The Governance Structure of Franchising Firms: A Property Rights Approach[*]

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ABSTRACT
Previous studies in franchising research do not explain *the governance structure of franchising firms* as an institutional entity that consists of two interrelated parts: Allocation of residual decision rights and transfer of ownership rights. This paper fills this gap in the literature. According to the property rights view, decision rights have to be allocated according to the distribution of intangible knowledge assets between the franchisor and franchisee and ownership rights have to be assigned according to the residual decision rights. Since ownership rights are diluted in franchising networks, the dilution of residual income rights of franchised outlets is compensated for by setting up company-owned outlets. According to the property rights view, an efficient governance structure of the franchising firm implies allocation of residual decision rights according to the distribution of intangible assets between the franchisor and the franchisee and transfer of ownership rights according to the distribution of residual decision rights. We empirically investigate (a) the influence of intangible knowledge assets on residual decision rights by using a logistic and ordinal regression model and (b) the relationship between residual decision and ownership rights by using a simultaneous equation model on a sample of firms from the Austrian franchise sector. Three hypotheses were derived from the property rights approach and tested in the Austrian franchise sector. The empirical results are generally supportive of the hypotheses.

JEL-classification: L22, M13, M21

Keywords
Governance, Franchising, Knowledge Assets, Decision Rights, Residual Income Rights

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1. Introduction

Previous research on the institutional structure of franchising networks (Brickley et al.
1991; Lutz 1995; Shane 1998; Lafontaine and Shaw 1999, 2004; Affuso 2002; Penard et
al. 2003a,b) does not explain the governance structure of the franchising firm as an
institutional entity that consists of two interrelated parts: Residual decision rights and
ownership rights. The latter includes not only residual income rights of franchised outlets
but also residual income rights of franchisor-owned outlets. Previous work primarily
examines the incentive, signalling and screening effects of fees, royalties and other
contractual provisions from the point of view of organizational economics (see Dnes 1996
for a review) without taking into account the interactions between residual decision and
residual income rights as interrelated parts of the governance structure. This paper fills
this gap in the literature. According to the property rights view, decision rights should be
allocated according to the distribution of intangible knowledge assets between the
franchisor and franchisee and ownership rights should be assigned according to the
residual decision rights. Since ownership rights are diluted in franchising networks, the
dilution of residual income rights of franchised outlets is compensated by residual income
rights of company-owned outlets. Under a dual ownership structure, company-owned
outlets compensate the disincentive effect of low royalties for the franchisor, and low
royalties strengthen the investment incentives for the franchisee. Therefore, due to the
dual incentive effects of royalties, royalties and company-owned outlets are substitutes. In
this paper, first we develop a property rights view of the governance structure of
franchising firms, and second we empirically investigate (a) the influence of intangible
knowledge assets on residual decision rights by using a logistic and ordinal regression
model and (b) the relationship between residual decision rights and ownership rights

(royalties and the proportion of company-owned outlets) by using a simultaneous equation model. Three hypotheses are derived from the property rights approach and tested in the Austrian franchise sector. The empirical results are generally supportive of the hypotheses.

This paper is structured as follows: We start with a review of the relevant literature. Next we discuss the main propositions of the property rights approach, based on Barzel 1989, Hart and Moore 1990 and Jensen and Meckling 1992. We then use this property right approach to examine the governance structure of the franchising firm. First we investigate the relationship between the characteristics of knowledge assets and the allocation of decision rights in franchising networks. Second we develop the property rights propositions about how to structure the residual decision and ownership rights between the franchisor and franchisee. Finally, we derive three hypotheses and empirically investigate these hypotheses in the Austrian franchise sector.

2. Related Literature

Although franchising has been dealt with extensively in organizational economics and management literature, the relations between residual decision and ownership rights in franchising firms remain largely unexplored. Most studies have focused on the explanation of the incentive structure (fees, royalties, and other contractual restrictions) (for a review, see Lafontaine and Slade 2001) and the proportion of company-owned outlets (Dant et. al. 1996; Lafontaine and Shaw 2004; Dahlstrom and Nygaard 1999; Bai and Tao 2000; Penard et al. 2003a; Affuso 2002) without investigating the governance structure as an institutional entity consisting of residual decision and ownership rights. However, in the last years some authors have pointed out that the efficiency of the franchising network can be only determined if we take into account the interaction effects between the different contractual provisions. Brickley (1999) presented an agency cost

explanation of the complementarities between advertising and area development plans, restrictions on franchisee's outside activities and area development plans, and between advertising and restrictions of outside activities. Berkovitz (2000) applies transaction cost reasoning to analyze interactions between contract provisions. Furthermore, Lafontaine and Raynaud (2002) examined complementarities between residual claimancy rights and self-enforcement mechanisms, such as exclusive territory clauses, multi-unit ownership guarantees, contract renewal and termination rights. Finally, Arrunada et al. (2001) were the first researchers in organizational economics that explicitly analyzed the relationship between decision rights, monitoring and incentive mechanisms in automobile franchise contracts. They found some complementarities between completion and termination rights, and between monitoring rights and incentives in the automobile distribution. They derive the hypotheses from the agency theory, self-enforcement theory, and multi-tasking theory (Klein and Murphy 1988; Holmstrom and Milgrom 1994).

Our paper is related to a number of ideas that have appeared elsewhere in the organizational economics literature. Wernerfelt (2002) and Brickley et al. (2002) argue that if a person (e.g. a local manager in bank offices) has specific knowledge that creates the residual income stream, it is important to locate residual decision and ownership rights jointly. Another closely related paper is Aghion and Tirole (1997) which is primarily concerned with the allocation of 'real' and 'formal' authority. According to Aghion and Tirole, the person with formal authority will exercise real authority if he actually has the relevant information. In addition, Stein (2002) argues that decentralization is more likely under "soft" than under "hard" information because "soft" information cannot be directly verified by anyone other than the agent who produces it. Furthermore, based on Milgrom and Roberts (1995) and Brickley et al (1996), Nagar (2002) and Demers et. al (2002) find that the allocation of decision rights is a determinant of incentive compensation. Moreover, Rajan and Zingales' concept of access to critical

resources is closely related to our view (Rajan and Zingales 1999, 2001; Zingales 2000). They argue that power stems from control over (access to) critical assets that generate the residual income stream, but not primarily from ownership of assets – as argued by Grossman, Hart and Moore (Grossman and Hart 1986; Hart and Moore 1990). Hence the regulation of access (as ability to use a critical resource) refers to the problem of allocating residual decision rights.

