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Complementarities and Substitutabilities in Franchise Contracting: Some Results from the German Franchise Sector [⋆]

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Abstract. According to the property rights approach, 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 rights of control (residual decision rights). Since residual income rights are diluted in franchising relationships, ownership rights include not only residual income rights (initial fees and royalties) but also complementary ownership surrogates to simulate the motivation effect of undiluted ownership rights. Therefore, under a property rights perspective, an efficient contract structure in franchise relationships implies co-location between knowledge assets and decision rights and complementarity between residual decision and ownership rights. The more important the franchisor's (franchisee's) system-specific assets (local market knowhow) for the generation of residual surplus, the more decision and complementary ownership rights should be transferred to the franchisor (franchisee). Three hypotheses were derived from the property rights approach and tested in the German franchise sector. The empirical results are partly supportive of the hypotheses.

Key words: complementarities, decision rights, franchising, knowledge assets, ownership structure, substitutabilities

1. Introduction

Contractual relations between the franchisor and franchisees are organized as stable networks based on the combined use of the franchisor's system-specific know-how and the franchisee's local market know-how to maximize the residual income stream. Due to the noncontractability of knowledge assets, property rights as residual decision and residual income rights (Barzel, 1989; Hart, 1995; Foss and Foss, 1998, Hart and Moore, 1990) must be allocated between the franchisor and the franchisee. According to the property rights theory, the structure of residual decision and ownership rights depends on the distribution of intangible knowledge assets that generate the residual income stream (Barzel, 2000). Intangible knowledge assets are the knowledge and skills (know-how) that cannot be codified and

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easily transferred to other agents since they have an important tacit component (Polanyi, 1962; Nelson and Winter, 1982). In franchise relationships they refer to the system-specific assets of the franchisor and to the outlet-specific assets of the franchisee. Our thesis of the paper is: The higher the franchisor‘s portion of non-contractible system-specific (brand name) assets relative to the franchisee’s local market assets, the more residual decision rights and complementary ownership rights should be assigned to the franchisor. Since ownership rights are diluted in franchise relationships, due to the division of residual income stream, ownership surrogates mitigate the disincentive effect of the diluted residual income rights. For instance, the disincentive effect of franchisee’s diluted residual income rights may be mitigated by territorial restraints, exclusive customer clause or the right to control network entry. On the other hand, the franchisor’s diluted residual income rights may be compensated by tying arrangements, resale price maintenance, lease control, exclusive dealing clauses, buy back arrangement as well as approval and termination rights. Therefore, we argue that an efficient property rights structure implies both complementarity between residual decision and ownership rights and substitutability between residual income rights and ownership surrogates. Three hypotheses are tested in the German franchise sector. The study presents some empirical evidence that residual decision and ownership rights are complements and residual income rights and ownership surrogates are substitutes in franchise contracts.

The paper is organized as follows: In section two we review the relevant literature. In section three we apply the property rights theory to explain the structure of franchise agreements. We examine the relationship between knowledge assets and residual decision rights, residual decision and ownership rights, and between residual income rights and ownership surrogates. Finally, we develop three hypotheses that are tested in the German franchise sector.

2. Literature Review

Although franchising has been treated extensively in organizational economics and management literature, the relations between the elements of the franchise agreement remain largely unexplored. Most studies in the 1980s and 1990s (for a review, see Dnes, 1996; Lafontaine and Slade, 1998) primarily concentrated on the explanation of the fee structure and other contractual provisions without taking into account that the contract design is an institutional entity allocating both residual decision and ownership rights between the franchisor and the franchisee. (a) The agency cost explanation initiated by Rubin (1978), extended by Mathewson and Winter (1985), Lal (1991), Bhattacharyya and Lafontaine (1995), and tested by Brickley and Dark (1987), Norton (1988) as well as Lafontaine (1992) and Sen (1993) tries to show that franchising, characterized by revenue or profit-sharing contracts, has agency cost advantages compared to company ownership. Franchisee’s payments of royalties (as percentage of sales) result in lower agency costs (monitoring cost, residual loss and risk premiums), especially under high uncertainty. Although this approach offers an explanation of the fee structure in franchise agreements, it cannot explain the allocation of ownership rights as residual rights of control between the franchisor and the franchisee, due to the complete contracting assumption (Hart, 1995, 20; Masten, 2000). In addition, compared to the property rights approach, profit sharing is based on the assumption of franchisee risk aversion. However, empirical results on risk sharing are inconsistent with this agency-theoretical view (Lafontaine and Slade, 1998; Allen and Lueck, 1992, 1999). (b) A further explanation of the fee structure is offered by the transaction cost theory. Klein (1980) and Williamson (1985) show that the initial fee serves as a hostage in the franchise relationship. The payment of the initial fee prevents the franchisee from expropriating quasi rents generated by the franchiser's system-specific assets. Hence initial fees mitigate exchange hazards by pricing-out the hazard up-front (Bercovitz 1999). (c) In addition, Gallini and Lutz (1992) present a signalling theory. In this model, the franchisers have private information about the brand name value of their franchise system that they intend to communicate to potential franchisees. High (low) variable fees serve as a device to signal high (low) quality investments of the franchiser in his brand name. Empirical results do not support this theory (Lafontaine, 1993).

