An Incomplete Contracting Model of Dual Distribution in Franchising

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Abstract

Dual distribution in franchising is addressed from an incomplete contracting perspective. We explicitly model cooperative (dual distribution) franchising as an organizational form, next to wholly-owned, wholly-franchised, and dual distribution franchise systems. Key conclusions of the model are: (1) dual distribution as an efficient governance mechanism does not depend on heterogeneous downstream outlets, and (2) whether dual distribution or some other organizational form is efficient depends on the size of the benefits to dual distribution relative to the parties’ costs of investing.

Keywords: Franchising; Dual distribution; Cooperative franchising; Incomplete contracting

Introduction

Franchising has been the big success story in the second half of this century—an entirely new form of organization that has spread rapidly. But it has been running into problems, where growth has slowed and the imbalance in power has allowed franchisers to exploit franchisees. The law has began to protect franchisees in the same way as employees, but an alternative and perhaps better solution could be to have the franchise become a cooperative with diluted incentives for exploiting the membership.' Holmström (1999, p. 416)

Dual distribution franchising is most widespread of these governance structures. Evidence regarding dual distribution franchising shows that it is stable over time, i.e. the percentage of franchised units remains fixed after the early years in franchising. Lafontaine and Shaw (2005) show that the percentage of franchised outlets of experienced franchisors is about 85% on average. There are substantial cross- and within-sector differences. For example, restaurant chains have a higher percentage of company-owned outlets on average than the construction and maintenance sectors. For example, the car rental companies Hertz and National have high levels of company-owned (66% and 40%, respectively), while Budget, Thrifty, and Dollar have much lower levels of company ownership. Franchises establish a stable percentage usually after seven years. Their empirical results show also a strong positive relationship between brand value and the percentage of company-owned outlets. Our equilibrium model is addressing these features of established franchises. One of the main contributions of this article is to...
delineate the circumstances when dual distribution franchising is the unique efficient governance structure.1

These governance structures in franchising are well known ways of organizing franchising, like the public corporation being the dominant way of organizing production in the economy at large (Rajan and Zingales 2000). However, other governance structures are adopted in the economy, like supplier cooperatives, worker cooperatives, and nonprofits (Hansmann 1996). Franchising shows also more variety than the above three types. For example, franchisees own the brand and the business format of Best Western hotels. Other examples are ACE Hardware, True Value hardware, and Straw Hat Pizza. These cooperative (dual distribution) franchising governance structures are not limited to the USA. For example, drug store DA, retailers Intres and Euretco (fashion, sports, furniture), Primera convenience stores, Top Movers and Motoport are examples of cooperative franchises in the Netherlands. Retail chain Intermarché in France has members and franchisees developing franchising. It consists of supermarkets, some hypermarkets and other stores specialized in clothes (Vêti), fast food (Restaumarché), Do It Yourself (Bricomarché), and hard discount stores (Netto). Système U in France consists of convenience self-service stores (Marché U), supermarkets (Super U) and some hypermarkets (Hyper U). These companies are cooperatives with a bottom up governance system. Intersport and 3e AG are cooperative franchises in Austria. In these cooperative franchise chains, either all outlets together own the brand and the business format, or some outlets own the brand and the business format. We label the former as cooperative franchising and the latter as cooperative dual distribution franchising. Another main contribution of this article is that we explicitly model cooperative (dual distribution) franchising, which has received little attention in organizational economics.

A standard way of delineating a governance structure is to distinguish income rights, addressing the question ‘How are benefits and costs allocated?’, and decision rights, addressing the question ‘Who has authority or control?’ (Hansmann 1996). The value of an efficient governance structure is that it provides all parties with incentives to invest in such a way that the entire franchise system generates the highest value. We focus on changes in the structure of decision rights as an alternative to changes in royalty rates (income rights) and legal protections for franchisees for achieving satisfactory levels of franchisees’ investment and motivation. The choice of governance structure is determined by answering two questions: What is the incentive to invest for each party in the franchise system in each governance structure? Which governance structures are efficient under which circumstances?

These questions will be addressed in an incomplete contracting model with transaction specific investments and dual distribution benefits. We motivate these aspects of our analysis now. Incomplete contracting theory starts with the observation that there are limits to contracting due to the complexity of the real world, like the complexity of a transaction or the vagueness of language. It is too costly to describe all relevant contingencies regarding the exchange ex ante in a contract. Contracts are therefore necessarily incomplete.2 Meaningful contracts can only consist of clauses which are observable and verifiable by a third party. Clauses which are observable but not verifiable have to be left out of the contract because they are not enforceable. Contractual incompleteness entails that it is hard to verify ex post that a party has made an investment and the associated costs. This occurs with specific, irreversible (or sunk) investments, i.e. investments which have a significant higher value within the relationship than in alternative uses (Klein, Crawford, and Alchian 1978). These investments occur in so many ways that various types are distinguished (Williamson 1985): site-specific investments, human asset specificity, physical site asset specificity, dedicated assets, and brand names. Examples in franchising are local advertising and customer service, quality control, human resource management, and product innovation by the franchisees (Sørensen and Sørensen 2001), and the franchisor investing in systemspecific assets like know-how and the brand name (Klein and Leffler 1981; Norton 1988). Specificity of investments entails that the costs of investment are paid by the investing party.

The incompleteness of contracts causes problems when the parties involved in the exchange make specific, irreversible investments. It will give rise to ex post opportunistic behavior regarding the remaining surplus. The reason is that the interests of the franchisees and the franchisor are usually not completely aligned with the interests of the entire franchise system. Illustrations are the concerns about free-riding by franchisees on the brand name and territorial encroachment of franchisors adding new units of their brand proximately to their franchisees’ existing units (Kalnins 2004). It will therefore be assumed that each party maximizes its own profit, not the profits of the franchise system.

The investor recognizes his weak bargaining position once the investment has been made, i.e. he anticipates that the other party may take advantage of the contractual incompleteness by claiming a larger share of the ex post surplus than initially agreed upon. He may decide not to invest in the project generating the highest surplus. This is the (inefficient) hold-up problem (Klein, Crawford, and Alchian 1978). A suitable choice of governance structure mitigates or even eliminates the hold-up problem. The allocation of decision rights entails a distribution of bargaining power because it allocates ownership over assets to the franchisor and the franchisees. This has an impact on the incentive

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1 Multiple channels of distribution have been studied before, like the coexistence of employees and subcontractors to perform trucking services (Baker and Hubbard 2004), the coexistence of spot and contract markets in many agricultural markets (Hendrikse 2007), and the marketing literature on dual channels (Chiang, Chhajed, and Hess 2003; Liu and Zhang 2006; Purohit 1997; Zettelmeyer 2000).