Starting from the research deficit that the relationship between knowledge assets, residual decision rights and ownership rights in franchising networks has not been explained yet, the objective of our paper is to develop a property rights view of the governance structure of franchising firms. Our approach can be summarized as follows. Knowledge assets (intangible system-specific and local market assets) determine the allocation of residual decision rights, and the structure of residual decision rights influences the allocation of ownership rights between the franchisor and the franchisee.

3. A Property Rights View of the Governance Structure

The property rights theory starting from Alchian (1965), Demsetz (1967) and Barzel (1987, 1989) tries to solve two interrelated problems: The allocation of residual decision rights as "division- of-knowledge" problem and the allocation of ownership rights as incentive problem (Langlois 2002a, 27).

3.1. Allocation of Decision Rights

Hayek (1935) already pointed out that centralization of decision-making is only efficient if the central planer has the knowledge that is specific in time and place. March and Simon (1958) applied similar ideas to the design of organization. Due to the CEO's limited information processing capabilities organizations must delegate decision making. Based on the property rights theory, Jensen and Meckling (1992) argued that

organizational efficiency requires that those with the responsibility for decisions also have the knowledge valuable to those decisions. Co-location of decision rights with knowledge can be achieved by transferring the knowledge to the person who has the decision right or by transferring the decision rights to the person with the knowledge. This means that knowledge transfer costs determine the degree of centralization of decision making. Decision rights tend to remain in the CEO's office when the costs of transferring knowledge to the central office is low, and decision rights tend to be delegated to lower levels of the hierarchy when the firm primarily produces knowledge that is costly to transfer to the CEO (Malone 1997).

The relevant question is which factors influence the knowledge transfer costs. According to the property rights approach (Hart and Moore 1990; Barzel 1989) the structure of decision rights depends on the relation between tangible (contractible) and intangible (noncontractible) knowledge assets. First, if the knowledge can be codified, it is easily transferred by contract. In this case non-residual decision rights (as decision actions) are explicitly stipulated in contracts (Demsetz 1998). This more explicit, tangible type of knowledge is akin to what Kogut and Zander (1992, 1993, 1995) call information. Second, if the knowledge cannot be codified due to its tacit characteristics, residual decision rights must be allocated because it cannot be easily communicated and specified in contracts due to too high transaction costs. Hence knowledge assets with more idiosyncratic and tacit characteristics, that is akin to what Itami (1984) call "invisible" resources, Kogut and Zander call know-how and von Hippel (1994) refer to "sticky" information, have a high degree of intangibility (noncontractibility) (Contractor and Ra 2002). Since it is difficult to specify decision actions in contracts under intangible knowledge assets, the person who has the intangible knowledge assets that generates the residual surplus should have the residual decision rights to maximize the residual income. Consequently, given the distribution of intangible knowledge assets the maximum

resource value obtains if the decision rights are assigned to those who are best able to use these assets. This view is compatible with Rajan and Zingales approach that the person with access to critical assets should have the power or authority (Rajan and Zingales 2001; Malone 1997; Wruck and Jensen 1994). The relationship between knowledge assets and decision rights can be stated by the following property rights proposition: The more intangible knowledge assets one person has relative to another person, the more important are his assets for the generation of residual income, and the more residual decision rights should be assigned to that person.

3.2. Structure of Ownership Rights

Co-location of knowledge assets and decision rights is only sufficient for designing an efficient organization structure if no agency problems arise. In reality, however, motivation problems result in adverse selection, moral hazard and hold-up problems. In this situation, allocation of decision rights not only results in lower information costs due to co-location of knowledge and decision rights but also in additional agency costs (Jensen and Meckling 1992). To alleviate this incentive problem, ownership rights as residual income rights should be assigned to the person potentially best equipped to increase the residual income. By combining asset ownership with the residual decision rights that create a high residual surplus, strong incentives are generated to realize the highest value of asset usage. This is compatible with the view of Wernerfelt (2002), Brickley et. al (2002), Nagar (2002) and Demers (2001) that complementarity between between residual decision and ownership rights increases the residual income generating effect of decision rights. The relationship between decision and ownership rights can be stated by the following proposition: The more residual decision rights a person has due to his intangible knowledge assets, the more residual income rights should be transferred to him.

4. Explaining the Relationship between Knowledge Assets, Residual Decision and Ownership Rights in Franchising Networks

4.1. Knowledge Assets and Decision Rights

The relevant question is which knowledge assets are generated and used in franchising networks and how are the decision rights allocated. The franchisor faces the problem of maximizing the returns to his intangible system-specific assets when they are dependent on investments in local intangible assets of the franchisee (Caves and Murphy 1976). Based on Hall's view of knowledge assets (Hall 1993), the franchisor's intangible knowledge assets refer to the system-specific know-how and the brand name assets as reputation capital (Klein and Leffler 1981; Doyle 1990) that are characterized by a low degree of contractibility because they have an important tacit component. The system-specific know-how includes knowledge and skills in site selection, store layout, product development and procurement (Kacker 1988). The brand name assets refer to intangible investments in system marketing and promotion as signalling device to reduce information asymmetry between the firm and the customers (Norton 1988; Gonzales-Diaz and Lopez 2002). The franchisee's intangible knowledge assets refer to the outlet-specific know-how as 'exploration' and 'exploitation' capabilities (March 1991; Sorenson and Sorensen 2001). The first include local market knowledge and innovation, and the latter include quality control, human resource management and administrative capabilities (Wicking 1995). Since the 'exploration' capabilities show a higher degree of tacity than the 'exploitation' capabilities, their contractibility is lower.