In the last years some authors have studied interaction effects between contract provisions. Wimmer and Garen (1997) have shown that more specific assets act as an implicit bond and substitutes for a reduced royalty rate in inducing franchisees efforts. In addition, Brickley (1999) presented an agency cost explanation of the complementarities between mandatory advertising and area development plans, restrictions on franchisee's outside activities and area development plans, and between mandatory advertising and restrictions of outside activities. Further, Berkovitz (1999) applies transaction cost reasoning to analyse interactions between contract provisions. She found that the initial fee and the duration of franchise contracts are significant larger, the larger the relationship-specific investments. In addition, she argued that the hostage function of specific investments could be increased by including termination conditions. By extending Klein's self-enforcement view of contract provisions (Klein, 1995; Klein and Murphy, 1997), Lafontaine and Raynaud (2001) examined complementarities between residual claimancy rights and self-enforcement mechanisms, such as exclusive territory clauses, multi-unit ownership guarantees, contract renewal and termination rights. They argued that the dilution of the franchisee's residual income rights requires the use of selfenforcement mechanisms to increase the franchisee's incentive to maximize the residual surplus of the network. Finally, Arrunada et al. (2001) went further than the previous literature in that they analyzed the entire system of allocation of rights concerning decision rights, monitoring and incentive mechanisms. They found some complementarities between completion and termination rights, and between monitoring rights and incentives in the automobile distribution. On the other hand, a theoretical deficit of this study is that they do not present a general approach that explains the interactions between the elements of contract design but they derive their hypotheses from different theoretical strands in organizational economics. To summarize, these studies offer explanations of interaction effects between certain contract provisions in franchise relationships, but they do not present an explanation of the contract design as an *institutional entity*. Starting from this theoretical deficit, the objective of our paper is to develop a property rights view of the structure of residual decision and ownership rights in franchise agreements by creating a more holistic approach that takes into account the interactions between residual decision rights, residual income rights and ownership surrogates. Recently, Grandori (1997, 2002) proposed such a view of theory building in inter-organizational research that focuses on the interactions between the different parts of the network governance.

3. A Property Rights View of the Structure of Decision and Ownership Rights in Franchise Relationships

3.1. THE STRUCTURE OF DECISION RIGHTS

According to the property rights approach, the structure of residual decision and ownership rights depends on the intangibility of knowledge assets (Barzel, 1989, 2000; Hart and Moore, 1990; Hart, 1995). The person who has intangible knowledge assets that generates the residual income stream should have residual decision rights to maximize the residual surplus. These rights refer to the use of intangible knowledge assets, characterized by an important tacit component, which cannot be specified in contracts (Teece, 2001). In this case, it is only possible to transfer decision rights to control future decisions because decision actions are not contractible (Aghion et al., 2002). This is compatible with Simon's view (Simon, 1951) that sequential decision making can be achieved by giving the parties decision making authority (Baker et al., 2002).

Which intangible assets are involved in franchise contracting? The franchisee's intangible assets refer to the local know-how in marketing, human resource and procurement management and the franchisor's intangible assets refer to the system-specific assets (Caves and Murphy, 1976). If the local market assets generate a large portion of residual surplus, the corresponding residual decision rights must be transferred to the franchisee to maximize the residual surplus. On the other hand, if the franchisor's brand name investments are very important to generate a large fraction of the residual income, a large fraction of residual decision rights must be assigned to the franchisor. This means that residual decision rights tend to be centralized when the franchisor has a strong know-how position, due to his intangible system-specific assets, and when he can easily acquire the local market knowledge of the franchisee, due to his low degree of intangibility. Decision rights tend to be more decentralized when the franchisee's know-how is very outlet-specific and consequently the knowledge transfer costs are very high (Jensen and Meckling, 1992; Bradach, 1998). In this case the bargaining power of the franchisee is relatively large due to his non-contractible local market assets. Therefore, if the franchisee's local market assets create a high residual income stream, residual decision rights must be transferred to him. We can summarize the relationship between knowledge assets and residual decision rights by the following proposition: The higher the franchisor's (franchisee's) portion of intangible knowledge assets relative to the franchisee's (franchisor's), the more residual decision rights must be transferred to the franchisor (franchisee).

3.2. THE DISTRIBUTION OF OWNERSHIP RIGHTS

How are the ownership rights allocated between the franchisor and the franchisee? Due to the division of residual income rights (payment of royalties) and the transfer of outlet rights, ownership rights are diluted in franchise relationships. This may result in underinvestment problems that can be mitigated by ownership surrogates that serve as incentive mechanisms to compensate the disincentive effect of diluted residual income rights. Therefore, ownership rights include not only residual income rights (royalties/fees) but also ownership surrogates to simulate the incentive effect of undiluted residual income rights.

Which ownership surrogates are included in franchising contracts? The disincentive effect of franchisee's diluted residual income rights may be mitigated by the following ownership surrogates: Exclusive territory clause, exclusive customer clause, the right to control network entry as well as lease and alienation rights. On the other hand, the franchisor's attenuated ownership rights may be compensated by the following ownership surrogates that simulate the incentive effect of undiluted residual income rights: Tying arrangement, resale price maintenance, lease control, exclusive dealing clauses, option rights such as buy back arrangement and approval rights, and termination rights.

