the 5 % level +++ Significant at the 1 % level

Table 2 –Descriptive Statistics for the variable PERFORMANCE

Designation	Definition	Mean	St. error	Min	Max
PERFORMANCE	Network's turnover / Network's size	0.91	1.53	0	14.22

Table 3 – Results of the regression for the variable PERFORMANCE with the provisions a explanatory variables

Variables	Coefficients	Standard error	Student value
Constant	-195.686	103.646	-1.888
Royalty	57.422	77.003	.746
Publicity	59.033	35.304	1.672
Duration	7.178 ⁺	7.730	.929
Entry	.663 ^{E-03}	.362 ^{E-03}	1.831
Investment	.141 ^{E-01+}	.810 ^{E-02}	1.749
Contribution	.182	.113	1.609
Results corrected for heteroskedasticity			
Fisher probability = .034			
Number of observations : 103			

+ Significant at the 10 % level ++ Significant at the 5 % level +++ Significant at the 1 % level

APPENDIX 6 – SUMMARY OF THE ESTIMATIONS RESULTS
FOR EACH EXPLANATORY VARIABLE

	INDUSTRIE		DENSITY			TRAINING			SIZE			AGE			INTERNATIONAL		STRUCTURE	
DUREE	+++	> 0				+	< 0									++	>0	
ENTRY contracts >5 years						+	< 0	> 0				+	> 0	> 0		+++	>0	
INVESTMENT contracts ≤ 5 years						+	< 0	> 0										
INVESTMENT contracts >5 years						+	> 0	> 0								+++	>0	
CONTRIBUTION contracts ≤ 5 years									+	> 0	> 0					+	>0	
CONTRIBUTION contracts >5 years						+	> 0	> 0								+++	>0	
PUBLICITE												+	< 0	> 0		+	>0	
ROYALTY	+	< 0	> 0	+	< 0	< 0												

For each explanatory variable : i) the significance level, ii) the observed sign, iii) the **predicted** sign