How does the distribution of intangible knowledge assets influence the allocation of residual decision rights in franchising networks? Generally we can differentiate between strategic and operative decisions. Strategic decisions are primarily made by the

franchisor and operative decisions are divided between the franchisor and the franchisee. Operative decisions include marketing decisions (price, product, promotion, service), human resource decisions and procurement decisions. According to Jensen and Meckling (1992), two ways for allocating decision rights exist: Either knowledge must be transferred to those with the right to make decisions or decision rights must be transferred to those who have the knowledge. This means that decision rights tend to be centralized in the franchising network when the costs of transferring knowledge to the franchisor are relatively low. This is the case when the franchisor's portion of intangible knowledge assets is relatively high compared to the franchisee. In this case he has a strong bargaining power, due to his system-specific assets, and can easily acquire the local market knowledge of the franchisee, due to its low degree of intangibility. On the other hand, residual decision rights have to be delegated to the franchisee when his local market know-how is very specific and consequently the knowledge transfer costs are very high (Malone 1997; Brickely, Smith and Linck 2000). In this case the bargaining power of the franchisee is relatively strong due to his noncontractible local market assets. Both the franchisor and the franchisee have to undertake specific investments to generate a high expost surplus. Consequently, if it is important to take advantage of franchisee's intangible knowledge assets to generate the residual income stream, he must be transferred residual decision rights to utilize his specific knowledge.

4.2. Allocation of Residual Income Rights

The franchisor and the franchisee's incentive to use the intangible knowledge assets (system-specific and local market assets) to maximize the residual income stream are

increased when the person who has the residual decision rights also has the residual income rights. In franchising firms residual income rights consist of the following components: Initial fees and royalties, and the proportion of company-owned outlets.

4.2.1. Initial Fees and Royalties

 Initial fees are the remuneration for the system-specific know-how (brand name assets) transferred to the franchisee at the beginning of the contract period (Klein, Leffler 1981). The higher the franchisor's intangible brand name assets at the beginning of the contract period, the higher the rents generated by his system-specific know-how and the higher the initial fees. In addition, the more important the franchisor's system-specific investments are relative to the franchisee's intangible investments during the contract period, the higher the fraction of residual income created by him, and the higher the royalties should be (Rubin 1978; Lutz 1995). Conversely, the more important the franchisee's intangible local market investments are relative to the franchisor's intangible investments, the higher his fraction of the residual income and the lower the royalties to provide the necessary incentive for the franchisees should be. Moreover, the property rights view suggests a positive relationship between initial fees and royalties: The higher the franchisor's system-specific assets and his reputation capital, the more intangible investments are necessary during the contract period to maintain a certain brand name value, and the higher the royalties as residual income rights are. Empirical evidence of a positive relationship between initial fees and royalties was found in the Austrian franchise sector (Windsperger 2001). These results are consistent with Dnes (1993) view. According to Dnes the franchisor may recover his sunk investments through the initial fee because high sunk investments may arise when the system-specific know-how is very important for the success of the franchise. On the other hand, this incomplete contracting view is not

compatible with the agency theory (see Lafontaine and Slade 2001) that predicts a negative relationship between fees and royalties.

4.2.2. Mix of Franchised and Company-owned Firms

Since the transfer of outlet rights to the franchisee dilutes the franchisor's residual income rights, his incentive to untertake system-specific investments is attenuated. This disincentive effect is higher, the lower the fees and royalties are. On the other hand, royalties serve as incentive mechanism for the franchisee to untertake intangible local market investments. The lower they are, the larger his fraction of residual income rights is. To increase the franchisor´s residual income position and his investment incentive without mitigating the franchisee´s investment incentive by raising fees or royalties, company-owned outlets may compensate the diluted residual income rights at the franchised outlets. How can this dual structure be explained? According to the property rights view, the more important the franchisor's intangible assets relative to the franchisee for the generation of residual income, the more property rights must be transferred to him, and the higher the percentage of company-owned outlets is. Hence if the franchisor has a large fraction of residual decision rights due to the more important intangible system-specific assets compared to the intangible local market assets, the percentage of company-owned outlets (PCO) should be relatively high; on the other hand, if the local market assets of the franchisee are relatively important compared to the system-specific assets, the franchisee's fraction of residual decision rights should be relatively high and, consequently, the PCO should be relatively low. Therefore, the know-how distribution between the franchisor and franchisee may explain sectoral differences. Empirical results indicate that the PCO in product franchising is considerably higher than in the services sector (e.g. Lafontaine and Shaw 2004; Penard et al. 2003a).

4.2.3. Interaction between Company-owned Outlets and Royalties

Since residual income rights include company-owned outlets and royalties, the PCO and the royalty rate must be simultaneously determined. According to Rubin (1978) and Scott (1995) royalties and franchisor-owned outlets are substitutes. Thus the lower the royalties, the higher the PCO to maintain the franchisor´s investment incentive. This may be explained by the dual incentive effects of royalties. Royalties are the residual income for the franchisor to invest in system-specific assets, but setting a positive royalty rate dilutes the incentive effect for the franchisee to invest in local market assets. To ensure the franchisor´s investment incentive under a low royalty rate, residual income rights are transferred to him by setting up company-owned outlets. Hence, contrary to the agency-theoretical view (e.g. Penard et al. 2003b), company-owned outlets function as a substitute for the diluted residual income rights of franchised outlets.

Which factors influence the relationship between royalties and the PCO? According to the property rights view, the interaction effect between PCO and royalties depends on the importance of intangible system-specific assets relative to the local market assets for the creation of residual surplus. (a) If the system-specific assets are very important for the generation of residual income, a high fraction of ownership rights must be transferred to the franchisor. In this case the diluted residual income rights of the franchised outlets are compensated by a relatively high PCO. (b) On the other hand, if the local market assets and the system-specific assets are very important for the creation of residual surplus, more residual income rights must be transferred to the franchisee. Compared to (a), the franchisee pays relatively lower royalties and the dilution of the franchisor's residual income rights is compensated by a higher PCO. We may conclude that the negative interaction between royalties and PCO depends on the bargaining power of the franchisor and the franchisee, i. e. on the importance of intangible system-specific

assets relative to the local market assets for the creation of residual surplus of the network.