2 There are sometimes simple contracts which may deal with incompleteness, e.g. Nöldeke and Schmidt (1995), but there are a number of reasons why in practice complete contracts can be limited. Tirole (1999) and Maskin and Tirole (1999) discuss the indescribability of contingencies, renegotiation, collusion, wealth constraints, enforcement by human beings, and ex ante asymmetric information.

Notice that decision rights are relevant next to income rights due to the incompleteness of contracts. Incomplete contracts are completed by the allocation of authority in order to decide in circumstances not covered by the contract. Decision rights matter therefore only for the incentive to invest in non-verifiable investments. Windsperger and Dant (2006) provide support for this perspective in a franchising context. Maness (1996) formulates an incomplete contracting model with a focus on income rights. We focus on the allocation of decision rights in franchising and its impact on the investment in specific assets, like the brand name and local market knowledge. Decision rights in franchising are emphasized by Combs, Michael, and Castrogiovanni (2004, p. 907) when they characterize a franchise as ‘... one firm (the franchisor) sells the right to market goods or services under its brand name and using its business practices to a second firm (the franchisee)’. His definition stresses the importance of the brand and the business format in franchising, and the right to market goods or services.

An important aspect of our model is that there are unique benefits related to dual distribution. Dual distribution benefits are not specific to certain outlets, but specific to the composition of the portfolio of outlets in the franchise system, i.e. it is a systemic or synergistic effect. They arise only when there are company owned outlets as well as outlets run by entrepreneurs. We illustrate the systemic effect with an example. Organizational learning increases performance when there is exploitation as well as exploration in the franchise system (Bradach 1997; Sorensen and Sorensen 2001). An organization engaged in only exploration looses economies of scale, while an organization devoted to exploitation misses opportunities due to changes in the environment. A dual distribution franchise is doing both types of learning because incentives are usually structured in such a way that the company-owned units refine existing routines, i.e. exploit, while entrepreneurs running franchises explore more new resources and novel routines. Company-owned units and franchise units therefore complement each other.

There are many sources of dual distribution benefits. The appendix provides an overview of the literature that supports our claim that there are dual distribution benefits under certain conditions. (The appendix provides also a general formulation of dual distribution benefits in order to capture cross-investments.) The dual distribution benefit is modeled as an exogenous parameter. This parameter is to be interpreted as a reduced form of an underlying model, which can be specified in various ways as witnessed by the articles reviewed in the appendix. Another reason for modeling the dual distribution benefit as an exogenous parameter is to have the main focus on the impact of governance structure on the incentive to invest for the franchisor as well as for the franchisees.

The paper is organized as follows. We start with presenting the model. Next we determine the incentive to invest for each party in each governance structure. Subsequently the efficient governance structures are determined, and empirical and managerial implications are formulated. Finally, we conclude.

**Model**

This section presents an incomplete contracting, property rights model (Grossman and Hart 1986) regarding the interactions between governance structure and the investments of the parties in a franchise. (The standard property rights model builds on the transaction cost literature of Williamson (1985).) Four ingredients of the model will be specified: the decision-making parties, the investment and governance structure possibilities, the sequence of decisions, and the payoffs. We start with the decision-making parties. Fig. 1 presents a franchise system consisting of three parties. Party 1 is the franchisor considering an investment generating a revenue A for the franchise system, party 2 is a distributor considering an investment generating a revenue B for the franchise system, and party 3 is a distributor considering an investment generating a revenue C (>B) for the franchise system. Differences in the individual characteristics of the outlets and franchisees, e.g. geographic proximity to each other, have been important in agency models (Brickley and Dark 1987).

Each party has the choice between investing or not investing. (Tirole (1999) and Maskin and Tirole (1999) provide continuous versions of the investment decisions.) In order to determine the impact of governance structure on the incentive to invest of each party, seven governance structures are distinguished in Fig. 2. A cross in a box indicates that this party has the residual control/power/authority to decide in unforeseen circumstances. Governance structure I entails that all outlets are company owned, i.e. the franchisor has all the power. There are two dual distribution governance structures with the franchisor having power. The high value franchisee (i.e. party 3) is independent in governance structure II and has therefore power, while the low value franchisee (i.e. party 2) has no power. The power of the distributors is reversed in governance structure III. The entire chain is franchised in governance structure IV. Finally, three cooperative franchises are distinguished. A cooperative franchise is characterized by the assets of the franchisor being owned by one or both distributors. In governance structure V, the two stores have the ownership over the entire network. Governance structure V is called a cooperative franchise. There are two dual distribution cooperative franchises as well. The low value
the determination of governance structure. The basic logic of investment decisions is preceded by payoff (Gibbons 2005). Our model specifies the stages 1 and 2, while the stages should choose and the accompanying side payment, (v) parties received their share of the world, (iv) the parties negotiate over which decision the party in control of a decision right/ownership, (ii) parties simultaneously choose actions (here investments), (ii) parties negotiate over the actions and the state of the world, (iv) the parties negotiate over which decision the party in control should choose and the accompanying side payment, (v) parties received their payoff (Gibbons 2005). Our model specifies the stages 1 and 2, while the stages 3–5 are summarized by (the subgame perfect equilibrium) of these stages of the game. We illustrate this feature in the motivation of Fig. 3.

Halonen (2002) shows that joint ownership can be explained in repeated settings. Our model is to be positioned in the basic setting of the seminal contributions. The sequence of decisions is in line with the classic incomplete contracting models of Grossman and Hart (1986) and Hart and Moore (1990), i.e. investment decisions are preceded by the determination of governance structure. The basic logic of the model is that a party is willing to deteriorate its bargaining position (due to the incompleteness of contracts) by investing in specific assets in the second stage when it has received sufficient bargaining power/strength in the first stage in order to recoup its investment costs in the ex post renegotiation process. The allocation of bargaining power by the governance structure in the first stage determines the willingness to deteriorate ones bargaining position, and therefore the incentive to invest in the second stage.

The subgame perfect equilibrium of the model is determined by the method of backward induction (Dixit and Skeath 1999). It entails that the investment decisions in the second stage of the game are addressed first, given the choice of governance structure. A party invests when the payoff of not investing is less than the payoff of investing. Fig. 4 presents the payoffs of the subgame perfect equilibrium investment decisions of all parties in every governance structure for all possible values of $k_2$ and $k_1$ when $k_1 < A$. The case $k_1 > A$ is presented by replacing the payoff $A - k_1$ of the franchisor by 0 in all governance structures in Fig. 1. The case $k_1 < A$ will be addressed later. The first (second, third) number in the vector after each governance structure is the subgame perfect equilibrium payoff of party 1 when party $i$ invests, otherwise it is 0, where $i = 1, 2, 3$. Party 1 (2, 3) has to pay the entire cost $k_1$ ($k_2, k_3$) of investment 1 (2, 3) due to investment costs being non-contractionist. Fig. 3 provides an illustration of the specification of the payoffs when governance structure II is adopted. (The appendix motivates the specification of the stages and the payoffs of the game and presents the extensive form of the entire game.) The next two sections determine the equilibrium features of the above model.