3.2.1. *Incentive Effects of Ownership Rights*

In the following we discuss the incentive effects of residual income rights and ownership surrogates in franchising networks.

(I) Residual income rights

Royalties. By linking the franchisor's residual income to the franchisor's investments in noncontractible assets, he has an incentive to undertake the requisite investments during the contract period. Therefore, the more important the franchisor's intangible investments are relative to the franchisee's intangible investments, the higher is the fraction of residual income created by him, and the higher should be the royalties (Rubin, 1978; Sen, 1993; Lutz, 1995). Conversely, the more important the franchisees' intangible investments are relative to the franchisor's intangible investments, the higher should be their fraction of the residual income and the lower should be the royalties to provide the necessary incentive for the franchisees. Therefore, royalties have a dual incentive effect: The investment incentive of the franchisor varies positively and the investment incentive of the franchisee varies negatively with the royalty rate. This result is compatible with the agency-theoretical view (Mathewson and Winter, 1985; Lal, 1991).

Initial fees. Initial fees are the remuneration for the system-specific know-how transferred to the franchisee at the beginning of the contract period. The higher the franchisor's intangible assets (brand name assets (Klein and Leffler, 198l) at the beginning of the contract period, the higher are the rents generated by his know-how, and the higher are the initial fees. The franchisor's specific investments depend on the initial stock of assets because a franchise with a high brand name capital requires more system-specific investments to assure a certain franchise value compared to a franchise with a low brand name capital. These results are consistent with Dnes (1992, 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. In addition, a further proposition about the relationship between fees and royalties can be derived: The higher the franchisor's brand name assets, the higher are his intangible investments during the contract period, and the higher are the fees and royalties as residual income generated by the system-specific know-how. Therefore, the property rights approach proposes a positive relationship between initial fees and royalties (Windsperger, 2001). This view is not compatible with the agency theory (Lafontaine and Slade, 1998) that predicts a negative relationship.

(II) Ownership surrogates

Exclusive dealing clause. If the franchisee sells competing products that are not part of the franchise network, the franchisor's incentive to undertake relationship-specific investments will be reduced because the franchisee can benefit from the franchisor's investments without paying fees or royalties. In this case, the franchisees appropriate some of the value of the franchisor's investment in system-specific assets. One solution of this interbrand free rider problem is to forbid the franchisee to sell competing products or opening up additional outlets. Exclusive dealing arrangements are used to prevent franchisees from appropriating the benefits of the franchisor's intangible investments and therefore provide the franchisor with a property right to his marketing investment (Marvel, 1982, p. 7).

Exclusive territory arrangement. If the franchisor wants to encourage sales efforts by franchisees that increase the demand for the product and hence the residual surplus, the franchisor has to design contract terms that enable the franchisee to reap the benefits of his intangible investments (Muris et al., 1992, pp. 96–98). Exclusive territory and customer terms create a property right in intangible assets so that the franchisee can earn returns on investments in local advertising and services. In addition, territorial restraints – especially combined with resale price maintenance – reduce intrabrand free riding and encourage the franchisee to undertake intangible investments (Mathewson and Winter, 1998). Furthermore, the franchisor can transfer the right to control network entry to the franchisees when the investments in local assets are very crucial for the success of the system (Mathewson and Winter, 1994). However, this weakens the franchisor's ownership position at the local markets because he cannot increase the proportion of company-owned outlets.

Tying arrangement. Tying arrangements are frequently used when quality control through quality specifications is very costly (Klein and Saft, 1985). The more important the franchisor's brand name assets for the creation of the residual surplus, the more critical is quality control to protect his intangible investments in the franchise network. Since quality control through quality specification is not economically feasible under a high degree of asset intangibility, the only measure to maintain sufficient quality control is to require that the franchisee buys his inputs from the franchisor or the franchisor-approved suppliers (McCarthy, 1970). In this case, the tying clause provides an incentive for the franchisor to undertake intangible investments in his franchise business by ensuring that a minimum quality standard is maintained at all franchised outlets. Including royalties in the supply price of input goods can increase this incentive effect. On the other hand, hidden royalties may lower the franchisee's investment incentive.

Resale price maintenance. Competition among franchisees can reduce the investment incentives by creating an externality among franchisees: The sales efforts provided by one franchisee may directly benefit other franchisees. Since the franchisee who provides the local services and promotion must charge a higher price to cover his costs, customers buy from another franchisee whose cost and price are lower because he does not make the requisite intangible investments in sales efforts. Consequently, this free riding may affect the franchisor's brand name by debasing the quality of the product or service (Goldberg, 1982, p. 461). Resale price maintenance eliminates this intrabrand free rider effect by reducing consumers' incentives to buy from franchisees that do not provide the local marketing investments, such as promotion and after-sale services (Mathewson and Winter, 1986, p. 214). Consequently, the resale price maintenance agreement prevents the franchisees from free riding and creates an incentive for the franchisor to undertake important intangible marketing investments. In addition, resale price maintenance may increase the franchisee's incentive to undertake intangible investments in local services due to the reduction of free riding risk.