4.3. Property Rights Propositions and Hypotheses

By applying the complementarity view of the organization structure (Milgrom and Roberts 1995; Brickley, Smith and Zimmerman 1996), the franchisor and the franchisee's motivation to use the knowledge assets to generate the residual income stream is increased if the residual decision rights are allocated according to the distribution of intangible knowledge assets and the residual income rights are co-located with the residual decision rights. Consequently, the relationship between knowledge assets, residual decision rights and ownership rights can be stated by the following propositions:

(I) If the franchisor's intangible system-specific assets have a high impact on the total residual surplus relative to the franchisee's intangible market assets, the franchisor should have a large fraction of residual decision rights. Hence we derive the following hypothesis*:*

> H1: Increases in intangible knowledge assets of the franchisor relative to the
> franchisee will lead to a higher fraction of residual decision rights of the
> franchisor.

(II) If the franchisor has a large fraction of residual decision rights due to the importance of his intangible knowledge assets, the franchisor should get a large fraction of residual income rights. His fraction of residual income rights is higher, the higher the royalties/fees are and the more the diluted residual income rights at the franchised outlets are compensated by company-owned outlets. Hence we derive the following hypothesis:

> H2: Increases in residual decision rights of the franchisor relative to the franchisee
> will lead to a higher fraction of ownership rights of the franchisor.

(III) Diluted residual income rights at the franchised outlets are compensated by residual income rights of company-owned outlets. Hence royalties and PCO are substitutes.

H3: Royalties and the proportion of company-owned outlets are negatively related.

5. Empirical Analysis

The empirical setting for testing these hypotheses is the franchise sector in Austria. The data set was collected in 1997. After several preliminary steps in questionnaire development and refinement, including in-depth interviews with franchisors and representatives of the Austrian franchise association, the final version of the questionnaire was pretested with 10 franchisors. The revised questionnaire, which incorporated the alterations suggested by the pretest, was mailed to 216 franchisors in Austria. We received 83 completed responses with a response rate of 38,4%. To test for a potential response bias we used a procedure suggested by Armstrong and Overton (1977). We compared early-returned questionnaires to late-returned questionnaires on a number of variables: indicators of knowledge assets, decisions rights and ownership rights. We found no evidence of obvious response bias in the sample.

5.1. Measurement

The various measures used to test the hypotheses are described below (see appendix A).

(I) Knowledge Assets

(a) Franchisor's knowledge assets: Based on indicators used in earlier studies (e.g. Lafontaine 1992; Fladmoe-Lindquist and Jaque 1995) two proxies for the franchisor's system-specific assets and brand name assets are used: Training days (initial and annual training) and advertising fees. The number of training days is an indicator of the importance of the franchisor's system-specific know-how to generate the residual income

of the network. The assumption behind this measure is that as intangibility of knowledge assets increases, so does the number of days of face-to-face interaction. As argued by Simonin (1999), the higher the degree of intangibility, the less contractible are the knowledge assets, and the more personal (face-to-face) knowledge transfer methods are used, such as telephone, meetings, coaching and training. A similar measurement concept was used by Argote (2000) and Darr et. al (1995). The indicator for the importance of the franchisor's brand name assets to generate the residual income stream is the advertising fee that the franchisees are required to pay to the franchisor (Lafontaine and Shaw 2004; Agrawal and Lal 1995). The more important the franchisor's brand name assets for the generation of the residual surplus, the more marketing investments (national advertising and promotion measures) are required to maintain the brand name value, and the higher the advertising fees paid by the franchisees are.

(b) Franchisee's knowledge assets: The franchisee's intangible knowledge assets refer to the franchisee's local market know-how consisting of 'exploration' and 'exploitation' capabilities. Since it was not possible to receive data from the franchisees, the franchisee's intangible knowledge assets are assessed by the franchisor. In the questionnaire the franchisors were asked to rate on a five-point scale to evaluate franchisee's intangible assets (see appendix A). We used the following indicators to measure the 'exploration' and 'exploitation' capabilities advantage of the franchisee compared to the manager of a company-owned outlet: Based on March (1991), Bradach (1998), Lewin (1998) and Sorensen and Sorenson (2000), the domain of the content of 'exploration' capabilities refers to innovation and local market knowledge, and the domain of the content of 'exploitation' capabilities refers to quality control and administrative capabilities. We used formative indicators because the constructs are defined by theoretical judgement and produced by the indicators representing the domain of the content (Diamantopoulos and Winkelhofer 2001; Edwards and Bagozzi 2000). If

we omitted an indicator, the content of the construct would change (Bollen and Lennox 1991, 308). For instance, if innovation were removed from 'exploration' capabilities, this would change the essential nature of this construct. Since innovation and local market knowledge are characterized by a higher degree of tacity than adiministrative and quality control capabilities, 'exploration' capabilities show a higher degree of intangibility (noncontractibility) than 'exploitation' capabilities.

(II) Decision Rights: Residual decision rights include the following decisions in the franchise network: procurement decision, price and product decisions, advertising decision, human resource decisions (recruitment and training), investment and finance decisions and decisions concerning the application of accounting systems. The decision index addresses the extent to which residual decisions are made by the franchisor and the franchisee. Hence it is a measure of decentralization/centralization of decision making in the network. The franchisors were asked to rate the franchisee's influence on these decisions on a seven-point scale. By averaging the scale values we constructed a decision index varying between 1 and 7. The higher the index, the higher the franchisee's influence on residual decision-making is. Consequently, the decision measure varies positively with the degree of decentralization and negatively with the degree of centralization of decision-making.

(III) Ownership Rights: These refer to residual income rights of the franchised outlets (initial fees, royalties as percentage of sales) and the percentage of company-owned outlets.

(IV) Number of Outlets: According to the transaction cost theory the set-up costs of the franchisor's headquarter may influence the tendency toward centralization. The more outlets are coordinated by the central office, the larger the coordination economies of scale are (Brickley et al. 1991), and hence the higher the tendency toward

centralization is. Therefore, we use the number of franchised and company-owned outlets as indicator for coordination economies of scale.

(V) Outlet size: Existing empirical evidence shows that the tendency toward vertical integration rises with the size of the outlets. The size is measured by the average size of sales (Martin 1988; Lafontaine 1992).

(VI) Age of the franchise system: The number of years the company has been in franchising is used to appreciate the franchisor's experience. We expect the percentage of company-owned units increases with organizational learning representing the ownership redirection effect (Dant et al. 1996; Dant et al. 1998).