**Equilibrium investment**

Three parties are taking investment decisions in the second stage of the game. The franchisor chooses first, subsequently party 2, and finally party 3. (It turns out that this sequence of decisions does not matter due to the payoffs of the players being additive.) The specification of the payoffs is involved because it entails specifying a number for each party for every investment decision in all governance structures. However, the idea behind the payoffs is simple. If party 1 (2, 3) invests, then value is created and the costs have to be paid. The distribution of value depends on the prevailing governance structure, i.e. the value generated by the asset goes to the owner of the asset. For example, if party 2 invests when governance structure II is adopted, then the value generated by this investment is captured by party 1 because party 1 owns the assets used by party 2. Finally, the dual distribution benefit is captured by an exogenous parameter $\sigma$. The value generated by party 2 (3) is multiplied by $\sigma$ in a dual distribution governance structure. The appendix provides a review of the literature regarding the various sources of dual distribution benefits. Additionally, a general way of modeling dual distribution benefits is provided. The model analyzed is one of the most simple versions of the general specification, but the analysis in this article extends to other specifications.

The cost of investment by party $i$ is $k_i$ when party $i$ invests, otherwise it is 0, where $i = 1, 2, 3$. Party 1 (2, 3) has to pay the entire cost $k_1$ ($k_2, k_3$) of investment 1 (2, 3) due to investment costs being non-contractionist. Fig. 3 provides an illustration of the specification of the payoffs when governance structure II is adopted. (The appendix motivates the specification of the stages and the payoffs of the game and presents the extensive form of the entire game.) The next two sections determine the equilibrium features of the above model.

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3 We have not presented governance structures with joint ownership of the franchise by the franchisor and a franchisee because they cannot be optimal in the seminal contributions of Grossman and Hart (1986) and Hart and Moore (1990). This seems counterfactual, but it turns out that various assumptions of these models can be relaxed such that joint ownership can be optimal. For example, Schmitz (2008) shows that joint ownership can be optimal when the assumption is relaxed that the ex post bargaining process is always efficient. Halonen (2002) shows that joint ownership can be explained in repeated settings. Our model is to be positioned in the basic setting of the seminal contributions.

4 The classical timing in incomplete contract models is: (i) parties negotiate over control of a decision right/ownership, (ii) parties simultaneously choose actions (here investments), (iii) both parties observe the actions and the state of the world, (iv) the parties negotiate over which decision the party in control should choose and the accompanying side payment, (v) parties received their payoff (Gibbons 2005). Our model specifies the stages 1 and 2, while the stages 3–5 are summarized by (the subgame perfect equilibrium) of these stages of the game. We illustrate this feature in the motivation of Fig. 3.
(2, 3). For example, if \( k_3 \leq \sigma C \) and governance structure II is adopted, then parties 1 and 3 will invest (resulting in positive payoffs \( A - k_1 \) and \( \sigma C - k_3 \), respectively) and party 2 does not invest (resulting in payoff 0).

Fig. 4 illustrates in various ways the general result that a party will only invest when the costs of investment are sufficiently low and at least some power is allocated to this party. For example, the franchisor does not invest in the governance structures V, VI, and VII, while there will be investment by the franchisor in the governance structures I–IV when \( k_1 \leq A \). Party 2 will never invest in governance structure II because no bargaining power is allocated to party 2. Party 3 recoups its investment costs in governance structure II only when \( k_3 \leq \sigma C \).

Efficient governance

This section formulates results regarding the efficient governance structure. There are trade-offs involved in the determination of the efficient governance structure because allocating more ownership rights to one party means taking ownership rights away from another party.

We start by distinguishing various kinds of efficiency. First best efficiency entails that the highest possible surplus is generated, i.e. each party invest when the benefits are larger than the costs. A governance structure is second best efficient when it generates a higher surplus than the alternatives. Finally, an investment decision is inefficient when a party should invest because the benefits are larger than the costs, but the party refrains from doing so because the governance structure will allocate too much of the benefits to somebody else.

Consider the case \( k_1 \leq A \). Generation of the highest surplus in a dual distribution governance structure requires that party 2 (3) should invest only when \( k_2 \leq \sigma B \) (\( k_2 \leq \sigma C \)), while party 1 should always invest. Fig. 3 shows that governance structure II is the unique first best efficient governance structure when \( k_2 > \sigma B \) and \( k_3 \leq \sigma C \). Allocating no power to party 2 is efficient because party 2 will not invest anyway. Similarly, governance structure III is the unique first best efficient governance structure when \( k_2 \leq \sigma B \) and \( k_3 > \sigma C \). The governance structures I–IV are first best efficient when \( k_2 > \sigma B \) and \( k_3 > \sigma C \). It is efficient that only party 1 invests. The governance structures I–IV allocate sufficient power to party 1 to elicit investment. Finally, there is no first best governance structure when \( k_2 \leq \sigma B \) and \( k_3 \leq \sigma C \). The reason is that a dual distribution governance structure is required to generate the first best outcome. However, a dual distribution governance structure has always one party without power, and therefore no incentive to invest, even when \( k_1 \leq A \), \( k_2 \leq \sigma B \) and \( k_3 \leq \sigma C \). We will start therefore with identifying the second best governance structures. Managerial implications are formulated next.

Second best governance structures

Second best efficiency of a governance structure entails that the sum of the payoffs of the three players in this governance structure is at least as high as the sum of the payoffs of the three players in any other governance structure. The second best efficient governance structures are determined by anticipating the equilibrium investment decisions for the case when there is a positive, but limited, dual distribution externality. The results are presented in Fig. 5. (The upward sloping line in Fig. 5 is characterized by \( k_3 = \sigma C (B - k_2) \).)

Various results emerge from Fig. 5. Governance structure I is efficient when the two distributors do not invest due to the high costs of their investments. If \( k_2 \geq \sigma B \) and \( k_3 \geq \sigma C \), then the franchisor is the only party investing. Governance structures I–IV are all efficient. (Nobody invests in the governance structures V–VII. They are inefficient.) However, if one of these inequalities does not hold, then I is always strictly dominated by either II, III or IV. The franchisor and at least one of the sellers will invest in the governance structures II–IV, whereas the franchisor is the only party investing in governance structure I. (Our simplifying assumption of no cross-investments is important for
this result. Appendix A1 specifies how cross-investments can be incorporated in the model.) Proposition 1 summarizes this result.