Lease control. Under lease control of the franchisor the franchisee hands over the business premises upon leaving the network. Due to the quality control and hostage function it provides high incentives for the franchisor to undertake specific investments (Klein, 1980). In addition, this hostage effect is positively related to the franchisee's specific investments (Bercovitz, 1999). If, however, the hostages posted by the franchisee are of value to the franchisor, the franchisee's holdup-risk may rise due to his high non-salvageable investments (Dnes, 1993, pp. 373–374). On the other hand, the franchisee will be reluctant to invest in specific local assets unless he expects that any future residual surplus in his lease will be generated for his own account (Adams, Jones, 1997, p. 260). Therefore, when franchisee's outlet-specific investments are very important relative to the franchisor's system-specific investments for the generation of residual surplus, lease rights should be transferred to the franchisee to increase his motivation to undertake specific investments.

Approval and buy back rights. When a franchised business is sold the franchisor retains the right to approve the purchaser, frequently he has a right of first refusal to acquire the franchise. The approval and buy back rights ensure that the franchisee cannot expropriate the quasi rents generated by the franchisor's intangible assets. In addition, the right of first refusals allows the franchisor total control over an outlet by matching any third-party offer for it (Dnes, 1993, p. 380). Therefore these rights "assure that the franchisor can recapture a franchise at renewal time without any capitalized brand name value accruing to the franchisee" (Caves and Murphy, 1976, p. 580). On the other hand, approval and buy back rights weaken franchisee's ownership position because he cannot fully appropriate the quasi-rents generated by the outlet-specific investments.

Alienation rights. When the franchise business is sold, franchisee retains the right to transfer outlet ownership. In addition, when the franchisee dies, the contract may specify the right to transfer outlet ownership to relatives of the franchisee. These rights provide an incentive for the franchisee to undertake outlet-specific investments by expecting to capture the rents generated by his investments during the contract period. On the other hand, franchisee's alienation rights may reduce the franchisor's investment incentive because he cannot fully appropriate the rents created by the combined use of his system-specific assets and the franchisee's local market assets.

In sum, in franchise contracting ownership rights include both residual income rights (royalties/fees) and ownership surrogates: The franchisor's incentive to invest in intangible knowledge assets (system-specific know-how) is higher, the higher the royalties are and the more the diluted residual income rights are compensated by ownership surrogates, such as tying arrangements, resale price maintenance, exclusivity clauses, lease control, buy back, approval and termination rights. On the other hand, the franchisee's incentive to invest in intangible knowledge assets (local market know-how) is higher the lower the royalties are, and the more ownership surrogates are included in the franchise agreement, such as exclusive territory arrangement, exclusive customer clauses, alienation rights and the right to control network entry.

3.2.2. *Interaction between Residual Income Rights and Ownership Surrogates*

Since ownership rights are diluted in franchise relationships ownership surrogates mitigate the disincentive effect of the diluted residual income rights. For instance, the disincentive effect of franchisee's diluted residual income rights may be mitigated by territorial restraints, exclusive customer clause or the right to control network entry. On the other hand, tying arrangements, resale price maintenance, lease control, exclusive dealing clauses, buy back arrangement as well as approval and termination rights may compensate the franchisor's diluted residual income rights. Therefore, ownership surrogates in franchise contracts serve as substitute to compensate the disincentive effect of diluted residual income rights. Hence the interaction effect between royalties and the franchisee's proportion of ownership surrogates is positive and the interaction between royalties and the franchisor's proportion of ownership surrogates is negative. In addition, the substitution effect between residual income rights and ownership surrogates depends on the importance of intangible system-specific assets of the franchisor relative to the franchisee's local market assets. The negative interaction between royalties and the franchisor's proportion of ownership surrogates is larger and the positive interaction between royalties and the franchisee's proportion of ownership surrogates is lower, the more important the franchisor's system-specific assets are for the creation of the residual surplus relative to the franchisee's local market assets. For instance, if the know-how position of the franchisor is very strong, he wants to have a large fraction of residual income rights (high royalties) of the network. We assume that the franchisor lowers the royalty rate to increase the franchisee's investment incentive. In this case, the reduction of royalties must be compensated by a larger increase of the franchisor's proportion of ownership surrogates than under a relatively weak know-how position of the franchisor.

3.3. THE PROPERTY RIGHTS HYPOTHESES

According to the complementarity view of organizational architecture (Milgrom and Roberts, 1995; Brickley et al., 1995) the residual income generating effect of the transfer of residual decision rights is enhanced by allocating ownership rights to those that are best able to maximize the residual income stream. This means that the franchisor and the franchisee's motivation to use the knowledge assets to generate the residual income stream are increased if the residual decision rights are complemented by the transfer of ownership rights. Consequently, an efficient property rights structure in franchise relationships implies colocation of knowledge assets and residual decision rights and complementarity between residual decision and ownership rights. In addition, due to the dilution of the franchisor's and franchisee's residual income rights, ownership surrogates serve as substitutes to compensate the disincentive effect of the diluted residual income rights. The relationship between knowledge assets, residual decision and ownership rights is illustrated by the following example. We compare two cases: In *case I* the franchisor has a large fraction of intangible knowledge assets (system-specific assets) and the local market assets of the franchisee are less intangible. Due to the franchisor's dominant know-how position he should get a large fraction of residual decision rights and complementary ownership rights to increase his incentive to invest in intangible system-specific assets. Hence the decision making power is relatively centralized. In *case II* both the intangible knowledge assets of the franchisor and franchisee generate a high residual income stream. Hence the residual decision rights must be assigned according to the franchisor's and franchisee's knowhow position. Hence the decision making power is more decentralized than in *case I*. In addition, the franchisee should also have a relatively higher portion of ownership rights.