5.2.Results

Table 1 and 2 present descriptive data for the sample (see appendix B). The measures of ownership rights (royalties, initial fees and the percentage of company-owned outlet) are presented in table 1: For our sample from the Austrian franchise sector the mean of royalties is 4,23 % and of advertising fees is 1,28 % (based on sales). More than 26,9% of the outlets are company-owned. The structure of decision rights is presented in table 2.

5.2.1. Decision Rights-Hypothesis

To test the hypothesis (H1) we carry out a regression analysis with the index of decision rights as independent variable. In the first step, we conducted a binary logistic regression analysis (Long 1997). We divided the franchise systems into two groups: More centralized systems are systems with a decision index between 3 and smaller than 5, and more decentralized systems are systems with an index between 5 and 7. Since only two out of 83 franchise systems realized a decision index smaller than 3, we deleted these systems from the data set. Hence the value of the dependent variable (DR) is 0 for more centralized systems and 1 for more decentralized systems. In the second step, we

conducted an ordinal regression analysis. The explanatory variables refer to initial and annual training days (IDAY, ADAY), advertising fees (ADV), franchisee's knowledge advantages resulting from 'exploration' and 'exploitation' capabilities (LM1, LM2) and the number of outlets (OUT). We estimate the following regression equation:

$$DR = \alpha_o + \alpha_1 ADAY + \alpha_2 IDAY + \alpha_3 ADV + \alpha_4 LM1 + \alpha_5 LM2 + \alpha_6 IDAY*ADAY + \alpha_7 OUT + \varepsilon$$

Based on our property rights hypothesis, DR varies negatively with the training days (ADAY, IDAY) and advertising fees (ADV). IDAY*ADAY indicates that the negative relationship between annual training days and decision rights is lower, the more system-specific know how is transferred at the beginning of the contract period, and hence the higher the initial training days (IDAY) are. A high number of initial training days and a low number of annual training days may indicate that the franchisor's system-specific know-how is more contractible (less intangible), because a larger part of the system-specific knowhow can be already transferred to the franchisee at the beginning of the contract period. In addition, DR varies positively with the franchisee's more intangible assets (LM1) and negatively with the franchisee's more tangible knowledge assets (LM2). We use two specifications of franchisee's local market assets: One-item and two-items scales. In the case of one-item scale, LM1a refers to the innovation advantage and LM2a to the administrative capabilities advantage of the franchisee compared to the manager of a company-owned outlet. Under two-items scale, LM1b refers to the mean of innovation and local market knowledge advantage and LM2b to the mean of administrative capabilities and quality control advantage. The number of outlets is included as control variable: DR may vary negatively with the number of outlets (OUT) indicating that coordination economies of scale increase the tendency toward centralization.

Results of the binary logistic and ordinal regressions are provided in table 3 and 4. Under logistic regression, the fit of the models (MODEL 1, MODEL 2) was tested based on the log of the likelihood ratio. For model 1 the chi-square value of 42,53 [38,48][1] is significant at p < 0,001 thus rejecting the null hypothesis that the estimated coefficients are zero. The overall fit of the binary logistic regression model represented by a significant chi-square and its predictive ability point to the appropriateness of the set of variables in predicting the degree of centralization of franchising networks. In both models the coefficients of annual training days and advertising (ADAY and FEE) are significant and consistent with our property rights hypothesis. On the other hand, the coefficient of initial training days (IDAY) is not significant. The coefficient of IDAY*ADAY is significant and consistent with the hypothesis. The result suggests if more system-specific know how is transferred at the beginning of the contract period, less system-specific know how must be transferred during the contract period resulting in less control by assigning residual decision rights to the franchisor. In addition, the coefficients of the local market know-how (LM1, LM2) are significant under model 1. The coefficient of LM1 is positive indicating that the residual decision rights for the use of more intangible local market assets (innovation and local market knowledge) must be transferred to the franchisee; on the other hand, the coefficient of LM2 is negative indicating that more explicit (contractible) local market knowledge (administrative capabilities and/or quality control) can be more easily transferred to the franchisor, due to relatively lower knowledge transfer costs. Furthermore, under model 2 only LM1 is positive and slightly significant indicating that more intangible (noncontractible) local market assets (LM1) have a larger impact on the allocation of residual decision rights compared to the less intangible local market assets (LM2). Moreover, the coefficient of

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[1] The values of the ordinal regression analysis are indicated in *brackets*.

OUT is negative and significant indicating that coordination economies of scale increase the tendency toward centralization.

Insert table 3 and 4

Under ordinal regression, we get similar results (see table 4). However, Nagelkerke R Square decreased from 0,77 to 0,55 [0,73 to 0,49] showing a weaker fit of the model. Finally colinearity diagnosis was performed using correlations between the independent variables (see table 6 in appendix B). The correlations between initial training and annual training days as well as between initial training and advertising are relatively high (r = 0,40 and r = 0,44; p < 0,01). This is not surprising as these variables have been used as a measure of the franchisor's system-specific and brand name assets.

5.2.2. Ownership Rights Hypotheses

To test the ownership rights hypotheses (H2, H3) we employ ordinary least squares and two-stage least squares regression analysis. The ownership variables are royalties (ROY) and the percentage of company-owned outlets (PCO). The choice of ROY may depend on the choice of the PCO, and other factors, such as decision rights, age, initial fees and sales volume. The simultaneous equation model hypothesizes that (1) the percent of company-owned outlets (PCO) influences the royalty rate (ROY), (2) the royalty rate affects the PCO, and (3) several antecedents affect both variables. The model includes residual decision rights (DR), outlet size (SALE) and initial fees (FEE) as antecedents of the royalty decision. Likewise, DR, outlet size (SALE), and age of the franchise system (AGE, AGE^2) are used as predictors of the PCO-decision. Therefore, DR and SALE are common to both decisions. On the other hand, FEE is unique to the royalty decision, and AGE and AGE^2 are unique to the PCO-decision. In order to ensure that the equations in

the systems are identified, each equation must exclude at least one of the exogenous variables. As a result, the empirical model is characterized by the following simultaneous equations:

$$
\begin{pmatrix} \text{ROY} \\ \text{PCO} \end{pmatrix} = \begin{pmatrix} 0 & \beta_1 \\ \beta_2 & 0 \end{pmatrix} \cdot \begin{pmatrix} \text{ROY} \\ \text{PCO} \end{pmatrix}
$$

$$
+ \begin{pmatrix} \gamma_1 & \gamma_2 & \gamma_3 & 0 & 0 \\ 0 & \gamma_4 & \gamma_5 & \gamma_6 & \gamma_7 \end{pmatrix} \cdot \begin{pmatrix} \text{FEE} \\ \text{DR} \\ \text{SALE} \\ \text{AGE} \\ \text{AGE}^2 \end{pmatrix} + \begin{pmatrix} \varepsilon_1 \\ \varepsilon_2 \end{pmatrix}
$$