Proposition 1. A wholly company-owned franchise is never uniquely efficient when \( k_1 \leq A \) and \( 1 < \sigma < 1 + B/C \).

(Notice that the incentive to invest for the franchisor is strongest in a wholly company-owned franchise. So, the level of investment costs of the franchisor may be at such a high level that the franchisor only invests in a wholly company-owned franchise. It is immediate from the extensive form that a wholly company-owned franchise is the unique efficient governance structure when \( A + \max(\sigma B, \sigma C) < k_1 < A + B + C, k_2 > \sigma B, k_3 > \sigma C \) and \( 1 < \sigma < 1 + B/C \).

Second, governance structure III is the unique efficient governance structure in the north-west rectangle. Seller C never invests when \( k_3 > \sigma C \) because the costs of investment are too high, regardless the choice of governance structure. This is efficient. The franchisor does not invest in the cooperative franchises V–VII due to a lack of power. These governance structures are therefore inefficient. Governance structures I–IV are efficient in inducing the efficient decision by the franchisor. Party 2 does not invest in the governance structures I and II because there is no incentive to invest due to the lack of power. These governance structures are inefficient because the value generated by party 2 is larger than its costs. Party 2 invests in the governance structures are inefficient because the surplus \( \sigma B - k_2 \) generated by seller B in governance structure III is larger than the surplus \( B - k_2 \) of party 2 generated in governance structure IV. A similar reasoning applies to governance structure II being uniquely efficient in the south-east rectangle. It discourages efficiently investment by party 2 with its relatively high costs of investment, while party 3 invests and generates the dual distribution externality. Proposition 2 states these results. (Propositions 2–6, like proposition 1, apply when \( k_1 \leq A \) and \( 1 < \sigma < 1 + B/C \).

Proposition 2. Dual distribution franchising (II or III) is the unique efficient governance structure when the costs of investment of the franchisee having power are not too large and the costs of investment of the franchisee without power are large.

Third, the dual distribution cooperative franchises VI and VII are identical in terms of investment incentives for all parties and therefore identical in terms of efficiency. The franchisor will not invest in these governance structures in equilibrium due to not having any power. Ownership of the assets of the franchisee generates therefore no revenues for the owner. It implies also that it does not matter for efficiency which franchisee owns the assets of the franchisor because the value of owning a non-investing franchisor is 0. This result is stated in proposition 3.

Proposition 3. The dual distribution cooperative franchises VI and VII are identical in terms of efficiency.

Fourth, the efficient governance structure choice in the south-west depends on the parameter values. The results are presented in two parts. First, consider the efficiency of governance structures with the franchisor having authority. The efficient governance structure is determined by comparing the governance structures II, III, and IV. If the franchisor has power, then governance structure IV is the unique efficient governance structure choice when \( k_2 \) and \( k_3 \) are small and \( \sigma \) is limited. The intermediate investment incentives for both distributors in governance structure IV create more value than the strong investment incentive for either party 2 in governance structure III or party 3 in governance structure II when the size of the dual distribution externality is limited, i.e. \( \sigma < 1 + B/C \). The attractiveness of governance structure IV is that both distributors have an incentive to invest because each of them has power. However, the positive dual distribution externality cannot emerge. Governance structures II and III have the advantage of generating the positive dual distribution externality, but only the independent distributor invests. The value of having two distributors investing without generating the dual distribution externality dominates the generation of the dual distribution externality by having just one investing distributor when the dual distribution externality is not too large. However, if the cost of investment of party 2 (3) increase above \( B - (\sigma - 1)C (C - (\sigma - 1)B) \), then governance structure II (III) dominates governance structure IV.

Second, the efficient governance structure with the franchisor having authority has to be compared with the efficient governance structure when the franchisor has no authority, i.e. governance structure VI=VII. Governance structure II dominates the governance structures VI and VII when \( k_2 \geq \sigma B - (A - k_1) \), i.e. the dual distribution externality is limited or the value of the brand is substantial. II as well as VI and VII induce investment by party 3, but the costs of investment by party 2 in governance structures VI and VII is too high from an efficiency perspective in order to sacrifice the value generating investment by the franchisor in governance structure II. A similar argument applies regarding governance structure III dominating the governance structures VI and VII when \( k_3 \geq \sigma C - (A - k_1) \).

Proposition 4. If the costs of investment of both franchisees are not large and the costs of investment of at least one of the franchisees are at an intermediate level, then a dual distribution (cooperative) franchise is the unique efficient governance structure when the investment by the franchisor adds more (less) value than having two investing franchisees.

The comparison between IV and VI=VII is driven by the dual distribution externality effect. Choosing between allocating authority to the franchisor in governance structure IV and taking away authority from the franchisor in the governance structures VI and VII entails a trade-off between sacrificing the generation of the dual distribution externality at both outlet versus sacrificing the value of brand development. If \( A - k_3 < (\sigma - 1)(B + C) \), i.e. the value added of the brand is insufficient or the dual distribution externality is substantial, then governance structure IV is dominated by governance structure VI=VII. So, taking power away from the franchisor by switching to the dual distribution cooperative franchise VI or VII is efficient when the relative importance of the brand decreases. Proposition 5 states this result.
Proposition 5. A wholly franchised system (dual distribution cooperative franchise) is the unique efficient governance structure when the costs of investment of both franchisees are low, the dual distribution benefit is moderate, and the importance of the brand is above (below) a certain level of the dual distribution effect.

Sixth, cooperative franchise V is never efficient. It is dominated by the dual distribution cooperative franchises because they generate the positive dual distribution externality \( \sigma > 1 \), whereas V does not. Proposition 2 formulates this result.

Proposition 6. Cooperative franchise V is never efficient.

We have now covered the case \( 1 < \sigma < 1 + B/C \), i.e. a positive, but limited, dual distribution externalities. If there are substantial positive dual distribution externalities, i.e. \( \sigma \geq 1 + B/C \), then the size of the south-west rectangle is zero. There are no parameter values anymore for which governance structure IV is the unique efficient governance structure. The intermediate investment incentives for both distributors in governance structure IV are not strong enough to override the strong investment incentives for either party 2 in governance structure III or party 3 in governance structure II.