If these complementarity conditions are not met, the following inefficiencies may arise:

- Misfit between knowledge assets and decision rights: In *case I* this means that the decision power is decentralized although the franchisor has a large portion of intangible knowledge assets in the network that generate the residual income stream. In *case II* a misfit between knowledge assets and decision rights means that the decision power is centralized although the franchisee has a high portion of intangible knowledge assets. Due to this incompatibility between knowledge assets and residual decision rights the residual surplus cannot be maximized.
- Misfit between residual decision and ownership rights: Due to the franchisor's know-how dominance the franchising network is relatively centralized in *case I*. At the same time the franchisor's portion of ownership rights is too low to provide efficient incentives to invest in intangible system-specific assets. In *case II* the franchising network is more decentralized under a strong know-how position of the franchisee. However, the franchisee may not fully use his local know-how advantage to maximize the ex post surplus because he obtains only a small fraction of the residual income stream.

As a result, the following testable hypotheses can be derived from the property rights approach (see Figure 1):

H1: Co-location between knowledge assets and residual decision rights

H1a: The higher the intangible knowledge assets of the franchisor are relative to the local market assets of the franchisee, the higher is the franchisor's portion of residual decision rights and the more centralized is the franchising network.

H1b: The higher the intangible local market assets of the franchisee are relative to the franchisor's brand name assets, the higher is the franchisee's portion of residual decision rights and the more decentralized is the franchising network.

H2: Complementarity between residual decision and ownership rights

H2a: The higher the franchisor's portion of residual decision rights, the higher the franchisor's portion of ownership rights. The franchisor's ownership

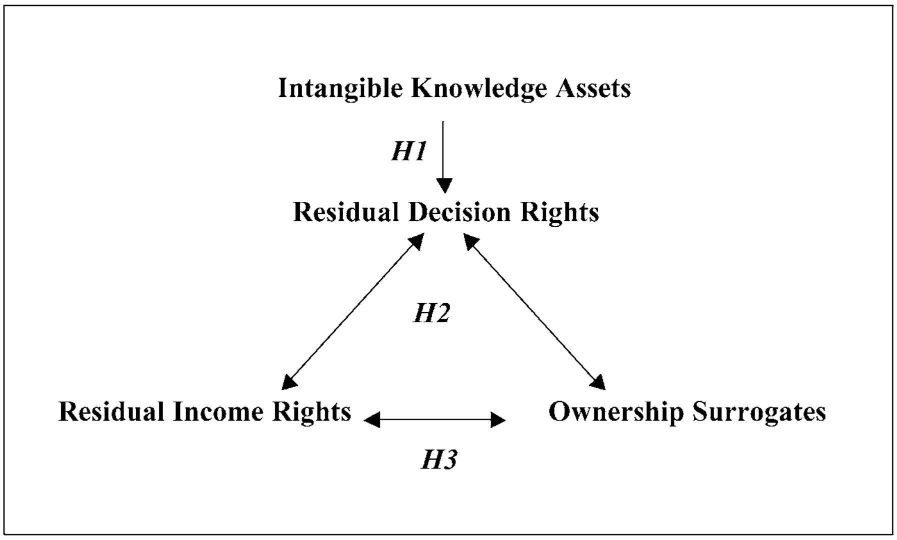

Figure 1. Property rights hypotheses of the franchise relationship.

position is strengthened by relatively high royalties and the following ownership surrogates: Resale price maintenance, exclusive dealing clauses, tying arrangements, lease control, buy back and approval rights.

H2b: The higher the franchisee's portion of residual decision rights, the more ownership rights are assigned to him. The franchisee's ownership position is improved by relatively low royalties and the following ownership surrogates: Exclusive territory arrangements, exclusive customer clauses, lease and alienation rights and the right to control network entry as ownership surrogates.

H3: Substitutability between residual income rights and ownership surrogates Royalties are negatively related with the franchisor's proportion of ownership surrogates and positively related with the franchisee's proportion of ownership surrogates.

4. Empirical Evidence from the German Franchise Sector

The empirical setting for testing these hypotheses is the franchise sector in Germany. The data set was collected in 1998. After several preliminary steps in questionnaire development and refinement, including in-depth interviews with franchisors and representatives of the German 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 485 franchisors in Germany. We received 153 responses with a response rate of 31,5%. To trace non-response bias, it was investigated whether the results obtained from analysis are driven by differences between the group of respondents and the group of nonrespondents. Non-respondent bias reduces the external validity of the study (Churchill, 1995). A T-test was conducted to find out whether several firm-related factors of the responding franchisors differed significantly from that of the non-responding firms. The non-responding group (N = 64) includes the firms, which completed the questionnaire four weeks after the first group (N = 89). The null hypothesis that the group means are equal could not be rejected.