Using this system of equations, we empirically investigate the interaction effect between royalties and the percentage of company-owned outlets. Support for substitutability exists if ROY negatively affects the percentage of company-owned outlets and PCO negatively affects the royalty rate. In addition, ROY decreases with decentralization of decision-making (DR). Furthermore, the property rights view of residual income rights suggest a positive correlation between initial fees (FEE) and royalties (ROY), because higher system-specific know how requires more intangible investments of the franchisor during the contract period to maintain a certain brand name value (Windsperger 2001). SALE has a positive impact on ROY indicating that higher SALE-values represent a higher brand name value that leads to higher investments by the franchisor during the contract period, and hence requires a higher royalty rate to maintain the franchisor's investment incentive. The second equation relates to the ownership variable PCO. The PCO decreases with decentralization of decision-making (DR). AGE represents the ownership redirection effect, due the franchisor's acquisition of outlet-specific knowledge during

organizational life cycle (Dant et al. 1996). Another explanation is the reputation effect of established franchise system for potential franchisees. In order to attract franchisees, the franchisor may maintain some company-owned outlets with the major role of signalling the value of the brand name assets in the early period of the franchise system (Gallini and Lutz 1992). This may explain a lower percentage of company-owned outlets in the latter period of the organizational life cycle. If the knowledge acquisition effect dominates the signalling effect, PCO increases with AGE. In addition, we include the outlet size (SALE) as explanatory variable. SALE has a positive impact on PCO indicating that, due to coordination economies of scale, higher sales lead to a higher percent of company-owned outlets.

Table 7 (see appendix B) presents the correlations of the variables used in the simultaneous equation system. To estimate the system of equations, we employ OLS and two-stage least squares (2SLS) (Wooldrige 2002). 2SLS estimators yield consistent parameter estimates when equation systems are simultaneous. Table 5 and 6 report the results of the OLS and 2SLS-regression analysis for the ownership variables. Model fit is acceptable with R sqaure values varying between 0,22 and 0,33. (a) ROY-equation: The coefficient of DR is highly significant and consistent with the property rights hypothesis. In addition, the coefficients of PCO supports the property rights view of the allocation of company-owned outlets. Furthermore, the cooefficient of initial fees and outlet size are consistent with the hypothesis but not significant. (b) PCO-equation: The coefficient of residual decision rights (DR) is highly significant and consistent with our property rights hypothesis. An increase in residual decision rights of the franchisee leads to a lower proportion of company-owned outlets. Moreover, the coefficient of ROY shows that the impact of royalties upon the PCO is negative and highly significant. Furthermore, the coefficient of outlet size is positive and slightly significant under OLS, and the age of the franchise system is not significant. Finally, we examine the substitutability hypothesis

between royalties and PCO. Negative coefficients for ROY and PCO, respectively, support a substitute relationship between royalties and the percentage of company-owned outlets. We find that increases in royalties are associated with a lower percentage of company-owned outlets and that increases in the PCO are associated with lower royalty rates.

Insert Figure 5, 6

6. Discussion and Conclusions

In this paper we have developed and tested a property rights model of the governance structure of the franchising firm. In recent years this perspective has been adopted to explain different contractual provisions in franchising. But this research did not explain the governance structure of the franchising firm as an institutional entity consisting of residual decision and residual income rights. We filled this gap by showing that residual decision rights are allocated according to the distribution of intangible knowledge assets (local market and system-specific assets), and the residual income or ownership rights are assigned to those who have a large fraction of residual decision rights that create a large part of the residual income stream. This result is compatible with the view that residual decision rights and ownership rights are complements in the organizational architecture of the firm (e.g. Brickley et al. 2002; Nagar 2002). Since ownership rights are diluted in the franchising network, establishing company-owned outlets may mitigate the disincentive effect for the franchisor. Therefore, company-owned outlets serve as a substitute for the franchisor's diluted residual income rights.

The results obtained from the survey presented above seem to provide support to the proposed property rights hypotheses. First, the results suggest that if the system-specific knowhow and the brand name assets are very important for the creation of

residual surplus, the franchising network is more centralized. Second, the results of the regression models also confirm the hypothesis that more intangible 'explorative' local market assets of the franchisee increase the tendency toward decentralization and more tangible 'exploitative' local market assets decrease the tendency toward decentralization of the network. This is consistent with Jensen and Meckling's view, that co-location of decision rights with knowledge can be achieved by transferring less intangible local knowledge to the person who has the decision rights (i. e. to the franchisor) and by transferring residual decision rights to the person who has more intangible local market knowledge assets (i.e. to the franchisee). That means that decision rights tend to remain in the franchisor's headquarter when the costs of transferring knowledge to the franchisor is low, and decision rights tend to be delegated to the franchisee when the local outlets primarily produce knowledge that is costly to transfer to the franchisor. If we compare the results of MODEL 1 and MODEL 2 under logistic and ordinal regressions, we can see that the significance of the coefficients of LM1 and LM2 is lower under two-items measures than under one-item measures for intangible local market assets. There is at least one possible explanation for this weaker support: The content of the constructs 'exploration' and 'exploitation' capabilities may be better represented by one-item compared to two-items scale because, even with modest error term correlations between items and without inappropriate respondent behavior in the case of multi-item measures, the incremental information from each additional item is extremely small (Drolet and Morrison 2001). Third, the results of OLS and 2SLS regression models consistently show that royalties and the percentage of company-owned outlets are substitutes, and residual decision rights and ownership rights are complements.