A figure similar to Fig. 4 can be determined when \( \sigma < 1 \). It turns out that governance structure IV is first best efficient for all parameter values. (If \( k_2 \geq B \) and \( k_3 \geq C \), then governance structures I–III are also first best efficient.) It prevents on the one hand the emergence of the negative dual distribution externality in the governance structures II, III, VI and VII, and on the other hand the allocation of insufficient power to either the distributors in governance structure I or the franchisor in governance structure V. This result implies that dual distribution may be due to the systemic effect \( \sigma \), regardless the value of brand name, i.e. \( A - k_1 \), or locational (or other) differences between outlets, i.e. \( B - k_2 \) and \( C - k_3 \). It is therefore not necessary for dual distribution franchising being a unique efficient governance structure that \( B < C \), i.e. we do not need to introduce heterogeneous outlets in order to explain dual distribution (in a spirit similar to Bai and Tao (2000)). The value generated by the independent distributor in a dual distribution governance structure may be higher than the value generated by either one or two distributors in governance structure IV. The importance of this systemic effect seems to be in line with the empirical result of Lafontaine and Shaw (2005) that dual distribution of established franchises is stable over time, i.e. the percentage of company ownership remains fixed after the early years in franchising and firms change their number of both company-owned and franchised outlets as they grow or decline. This result is established regarding the governance structures II and III. Proposition 7 predicts that this result will also hold for cooperative franchises.

Proposition 7. It is not necessary for the emergence of dual distribution that there are locational differences, or other differences between the distributors. System wide externalities may be sufficient for dual distribution franchising being the unique, efficient governance structure.

Finally, governance structure IV is also first best efficient for all parameter values when \( \sigma = 1 \). It is the unique first best efficient governance structure when \( k_2 < B \) and \( k_3 < C \). If \( k_2 \geq B \) and \( k_3 < C \), then all governance structure II is first best efficient. If \( k_2 < B \) and \( k_3 \geq C \), then also governance structure III is first best efficient. The governance structures I–IV are first best efficient when \( k_2 \geq B \) and \( k_3 \geq C \). Cooperative franchises are never efficient when \( \sigma \leq 1 \).

Managerial implications

Our analysis indicates that the efficient governance structure of a franchise system is determined by the magnitude of the dual distribution benefit (\( \sigma \)), the revenue generated by the investment of the franchisor and the two distributors (\( A, B, \) and \( C \)), and the costs of specific, irreversible (or sunk) investments of the three parties (\( k_1, k_2, \) and \( k_3 \)). Various managerial implications will be formulated based on these three aspects of an efficient governance structure. They follow of course from our assumptions regarding the existence of benefits from dual distribution and the specificity of investments. However, establishing these benefits requires dedicated effort by management and the choice of an appropriate governance structure.

The opening citation indicates that cooperative franchises may be a solution when growth has slowed or the fear of exploitation by franchisees due to an imbalance in power undermines the incentives for entrepreneurial activities by the franchisees. Our results show that a more competitive franchise system may well be a (dual distribution) cooperative franchise system. This is especially so when highly specific, non-contractible local assets are most important for the creation of value of the franchise. Managers of franchises may therefore facilitate shifting the balance of power in a franchise in order to give the franchisees confidence that they can recoup the costs of investment. Having a more competitive franchise is also in their interest.

A related observation is that shifting the balance of power by switching to another governance structure entails ownership redirection. A substantial research effort has been dedicated to the ownership redirection thesis of Oxenfeldt and Kelly (1968–1969). It states that powerful franchisees will reacquire successful franchisee units and eventually become completely corporate owned. We have delineated the circumstances when the franchisor is too powerful. Ownership redirection in the opposite direction, i.e. cooperative franchises, may be more likely in these circumstances because competitive processes are likely to winnow out the inefficient governance structures (Alchian 1950). It is therefore not a good idea from an efficiency perspective that wealthy franchisees convert franchisee-owned outlets in company-owned outlets, especially if they happen to perform well. (Lutz (1995) establishes the same result in an agency model with double-sided moral hazard.) However, the incomplete contracting approach to ownership in franchises indicates another way for franchisees to become more powerful. They are encouraged to try to reduce the noncontractibility of local assets (Windsperger and Dant 2006). This will limit the deterioration of the bargaining position of the franchisees, and
therefore increase the ownership stake of the franchisor in an efficient governance structure.

There are at least three managerial implications regarding the management of dual distribution franchise networks. First, the empirical results of Cliquet and Nguyen (2004) point towards the importance of the organization of innovation. Our model has delineated when the circumstances when organizing a franchise as a dual distribution (cooperative) franchise is desirable. Second, the empirical research of Ehrmann and Spranger (2004) indicates that managers should focus their attention on quality enhancement in the entire franchise system in order to bring the dual distribution benefit to its full potential. Third, the management of a dual distribution franchise is most likely to be more demanding than either wholly company owned networks or completely franchised networks because the optimal system of incentives of the two types of outlets differs (Holmström and Milgrom 1994; Yin and Zajac 2004). Dual distribution franchises may therefore require different managers than other franchises.

Another source for managerial implications are the results regarding the second best efficient governance structure, the effect of changes in the parameters on the second best efficient governance structure, and sectoral differences. First, if for specific parameter values the actual governance structure differs from the efficient governance structure predicted by the model, then this discrepancy has to be explained. Many problems are involved in doing such an exercise because the actual business world and a model are hardly ever a perfect match. However, if the model predicts that there are no circumstances for a certain governance to be efficient, then it entails that its occurrence is expected to be absent. Our results show that wholly-company owned franchising, i.e. governance structure I, is not likely to occur when the franchisee’s intangible assets are important. This is in line with the empirical results of Windsperger and Dant (2006).

Similarly, if there is a positive dual distribution benefit, i.e. \( \sigma > 1 \), then dual distribution is predicted to be a unique efficient governance structure for a large set of parameter values. Again, this seems to be corroborated. Lafontaine and Shaw (2005, footnote 6) report that ‘... most chains operate what they see as the optimal proportion of company units. In the vast majority of cases, this proportion is neither 0% nor 100%’. It is therefore important to manage the systemic effect (Bradach 1997). Notice that the exact dual distribution governance structure to be expected is determined in our model by the importance of the value of investment of all parties, not just the value added by franchisor, e.g. brand name, or the franchisees, e.g. developing the local market.

Second, the model implies a number of changes in the efficient governance structure due to changes in the exogenous parameters. Lafontaine and Shaw (2005) show that the percentage of company owned outlets increases when the value of the brand name increases, i.e. \( A - k_1 \). Our model is inconclusive about this relationship because the dotted line in Fig. 5, its location being determined by the value of the brand name, is separating different dual distribution governance structures. However, there is an obvious relationship between the dual distribution benefit and the efficient governance structure. Dual distribution is absent when \( \sigma < 1 \), while it is pervasive when \( \sigma > 1 \). Fig. 5 reinforces this relationship because the area where governance structure IV is efficient shrinks when \( \sigma \) is increasing, i.e. a switch from wholly-franchised chain IV to a dual distribution chain is expected. Changes in the costs of investment of the distributors may also change the equilibrium percentage of dual distribution. A decrease in either \( k_2 \) or \( k_3 \), or an increase in either \( B \) or \( C \), may increase the percentage of franchised outlets when the dual distribution benefit is positive but limited (Fig. 5). This is the reverse of the ownership redirection hypothesis. Sacrificing the dual distribution benefit is attractive in order to restore the incentive to invest for all distributors (like in governance structure IV).