4.1. MEASURES OF VARIABLES

4.1.1. *Knowledge assets*

Knowledge assets refer to the intangible (non-contractible) system-specific assets of the franchisor and the intangible outlet-specific assets of the franchisee. (a) Franchisor's intangible knowledge assets: Three proxies for the franchisor's intangible knowledge assets are used: Annual training and annual meeting days, and the number of annual outlet visits. Annual training and meeting days and the number of visits (as personal knowledge transfer mechanisms) are indicators of the importance of the franchisor's system-specific know-how to generate the residual income of the network. The assumption behind these measures is that as the intangible knowledge assets increase, so does the number of days of face-to-face interaction (Simonin, 1999; Johnson and Lundvall, 2001), and hence the more personal knowledge transfer methods are used, such as meetings, coaching and personal training (see also Daft and Lengel, 1984, 1986). A similar measurement concept was used by Darr et al. (1995) and Argote (2000). (b) Franchisee's intangible knowledge assets: The franchisee's intangible knowledge assets refer to the local market know-how as franchisee's local marketing, quality control as well as innovation capabilities (Wicking, 1995; Sorenson and Sorensen, 2001) that cannot be easily acquired by the franchisor. 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. We used a three-item scale to measure the local know-how advantage of the franchisee compared to the manager of a company-owned outlet (see Appendix). The three-item measure was extracted by employing factor analysis. All variables had a loading in excess of 0,694. The total amount of variance explained by the factor solution is 56,313 percent. The reliability of this scale was assessed by Cronbach's alpha (0,61) which is compatible with the generally agreed upon lower limit of 0,6 for exploratory research (Hair et al., 1998).

4.1.2. *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 indicator of decision rights addresses the extent to which residual decisions are made by the franchisor and the franchisees. Hence it is a measure of centralization/decentralization 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 and the higher is the degree of decentralization of the franchising network. Consequently, the decision index varies positively with the degree of decentralization and negatively with the degree of centralization of decision making.

4.1.3. *Ownership rights*

Ownership rights refer to the allocation of residual income rights and ownership surrogates. Residual income rights are measured by the royalty rate (as percentage of sales). Ownership surrogates refer to the following contractual provisions: The first group are ownership surrogates that primarily increase franchisor's investment incentive: Tying clause, exclusive dealing clause, resale price maintenance, lease control, approval and buy back rights. The second group are ownership surrogates that primarily strengthen franchisee's investment incentive: Exclusive territory arrangements, exclusive customer clause, franchisee's lease rights and alienation rights. In order to be able to measure the relationship between ownership surrogates and residual decision and residual income rights, we use the relative number of the franchisor's and franchisee's ownership surrogates.

4.2. RESULTS

4.2.1. *Descriptive Statistics*

Table I, II and III presents descriptive data for the sample. The structure of decision rights is presented in Table II. The results reveal that human resource decisions, investment and finance decisions and advertising decisions are more decentralized and procurement, price, product and accounting decisions are more centralized. One may conclude that there is a tendency toward decentralization of decision making in the network. The measures of ownership rights (royalties, initial fees and ownership surrogates) are presented in Table I and III: The mean of royalties is 4,91% and the mean of initial fees (percentage of sales) is 5,13. More than 60% of the franchise contracts include exclusive dealing clauses, resale price maintenance, alienation rights and exclusive territory clauses.

4.2.2. *Test of Hypotheses*

4.2.2.1. *Decision rights-hypothesis (H1).* According to our property rights view of the governance structure, the franchisor's knowledge asset indicators are negatively correlated and the franchisee's knowledge asset indicator is positively correlated

Table I. Indicators of the German franchise sector

	N	Minimum	Maximum	Mean	Standard deviation
Annual training days of the franchisees (ADAY)	143	0	80	8,154	9,336
Annual meeting days (MEET)	148	0	150	6,6	12,52
Number of visits a Year (VIS)	150	0	50	5,65	5,686
Initial fees (FEE) (percentage of sales)	123	0	42,00	5,139	8,0211
Royalties (ROY) (percentage of sales)	150	0	17,00	4,9118	3,7276
Number of outlets (OUT)	153	2	1378	85,907	178,7873
Franchisee's innovation advantage	135	1	5	3,36	1,37
Franchisee's quality control advantage	135	1	5	2,62	1,35
Franchisee's local market knowledge advantage	133	1	5	3,87	1,3
Annual sales volume of an outlet (SALE) (US $)	121	53846	5384611	592940	923077

Table II. Decision rights in the German franchise sector

	N	Minimum	Maximum	Mean	Standard deviation
Procurement decision	153	1	7	4,2	1,96
Product decision	152	1	7	4,8	1,95
Accounting system decision	152	1	7	4,79	2,18
Price decision	153	1	7	5,56	2,01
Advertising decision	152	1	7	5,64	1,58
Employees' training decision	153	1	7	6,81	0,8
Investment decision	153	2	7	5,82	1,78
Financial decision	153	1	7	5,93	1,82
Recruiting decision	153	1	7	5,82	1,60

with the index of residual decision rights. To test the hypothesis we conducted a logistic regression analysis with the index of decision rights as independent variable (Demaris, 1992). 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 three out of 153 franchise systems realized a decision index smaller than 3 we deleted these systems from the data set. Hence the value of the independent variable (DR) is 0 for more centralized systems and 1 for more decentralized systems. The explanatory variables refer to annual training days (ADAY), annual number of visits (VIS), annual meeting days (MEET), franchisee's local market know-how