Our empirical study has some limitations: This has to do with the use of percepetual instruments to measure the franchisee's local market assets. In our study the influence of the franchisee's local market assets on the allocation of residual decision

rights depends on measures based on the franchisors' opinion. In future research the operationalization of franchisee's intangible local market assets should be improved by collecting data from franchisees. Furthermore, future research has to investigate the relationship between the allocation of residual decision and ownership rights and the efficiency of the franchise systems. Our property rights view suggests a higher performance under complementarity of residual decision and ownership rights, as well as under substitutability of royalties and the proportion of company-owned outlets.

      If we compare our results with other studies two main differences exist: First, previous studies do not investigate the structure of decision rights as well as the relationship between residual decision and ownership rights in franchising network. Second, empirical studies do not find a negative relation between royalties and the proportion of company-owned outlets (e.g. Shane 1998; Penard et al. 2003). Finally, we turn to some more general remarks and relate our paper to the literature on the theory of the firm, especially the new property rights theory (Grossman and Hart 1986; Hart and Moore 1990; Hart 1995; Baker et al. 2003). In the Grossman/Hart/Moore approach the owner of the asset is always able to exercise efficient control, due to the absence of uncertainty (Hart 1990). Hence this property rights approach cannot solve the division-of-knowledge problem (Langlois 2002a), because it assumes that decisions are contractible (Baker et al. 2003; Gibbons 2004), and the person who has the ownership rights automatically has the residual rights of control. Under uncertainty, however, the person who has the ownership rights need not have the residual decision rights that maximize the residual income. For instance, this could be the case when the franchisee's local knowledge and hence his residual decision rights are very important for the creation of residual income stream, but at the same time the franchisee may not fully use his local market knowledge to maximize the ex post surplus because he obtains only a small fraction of ownership rights. Consequently, our view is that assets characteristics

(tangible/intangible) determine the allocation of decision rights, and asset ownership must be co-located with the structure of residual decision rights. This reasoning is consistent with the modularity theory of the firm (Langlois 2002a) that tries to answer the question which modularisation of the firm organization will yield the best system decomposition. By applying our property rights view, the degree of modularisation can be operationalized by the structure of decision and ownership rights.

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Logistic Regression

Dependent Variable: Decision Rights (DR)		
Independent Variables	MODEL 1 Coefficients (LM1a, LM2a 1-item scale)[a]	MODEL 2 Coefficients (LM1b, LM2b 2-items scale)[b]
Intercept	2,705** (1,088)	2,341** (0,996)
ADAY (Annual Training Days)	-6,903*** (2,632)	-7,24*** (2,754)
IDAY (Initial Training Days)	1,759 (3,095)	0,443 (3,056)
ADV (Advertising Fee)	-4,391*** (1,664)	-3,798*** (1,4)
LM1 ('Exploration Capabilities')	2,172** (0,981)	1,761* (0,962)
LM2 ('Exploitation Capabilities')	-1,772** (0,84)	-0,754 (0,694)
IDAY*ADAY	13,056* (7,308)	13,539* (7,651)
OUT	-1,239** (0,594)	-1,08** (0,523)
	Model Statistics: N = 81	
	Model Chi-square = 42,53 (p < 0,001)	Model Chi-square = 38,48 (p < 0,001)
	-2 Log likelihood = 23, 87	-2 Log likelihood = 27,91
	Correct Classification % = 92	Correct Classification %=86
	Nagelkerke R Square = 0,77	Nagelkerke R Square = 0,73

*** P < 0,01; **P < 0,05; P* < 0,1; values in parentheses are standard errors.

[a]: One-item scale: LM1a: Innovation advantage; LM2a: Administrative capabilities advantage

[b]: Two-items scale: LM1b: Innovation and local market knowledge advantage; LM2b: Administrative capabilities and quality control advantage

Table 3: Logistic Regression Results

Ordinal Regression

Dependent Variable: Decision Rights (DR)		
Independent Variables	MODEL 1 Coefficients (LM1a, LM2a 1-item scale)[a]	MODEL 2 Coefficients (LM1b, LM2b 2-items scale)[b]
Threshold Constants	-6,572*** (1,463) -4,607*** (0,931) -0,849** (0,410) 2,754*** (0,586)	-6,328*** (1,48) -4,308*** (0,904) -0,748* (0,387) 2,552*** (0,538)
ADAY (Annual Training Days)	-2,291*** (0,58)	-2,361*** (0,583)
IDAY (Initial Training Days)	-0,308 (0,727)	-0,818 (0,713)
ADV (Advertising Fee)	-0,904*** (0,328)	-0,914*** (0,339)
LM1 (Exploration Capabilities Advantage)	0,814** (0,395)	0,668[+] (0,411)
LM2 (Exploitation Capabilities Advantage)	-1,093*** (0,394)	-0,603[+] (0,378)
IDAY*ADAY	3,461** (1,709)	4,231** (1,78)
OUT	-0,797** (0,311)	-0,714** (0,3)
	Model Statistics N = 81	
	Model Chi-square = 35,47 (p < 0,001)	Model Chi-square = 30,09 (p < 0,001)
	-2 Log likelihood = 87,06	-2 Log likelihood = 92,45
	Nagelkerke R Square = 0,55	Nagelkerke R Square = 0,49

*** P < 0,01; **P < 0,05; P* < 0,1; P[+] < 0,12; values in parentheses are standard errors.

[a]: One-item scale: LM1a: Innovation advantage; LM2a: Administrative capabilities advantage

[b]: Two-items scale: LM1b: Innovation and local market knowledge advantage;
LM2b: Administrative capabilities and quality control advantage

Table 4: Ordinal Regression Results

OLS Regression		
	Dependent Variables: ROY and PCO	
Independent Variables	Royalties (ROY)	Percentage of Company-owned Outlets (PCO)
Intercept	19,907* (10,93)	24,23 (37,5)
ROY (Royalties)		-1,222** (0,55)
PCO (Percentage of Company-owned Outlets)	-9,31E-02*** (0,032)	
FEE (Initial Fees)	1,593E-06 (0,000)	
DR (Decision Rights)	-2,616*** (0,679)	-10,94*** (3,11)
SALE (Outlet Size)	7,384E-0 (0,679)	4,1* (2,314)
AGE (Age of Franchise System)		0,777 (1,378)
AGE^2		-5,866E-02 (0,049)
F	4,65	4,44
R Square	0,28	0,33
	N = 51	N = 53