Third, Lafontaine and Shaw (2005) show that established chains maintain a stable percentage of company-owned outlets, but that this percentage varies considerably across sectors. Some industries such as hotels (Kalnins 2004) exhibit much less dual distribution than others such as fast food. Our analysis argues that the nature of this variation resides in the efficient governance structure of a franchise system being geared to the relative importance of the noncontractible investments of the franchisor and the franchisees as well as the size of the dual distribution benefit. Sorensen and Sorensen (2001) establish regarding restaurant chains in the United States that they franchise roughly 20 percent of their outlets in relatively homogeneous environments, while the best performing chains franchise around 70 percent of their outlets in more diverse markets. This is in line with our model (and the evidence regarding auto rental companies referred to in footnote 1). If the percentage of company-owned units is high, then our model indicates that the brand is important, while the investments at the outlets either create no value or they are not specific. Similarly, if the percentage of franchised outlets is high, then our model indicates that specific investments at the local level are important.

Conclusions and further research

The incomplete contracting framework has been applied to identify the circumstances when dual distribution in franchising is the unique equilibrium governance structure inducing investment by the various parties exactly when it is efficient to do so. Dual distribution franchising is the sub-game perfect equilibrium governance structure when the dual distribution externalities are significant and the cost of investment is not too large for the parties involved. Cross-network differences in the extent of company ownership depend therefore on the magnitude of the dual distribution benefits and the importance of the franchisees’ ex ante investments. Dual distribution as an efficient governance structure does not depend on heterogeneous downstream outlets.

Cooperative franchising (decision rights) has been presented as an alternative to changes in royalty rates (income rights) and legal protections for franchisees for achieving satisfactory levels of franchisees’ investment and motivation. Whether the dual distribution benefits are realized in a traditional franchise or a cooperative franchise depends on whether most value is
Their comments.

George John, Gerard Cliquet, Guilhem Bascle, and Li Feng for occurring.

Efficiency may dictate a drastic change in governance structures. For example, efficiency may dictate ownership redi-
tification, but the party loosing power will not favor this change. There is often a tension between effi-
cy and distributional considerations due to vested interests

A number of possibilities are formulated. First, actual franchise systems exhibit a substantial power asym-
metry between small franchisees and the large franchisor. One way of restoring the balance of power is to erect a franchise council (Ehrmann and Spranger 2007) and to study the optimal allocation of rights to them. Our model can be tailored to this issue in a straightforward way by modeling countervailing power as an association of various distributors. Second, the model considers only the allocation of ownership. A more general approach is to view organizations as an incentive system, considering also other instruments to align interests. Decision and income rights are treated simultaneously in the choice of gov-

This literature review shows that there are many possible sources of dual distribution benefits. They may originate anywhere in the franchise system and may be allocated to one or more parties. We provide a general formulation to capture all possible dual distribution benefits. A general way to describe the dual distribution effect of an investment is to define a parameter $\sigma_{ijg}$, where $i, j \in \{1, 2, 3\}$ and $g \in \{II, III, VI, VII\}$. Parameter $\sigma_{ijg}$ is defined as the dual distribution effect of the investment of party $i$ on party $j$ in governance structure $g$. A number of cases may be illuminating. First, if the dual distribution benefit is a horizontal externality, then $\sigma_{ijk} = 0$ and $\sigma_{ijg} \geq 0$ for $i, j \in \{2, 3\}$ and $i \neq j$. An example is organizational learning, i.e. the synergistic effects of exploratory and exploitative learning (Bradach 1997; Sorensen and Sorensen 2001). Another example is free riding, i.e. the underprovision of informational and

Acknowledgements

The authors would like to thank the referees, the editors, George John, Gerard Cliquet, Guilhem Bascle, and Li Feng for their comments.

Appendix A.

This appendix formulates the extensive form of the game. Section A.1 starts with motivating the presence of dual distribution benefits by a literature review and presents a general way to capture the variety of dual distribution benefits. Section A.2 specifies the payoffs when all parties invest. Section A.3 determines the Shapley value of each governance structure. Section A.4 presents the extensive form.

A.1. Dual distribution benefits

Many ideas regarding dual distribution benefits have been proposed in the literature. We will mention various ideas, without claiming to be exhaustive. First, the manager’s incentives are stronger under franchising than under company-ownership. The costs associated with monitoring and control may result in substituting control for incentives. Franchised stores are therefore subject to much less control from the chain operator than company-owned stores. Similarly, full company ownership entails stronger investment incentives for the franchisor, but it may increase monitoring costs to prevent shirking, capital costs, and search costs (Blair and Kaserman 1994; Brickley and Dark 1987; Brickley, Dark, and Weisbach 1991; Minkler and Park 1994; Yin and Zajac 2004). Dual distribution may be the optimal mix from a franchise system perspective. Second, Lewin-Solomons (1999) argues that a dual distribution franchise enhances innovation by providing a credible signal to (potential) franchisees that only profitable innovations will be implemented. Third, Sorensen and Sorensen (2001) explain the franchise mix as the result of a trade-off between exploration (franchising) and exploitation (company-owned units) in organizational learning. Fourth, Michael (2000) maintains that franchise chains engage in dual distribution to build bargaining power. Fifth, the relative compensation literature focuses on the ‘ratcheting’ of incentives (Green and Stokey 1983; Lazear and Rosen 1981). Sixth, Bradach (1997) highlights the creation of a dual labor market as a benefit of dual distribution. Seventh, Fischer and Harrington (1996) specify agglomeration economies, which may provide a way of modeling the evidence that larger, urban units being close to headquarters are more likely to be company owned (see Lafontaine and Slade (2001) for a review). Eighth, the spatial dispersion hypothesis of Brickley and Dark (1987) and Norton (1988) entails that firms using franchising tend to retain ownership of urban and high traffic outlets, while they franchise rural or suburban outlets. Ninth, Ehrmann and Spranger (2004) argues that dual distribution franchises may benefit from the effect of cost reduction, quality enhancement, growth stimulation and optimized risk control in contrast to pure franchise chains. They present empirical support for the quality argument of dual distribution. Tenth, Cliquet and Nguyen (2004) present evidence that dual distribution seems to facilitate innovation.