Table III. Ownership surrogates in the German franchise systems

	N	Relative frequencies
Resale price maintenance (obligatory)	153	12
Exclusive customer clause	152	42
Tie-in arrangement	152	36
Franchisor's lease control	150	44
Franchisee's lease right	149	56
Buck back and approval rights	148	67
Exclusive dealing clause	153	79
Resale price maintenance (facultative)	153	61
Alienation right	151	72
Exclusive territory clause	153	78

advantage (LMA), and the sectoral dummy variable (SEC) as control variable. 0 refers to product franchising and 1 to the services sector. Since – compared to services firms – product franchising firms are characterized by a higher fraction of noncontractible system-specific assets of the franchisor relative to the intangible local market assets of the franchisees, a higher proportion of residual decision rights should be transferred to the franchisor. Therefore we estimate the following regression equation:

$$\mathrm{DR} = \alpha + \beta_1\mathrm{ADAY} + \beta_2\mathrm{VIS} + \beta_3\mathrm{MEET} + \beta_4\mathrm{LMA} + \beta_5\mathrm{SEC}$$

Based on our property rights hypothesis, DR varies negatively with the annual training days, the number of visits and the meeting days (ADAY, VIS, MEET). In addition, DR varies positively with the franchisee's local market know-how advantage (LMA). Further, we controlled for the sectoral dummy variable (SEC) because the know-how intensity of the franchising firms varies with sectoral characteristics (Windsperger, 2002). 0 refers to product franchising and 1 to the services sector.

Results from the logistic regression analysis are provided in Table IV. The fit of the model was tested based on the log of the likelihood ratio. The chi-square value of 16,053 is significant at $p < 0{,}01$ thus rejecting the null hypothesis that the estimated coefficients are zero. The overall fit of the model represented by a significant chi-square and his predictive ability (76,8% of the observations are correctly classified) point to the appropriateness of the set of variables in predicting the degree of centralization of residual decision rights in franchising networks. The coefficient of annual training days (ADAY) is significant and consistent with our property rights hypothesis. In addition, the coefficient of annual visits (VIS) is very weakly significant, and the coefficient of annual meeting days (MEET) is not significant.

Table IV. Logistic regression results

MODEL Dependent variable: DR (0 = More centralized systems; 1 = More decentralized systems)	
Independent variables	Coefficients
Intercept	+1,19**
	(0,442)
Annual Training Days (ADAY)	–0,053**
	(0,025)
Number of Visits (VIS)	–0,073*
	(0,041)
Annual Meeting Days (MEET)	+0,016
	(0,022)
Local Market Knowledge Assets (LMA)	+0,095
	(0,232)
Sector (SEC)	+1,146**
	(0,466)
Model statistics: N = 124 Model Chi-square = 16,053 ($p < 0,01$) –2 Log likelihood = 125,561 Correct classification % = 76,8 Nagelkerke R square = 0,178	

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

On the other hand, the coefficient of the local market knowledge assets (LMA) is positive but not significant. Further, the coefficient of the sectoral variable (SEC) is in the expected direction and statistically significant indicating that the franchisee's local market assets are more important for the creation of residual income stream in the services sector than in the product franchising sector. Finally colinearity diagnosis was performed using correlations between the independent variables. No colinearity indication was found. In sum, our regression results weakly support our property rights hypothesis. They show that the intangible system-specific assets have the main influence on the allocation of residual decision rights.

4.2.2.2. *Complementarities and substitutabilities between decision and ownership rights (H2, H3).* According to our property rights hypotheses (H2, H3), residual decision and ownership rights (royalties and ownership surrogates) are complements, and residual income rights and ownership surrogates are substitutes. Several studies (Arora and Gambaredella, 1990; Ichniowski et al., 1997;

Table V. Complementarities and substitutabilities in German franchise agreement

Hypotheses	Correlations Between decision rights, residual income rights and ownership surrogates (controlling for the franchisor's system-specific assets and the franchisee's local market assets indicators, and annual sales volume)
H2: Correlations between	
Decision Index and	
Royalties	+0,064
Franchisor's proportion of	–0,2097**
Ownership surrogates	
H3: Correlations between	
Royalties and	
Franchisor's proportion of	
ownership surrogates	–0,177*

**P < 0,05; *P < 0,1.

Laursen and Mankhe, 2000; Hitt and Brynjolffson, 1997) already empirically measured complementarities between organizational variables. In the following we apply the correlation analysis (Arora and Gambardella 1990; Holmstrom and Milgrom, 1994) for examining possible complementarities/substitutabilities between residual decision rights, residual income rights and ownership surrogates in franchising networks. Since a simple correlation might be spurious, because a common set of factors influences the governance structure variables, we compute conditional correlations between decision and ownership rights variables (Hitt and Brynjolffson, 1997). Therefore correlation analysis is done, controlling for the franchisor's and franchisee's knowledge asset indicators and the annual sales volume of an outlet. The results of the correlation analysis are summarized in Table V.