*** $P < 0,01$; ** $P < 0,05$; *$P < 0,1$; values in parentheses are standard errors.

Table 5: OLS Regression Results

2SLS Regression		
	Dependent Variables: ROY and PCO	
Independent Variables	Royalties (ROY)	Percentage of Company-owned Outlets (PCO)
Intercept	25,15** (12,1)	53,86 (48,19)
ROY (Royalties)		-3,64** (1,39)
PCO (Percentage of Company-owned Outlets)	-0,186** (0,088)	
FEE (Initial Fees)	2,029E-06 (1,898E-06)	
DR (Decision Rights)	-3,181*** (0,881)	-14,41*** (4,13)
SALE (Outlet Size)	0,068 (0,72)	4,07 (2,811)
AGE (Age of Franchise System)		-1,14 (1,69)
AGE^2		-0,072 (0,06)
F	3,35	3,75
Pseudo R Square	0,22	0,29
	N = 50	N = 50

*** $P < 0,01$; ** $P < 0,05$; *$P < 0,1$; values in parentheses are standard errors.

Table 6: 2SLS Regression Results

APPENDIX A: MEASURES OF VARIABLES

Royalties (ROY): Franchisee's royalties as percentage of sales (including advertising)

Percentage of Company-owned Outlets (PCO):
Company-owned outlets*100/(company-owned + franchised outlets)

Initial Training Days (IDAY): Number of the franchisee's training days before opening franchised outlets

Annual Training Days (ADAY): Number of franchisee's annual training days

Fees (FEE): Initial fees

Advertising Fee (ADV): Franchisee's payment of advertising fees (as percentage of sales)

Franchisee's Knowledge Assets (LM1, LM2):
  LM1 ('Exploration Capabilities): Franchisee's know-how advantage compared to the
  manager of a franchisor-owned outlet evaluated by the franchisor concerning
      1. Innovation
      2. Local market knowledge
      (no advantage 1 – 5 very large advantage)
  LM2 ('Exploitation Capabilities'): Franchisee's know-how advantage compared to the
  manager of a franchisor-owned outlet evaluated by the franchisor concerning
      1. Quality control
      2. Administrative capabilities
      (no advantage 1 – 5 very large advantage)

Number of Outlets (OUT): Number of franchised and company-owned outlets

Outlet Size (SALE): Natural log of the average size of outlet sales

Years in Franchising (AGE)

Decision Index (DR) (Mean of 1. – 8.):
  To what extent are the following decision made by the franchisee? (no extent 1 – 7 to a very
  large extent)
      1. Procurement decision
      2. Product decision
      3. Accounting system decision
      4. Resale price decision
      5. Advertising decision
      6. Employees' training decision
      7. Investment and financial decision
      8. Recruiting decision

Appendix B: Descriptive Data

Table 1: Franchise Systems in Austria

	Minimum	Maximum	Mean	Std. Deviation
Advertising Fee (percent of sales)	0	9,00	1,28	1,70
Franchisee's Annual Training Days	0	70	8,63	9,68
Initial Training Days	0	200	23,53	35,88
Initial Fees (US$)	0	200000	10202	23233
Royalties	0	20	4,23	4,26
Age	1	30	7,04	5,67
Sales Volume (US$)	58400	2550000	474000	617146
Percentage of Company-owned Outlets	0,63	87,5	26,96	22,77
Number of Outlets	1	400	30,32	59,49
Franchisee's Local Market Knowledge Advantage	1	5,00	3,87	1,27
Franchisee's Quality Control Advantage	1	5,00	2,78	1,39
Franchisee's Innovation Advantage	1	5,00	3,50	1,35
Franchisee's Administrative Capabilities Advantage	1	5,00	3,30	1,26

Table 2: Decision Rights in the Austrian Franchise Sector

	Minimum	Maximum	Mean	Standard deviation
Procurement decision	1	7	3,94	2,30
Product decision	1	7	4,73	2,00
Accounting system decision	1	7	4,74	2,16
Resale price decision	1	7	4,88	2,14
Advertising decision	1	7	5,29	1,76
Employees' training decision	1	7	5,35	1,57
Investment decision	2	7	5,87	1,49
Financial decision	1	7	6,05	1,63
Recruiting decision	1	7	6,53	1,30

Table 6

Correlations of the Variables in the Logistic and Ordinal Regression

	ADAY	ADV	IDAY	OUT	LM1a	LM2a	LM1b	LM2b	DR
ADAY	1,000	,445	,402	-,018	-,201	-,035	-,124	-,140	-,014
ADV	,445	1,000	,080	,070	-,080	-,039	,051	-,137	-,235
IDAY	,402	,080	1,000	-,239	,061	,064	,089	,020	-,307
OUT	-,018	,070	-,239	1,000	-,221	-,207	-,155	-,186	-,165
LM1a	-,201	-,080	,061	-,221	1,000	,526	,827	,679	-,069
LM2a	-,035	-,039	,064	-,207	,526	1,000	,443	,757	-,078
LM1b	-,124	,051	,089	-,155	,827	,443	1,000	,555	,022
LM2b	-,140	-,137	,020	-,186	,679	,757	,555	1,000	-,077
DR	-,014	-,235	-,307	-,165	-,069	-,078	,022	-,077	1,000

One-item scale: LM1a: Innovation advantage; LM2a: Administrative capabilities advantage
Two-items scale: LM1b: Innovation and local market knowledge advantage;
LM2b: Administrative capabilities and quality control advantage

Table 7

Correlations of the Variables used in the 2SLS Regression

	AGE	SALE	DR	FEE	ROY	PCO
AGE	1,000	-,029	,243	-,125	-,097	-,219
SALE	,205	1,000	-,099	-,289	,164	-,067
DR	,243	-,099	1,000	-,096	-,228	-,211
FEE	-,125	-,289	-,096	1,000	,233	-,166
ROY	-,097	,164	-,228	,233	1,000	-,032
PCO	-,219	-,067	-,211	-,166	-,032	1,000