This literature review shows that there are many possible sources of dual distribution benefits. They may originate anywhere in the franchise system and may be allocated to one or more parties. We provide a general formulation to capture all possible dual distribution benefits. A general way to describe the dual distribution effect of an investment is to define a parameter $\sigma_{ijg}$, where $i, j \in \{1, 2, 3\}$ and $g \in \{II, III, VI, VII\}$. Parameter $\sigma_{ijg}$ is defined as the dual distribution effect of the investment of party $i$ on party $j$ in governance structure $g$. A number of cases may be illuminating. First, if the dual distribution benefit is a horizontal externality, then $\sigma_{ijk} = 0$ and $\sigma_{ijg} \geq 0$ for $i, j \in \{2, 3\}$ and $i \neq j$. An example is organizational learning, i.e. the synergistic effects of exploratory and exploitative learning (Bradach 1997; Sorensen and Sorensen 2001). Another example is free riding, i.e. the underprovision of informational and
Another example is a cross-investment, i.e. the franchisor as well as the franchisee add their own price-cost margin. It results in a smaller quantity sold marginalization, i.e. the franchisor’s investment affects value (free riding), then promotional services (Rubin 1978). Second, if the dual distribution benefit is a vertical externality, then \( \sigma_{1g} \geq 0 \) or \( \sigma_{1g} \leq 0 \) and \( \sigma_{2g} = 0 \) for \( i, j \in \{1, 2, 3\} \) and \( i \neq j \). An example is double marginalization, i.e. the franchisor’s investments in developing and maintaining the brand affect the value that franchisees can generate through their sales effort, and the franchisees’ investments in learning about their local markets affect the franchisor’s ability to innovate and modify his products and, ultimately, to improve the brand. Third, if there is a positive (negative) dual distribution effect of the investment of party 2 like organizational learning (free riding), then \( \sigma_{2g} + \sigma_{2g} + \sigma_{2g} > (<) 1 \).

The model in this article develops the results regarding only one type of dual distribution benefit because the efficient governance structure results are similar regarding the other types. In order to keep the model as simple as possible, we analyze the case of a dual distribution externality arising from the investment of the distributors, i.e. parties 2 and 3. We assume also that all the dual distribution benefits of an investment are captured by one party in each governance structure, and the effect of the investment of party 2 and party 3 is identical. Denote the dual distribution effect by \( \sigma \). This case allows us already to highlight the main investment incentive effects of the various governance structures. Table 1 presents the specification of \( \sigma_{ijg} \) of the model analyzed in this article. The values \( \sigma_{1g} = 0 \) reflect that no dual distribution benefit arises from the investment of party 1. The assumption that all dual distribution benefits of an investment are generated by one party is reflected in two parameters being equal to 0 in the set \( \{\sigma_{1g}, \sigma_{2g}, \sigma_{3g}\} \), where \( i \in \{2, 3\} \) and \( g \in \{II, III, VI, VII\} \). Notice that this specification allows us to concentrate completely on the investment incentive effects of a governance structure, without considering either horizontal or vertical externalities.

### Table 1

<table>
<thead>
<tr>
<th>( g )</th>
<th>( ij )</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>11</td>
</tr>
<tr>
<td>II</td>
<td>0</td>
</tr>
<tr>
<td>III</td>
<td>0</td>
</tr>
<tr>
<td>VI</td>
<td>0</td>
</tr>
<tr>
<td>VII</td>
<td>0</td>
</tr>
</tbody>
</table>

### A.2. Payoffs when all parties invest

Table 2 presents the payoff of each party in every governance structure when all parties invest. These payoffs reflect the value and costs of investment and the impact of governance structure. (Section A.3 motivates these payoffs by presenting the underlying characteristic function forms.) For example, the franchisor enjoys a payoff \( A + \sigma B - k_1 \) when he invests in governance structure II. Revenue \( A \) is received due to owning the brand/trademark and revenue \( \sigma B \) is due to dual distribution and ownership of the outlet of party 2. The costs of investment are \( k_1 \). Party 2 receives no revenues due to lack of ownership of assets, while the costs of investment are paid by party 2. Party 3 receives the dual distribution benefit generated by his investment and pays his costs of investment.

### Table 2

<table>
<thead>
<tr>
<th>Governance structure</th>
<th>Payoff</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Franchisor</td>
</tr>
<tr>
<td>I</td>
<td>( A + B + C - k_1 )</td>
</tr>
<tr>
<td>II</td>
<td>( A + \sigma B - k_1 )</td>
</tr>
<tr>
<td>III</td>
<td>( A + \sigma C - k_1 )</td>
</tr>
<tr>
<td>IV</td>
<td>( A - k_1 )</td>
</tr>
<tr>
<td>V</td>
<td>( -k_3 )</td>
</tr>
<tr>
<td>VI</td>
<td>( -k_3 )</td>
</tr>
<tr>
<td>VII</td>
<td>( -k_3 )</td>
</tr>
</tbody>
</table>

A.3. Shapley values

A governance structure is in our model an allocation of bargaining power. Bargaining power differences between governance structures are represented by the Shapley value. We start with defining the Shapley value. Subsequently, we determine the Shapley value for each level of investment in each governance structure. Finally, these Shapley values are used to specify the payoffs in the extensive form in Fig. 3 and Appendix A4, like in Hart and Moore (1990).

The Shapley value is an equilibrium concept in cooperative game theory (Dixit and Skeath 1999).

### A.3. Shapley values

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The Shapley value is an equilibrium concept in cooperative game theory (Dixit and Skeath 1999). It is used to determine the value of each player in each governance structure for all combinations of investment decisions. The characteristic function depends on the choice of governance structure \( G \) and the choice of investment \( x \) of the involved parties. Define the vector \( x = (x_1, x_2, x_3), \) where \( x_1, x_2, x_3 \) is the investment level by party 1 (2, 3). If a party invests (does not invest), then \( x_i \) is equal to 1 (0). Table 3 presents the characteristic function of all governance structures when all parties invest, i.e. \( x = (1, 1, 1) \). For example, the value of a coalition consisting of only the franchisor, i.e. \( v(1) \), is \( A + \sigma B \) in governance structure II because the franchisor owns his own assets and the assets of party 2. A coalition consisting of only party 2 has no value in governance structure II because this coalition owns no assets. The value of a coalition consisting of the parties 1 and 3, i.e. \( v(13) \), is \( A + \sigma B + \sigma C \) because together they own all assets. The value of the coalition of the parties 1 and 3 is identical to the value of the coalition of all players, i.e. \( v(13) \) is equal to \( v(123) \), because party 2 adds no value to the coalition of the players 1 and 3 in governance structure II. The