The data provide weak support for the hypotheses 2 and 3. Hypothesis 2 that franchise systems with a higher portion of ownership rights of the franchisor are more centralized and franchise systems with a higher portion of ownership rights of the franchisee are more decentralized is only partly corroborated. The correlation coefficient between the franchisor's proportion of ownership surrogates and the decision index is negative and significant. This result suggests that residual decision rights and ownership surrogates are complements. On the other hand, the relationship between royalties and residual decision rights are not significant. In addition, the data provide weak support for hypothesis 3. The correlation between the franchisor's proportion of ownership surrogates and royalties is negative and very slightly significant.

4.3. DISCUSSION

This paper develops a property rights view of complementarities and substitutabilities between decision and ownership rights in franchise contracting. According to the complementarity view, the residual income generating effect of decision rights is enhanced by allocating ownership rights (residual income rights and ownership surrogates) to those that are best able to maximize the residual income stream. Hence if the franchisor's intangible assets are very important for the creation of residual surplus, he should get a large fraction of residual decision and complementary ownership rights. Since ownership rights are diluted in franchise relationships, ownership surrogates are included in franchise contracts. Under a property rights view they compensate the disincentive effect of the diluted residual income rights. This study presents the first empirical evidence from the German franchise sector that differences in the allocation of residual decision rights may be primarily attributed to differences in the distribution of franchisor's knowledge assets. In addition, our results also suggest that residual decision rights and ownership surrogates are complements, and residual income rights (royalties) and ownership surrogates are substitutes. On the other hand, the empirical relationship between royalties and residual decision rights is not consistent with our hypothesis. In sum, we may conclude that our empirical results are partly supportive of our property rights hypotheses on complementarities and substitutabilities in franchise contracting. This weak support of the hypotheses may be due to several limitations of the study: First, the nonsignificance of the franchisee's local market assets might result from perceptional errors because this measure was based on the franchisors' opinion. In future research the operationalization of franchisee's knowledge assets should be improved by collecting data from franchisees. Second, the measures for the franchisor's intangible assets should be improved by using a multi-item scale as indicator of the system-specific know-how. Third, the interaction between residual decision and ownership rights may require the use of a simultaneous equation model with decision and ownership rights as endogenous variables (Greene, 2000). Moreover, future research has to investigate the efficiency consequences of complementarities and substitutabilities in franchise contracting. Our property rights view suggests a positive relationship between the performance of the franchise network, on the one hand, and the complementarity between residual decision and ownership rights as well as the substitutability between residual income rights and ownership surrogates, on the other hand.

This study also has managerial implications. Franchisors can benefit from a deeper understanding of the relationship between knowledge assets, residual decision rights and ownership rights in franchise relationships. The most important message is: Residual decision rights and ownership rights are complements in franchise contracting. For instance, high franchisee's outlet-specific capabilities under a high degree of decentralization of the network and low royalties are likely to generate a high residual surplus because the franchisees efficiently use their local market assets due to the assigned residual income rights. On the other hand, high franchisor's system-specific capabilities under a low degree of centralization and low royalties are unlikely to maximize the residual income stream because the franchisor is not motivated to undertake high system-specific investments.

5. Conclusions

The paper presents a property rights analysis of the relationship between residual decision rights, residual income rights and ownership surrogates in franchise agreements. We pursued the following objective with this research. First, we developed a property rights view of the structure of residual decision and ownership rights in franchise contracting by creating a more holistic approach that takes into account the interactions between the multiple elements in the contract design. This is in contrast with much of previous work in franchising that focused on the explanation of the fee structure and other contractual provisions without viewing the contract design as an *institutional entity*. Second, we presented empirical results by using data collected in the German franchise sector. Although our empirical study has some limitations, the data suggest that residual decision rights and ownership surrogates are complements, and residual income rights and ownership surrogates are substitutes in franchise contracting.

Appendix: Measures of Variables

Royalties (ROY): Franchisee's payment of royalties as percentage of sales
Annual Training Days (ADAY): Number of franchisee's annual training days
Number of Annual Visits (VIS): Franchisor's visits of the franchisees' Outlets
Annual Meeting Days (MEET): Number of meetings between the franchisor and the franchisees
Sales Volume (SALE): Average annual sales volume of an outlet
Franchisee's Intangible Knowledge Assets (LMA):
(three items; Cronbach alpha = 0,61): Franchisee's know-how advantage compared to the manager of a franchisor-owned outlet evaluated by the franchisor
(no advantage 1–5 very large advantage)

1. Innovation
2. Local market knowledge
3. Quality control

Number of Outlets (OUT): Number of franchised and company-owned outlets
Sectors (SEC): 0 = Product franchising; 1 = Services sector
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. Price decision
5. Advertising decision
6. Employees' training decision
7. Investment and financial decision
8. Recruiting decision

Relative Number of Franchisor's Ownership Surrogates (OR):

Ownership Surrogates of the Franchisor/Total Number of Ownership Surrogates of the Franchisor and the Franchisees

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