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5 A cooperative game consists of the characteristic function \( (N, v) \), where \( N \) is the set of players \( \{1, 2, \ldots, n\} \) and \( v(C) \) specifies a payoff for every possible subset \( C \) of the set of players \( N \), which is the minimum total payoff that coalition \( C \) can guarantee to its members. The Shapley value is an allocation of payoffs \( u_0 \) to each player \( i \) as defined by \( \sum_{C} c[v(C) - v(C - \{i\}) - (n - k)!/(k - 1)!]u_{0} \), where \( n! \) denotes the product \( 1 \times 2 \times \cdots \times n \) where the sum is taken over all the coalitions \( C \) that have \( i \) as a member, and where, in each term of the sum, \( k \) is the size of coalition \( C \).
change from governance structure I to governance structure II shows the effect of a dual distribution governance structure. The characteristic function determines the way in which the revenues are allocated to the three parties. This allocation of the revenues is determined by calculating the equilibrium of a cooperative game by the Shapley value. These values/payoffs reflect the distribution of bargaining power. The economic interpretation of the Shapley value is that it provides a measure for the incentive intensity to invest. Table 4 presents the Shapley values belonging to the characteristic functions of Table 3.

A.4. Extensive form

The classical timing in incomplete contract models is: (i) parties negotiate over control of a decision right/ownership, (ii) parties simultaneously choose actions (here investments), (iii) both parties observe the actions and the state of the world, (iv) the parties negotiate over which decision the party in control should choose and the accompanying side payment, (v) parties received their payoff (Gibbons 2005). Our model specifies the stages 1 and 2, while the stages 3–5 are summarized by (the subgame perfect equilibrium) of these stages of the game. The motivation for summarizing these stages by the subgame perfect equilibrium payoffs regarding these stages is presented in the next paragraph.

The ownership of assets in a specific governance structure determines the distribution of bargaining power. There are two scenarios. First, suppose there is no renegotiation. This has implications for the reimbursement of the costs of investment and the allocation of the value generated. Each party is reimbursed for its cost of investment. The surplus is divided according to the ownership of assets. We illustrate this by the case when all parties invest in governance structure II (Fig. 3). Party 1 generates revenue \( A \), while the value generated by party 2 is \( \sigma B \) because the value \( B \) is multiplied by \( \sigma \) due to being in a dual distribution governance structure. These revenues are used first to reimburse the costs of investment of both parties. The remaining surplus \( A + \sigma B - k_1 - k_2 \) goes to party 1 due to the ownership of both assets, while party 2 earns 0 due to not owing anything. The payoff of party 1 is therefore \( A + \sigma B - k_1 - k_2 \) and the payoff of party 2 is 0. Party 3 earns the surplus \( \sigma C - k_3 \) generated by its asset due to the ownership of this asset and being in a dual distribution governance structure. Second, suppose there is renegotiation. No costs of investment are reimbursed in this scenario due to the non-contractible and non-verifiable nature of the investment. Renegotiation of the contract after the investments

### Table 3

Characteristic function forms when all parties invest.

<table>
<thead>
<tr>
<th>( x )</th>
<th>G</th>
<th>Shapley value franchisor</th>
<th>Shapley value seller B</th>
<th>Shapley value seller C</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1, 1, 1)</td>
<td>I</td>
<td>( A + B + C )</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>(1, 1, 1)</td>
<td>II</td>
<td>( A + \sigma B )</td>
<td>0</td>
<td>( \sigma C )</td>
</tr>
<tr>
<td>(1, 1, 1)</td>
<td>III</td>
<td>( A + \sigma C )</td>
<td>( \sigma B )</td>
<td>0</td>
</tr>
<tr>
<td>(1, 1, 1)</td>
<td>IV</td>
<td>( A )</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>(1, 1, 1)</td>
<td>V</td>
<td>( B )</td>
<td>0</td>
<td>( C )</td>
</tr>
<tr>
<td>(1, 1, 1)</td>
<td>VI</td>
<td>( C )</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>(1, 1, 1)</td>
<td>VII</td>
<td>( C )</td>
<td>0</td>
<td>( \sigma B )</td>
</tr>
</tbody>
</table>

### Table 4

Shapley values when all parties invest.

<table>
<thead>
<tr>
<th>( x )</th>
<th>G</th>
<th>Shapley value franchisor</th>
<th>Shapley value seller B</th>
<th>Shapley value seller C</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1, 1, 1)</td>
<td>I</td>
<td>( A + B + C )</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>(1, 1, 1)</td>
<td>II</td>
<td>( A + \sigma B )</td>
<td>0</td>
<td>( \sigma C )</td>
</tr>
<tr>
<td>(1, 1, 1)</td>
<td>III</td>
<td>( A + \sigma C )</td>
<td>( \sigma B )</td>
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<td>(1, 1, 1)</td>
<td>IV</td>
<td>( A )</td>
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<td>(1, 1, 1)</td>
<td>V</td>
<td>( B )</td>
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<tr>
<td>(1, 1, 1)</td>
<td>VI</td>
<td>( C )</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>(1, 1, 1)</td>
<td>VII</td>
<td>( C )</td>
<td>0</td>
<td>( \sigma B )</td>
</tr>
</tbody>
</table>
have been made entails that the quasi-surplus $A + \sigma B$, i.e. the sum of the surplus and the costs of the investments, rather than the surplus $A + \sigma B - k_1 - k_2$ is divided according to the ownership of assets. The payoff of party 1 is therefore $A + \sigma B - k_1$, party 2 earns $-k_2$, and party 3 earns $\sigma C - k_3$. Notice that the owner of assets always prefers the renegotiation scenario above the non-renegotiation scenario. We present therefore these subgame perfect equilibrium payoffs in the extensive form, which allows us to limit the non-cooperative game of this paper to a governance stage and an investment stage.

The first stage of the game consists of the choice of governance structure. There are seven possible governance structures. The second stage of the game consists of the investment decisions of the three players. Each player decides between investing and not investing in specific assets. The total number of possibilities is therefore $7 \times 2 \times 2 = 56$, and entails therefore $56 \times 3 = 168$ payoffs. This is too much to present in one figure. The extensive form will therefore be presented in seven separate figures, i.e. one subgame for each governance structure. The payoffs are composed of revenues and costs. The revenues are taken directly from Table 2, while each player carries its costs of specific investments. For example, branch NYN in Fig. A1 corresponds to investment vector $(0, 1, 0)$ in governance structure I, i.e. only party 2 invests. The investment of party 2 generates revenue $B$. Revenue $B$ is allocated to the franchisor in governance structure I, while party 2 carries the costs $k_2$. Table 1 presents the payoffs of the branch YYY of Figs. A1–A6.

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