Plural Form in Franchising:

An Incomplete Contracting Approach

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Abstract

Plural form franchising is modeled from an incomplete contracting perspective. Complete franchising is the unique, efficient governance structure only when the plural form externality is limited and the costs of investment are low for both franchisees. Governance structure choice is irrelevant when the costs of investment are high for all franchisees, because no franchisee will invest. Finally, a plural form governance structure is the unique, efficient equilibrium in all other cases because the power allocated to independent franchisees makes them confident that they will be able to recoup their investments. Not locational or other differences between units are necessary for the emergence of plural form franchising, but positive externalities being specific for the plural form.

Keywords: Incomplete contracting, franchising, plural form

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1. Introduction

A franchise is a vertical relationship between a franchisor and many franchisees. Combs, e.a. (2004, P907) define that "In franchising, 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)". Franchising is an important phenomenon. In 1998, there were nearly $850 billion in sales of franchised goods and services at over 700,000 US franchise locations. And in the year 2000, franchises made up an estimated $1 trillion in annual retail sales (Franchise Funding, 2004). According to Michael (1996), sales through franchise have accounted for a significant portion in the following industries: printing and copying (71% of sales), tax preparation (67%), specialty food retailing (55%), restaurants (46%).

Various aspects of franchising are not well understood. Hendrikse and Windsperger (2004) identify topics like governance of franchises (bottom-up franchises, plural form), Gibrat's law, cognition, and complementarity. This article will focus on plural form franchising. It entails that some outlets are owned by franchisor, while other stores are owned by franchisees. Standard economic theory predicts the convergence of governance structures over time, i.e. the selection process of the market winnows out the efficient governance structure. Accordingly, some authors (e.g. Gallini and Lutz 1992; Scott, 1995; Oxenfeldt and Kelly, 1969; Caves and Murphy 1976; Norton, 1988) argue that the dual ownership structure is a transitory phenomenon. They predict that in the long run, one organizational structure, either wholly owned or wholly franchised will prevail and dominate. Explanations based on resources constraint, either capital, managerial talent, or local market information, predict that as the chains become mature, the percentage of company owned outlets should increase (Oxenfeldt and Kelly, 1969; Caves and Murphy 1976; Norton, 1988). On the contrary, signaling theory gives an opposite prediction (Gallini and Lutz 1992; Lafontaine, 1993). In reality, however, we often observe a relatively stable distribution of franchise and company-owned outlets within one network (Lafontaine and Shaw, 2005).

Horizontal as well as vertical externalities exist in franchising networks (Willianson, 1981; Dnes, 1993; Dnes and Garoupa, 2005). These externalities can be also negative or positive. The most prominent example of a negative externality is free-riding in franchises. Free-riding originates from opportunistically using the common brand name by the various franchisees (Caves and Murphy, 1976; Rubin, 1978; Klein, 1980). For example, on one hand a franchisee may horizontally free ride upon other franchisees' efforts (Rubin, 1978), and on the other hand she may vertically free ride upon the franchisor's system-wide promotional efforts as well (Mathewson and Winter, 1985). There are also positive externalities, like organizational learning and innovation (Bradach, 1997 and 1998; Sorenson and Sorensen, 2001; Lewin-Solomon, 1999; Cliquet and Nguyen, 2004).

These externalities depend on the choice of single or plural form franchising. Bradach (1998) examines complementarities between the company-owned and franchised units. He argues that plural form may help franchise networks to overcome four strategic challenges: (1) growth; adding new franchised units may help franchisors to overcome growth constrains, (2) uniformity; a ratcheting process is created in franchising chains, where company-owned units and franchised units set performance benchmarks for each

other, (3)local responsiveness, which is enhanced by the franchisee's local response to local customers and the market-pressure processes, and (4) system-wide adaptation to change; it is improved by the mutual learning process because plural form can generate more diverse ideas. Franchisees are influenced by the commitment and the results of company-owned units; and the company-owned units benefit from the challenge and post decision insights offered by the franchised units. So, the plural form may be superior to the single form because it leverages the strengths and ameliorate the weaknesses of each single form in order to maintain quality and homogeneity of the business concept throughout the entire franchise, while promoting innovation at the same time.

Sorenson and Sorensen (2001) explain plural form in franchising from the perspective of exploration and exploitation paradox. Franchisees have more incentives to "exploration" and company managers are more possible to be "exploitation". In the context of franchising, 'exploration' refers to the capabilities of innovation and local market knowledge learning, while 'exploitation' refers to the capabilities of controlling quality and executing administrative exercises. The mix of company-owned units and franchised units can affect the balance between centralization and standardization through organizational learning, thereby enhancing the franchise chain's efficiency and performance.

There are also literatures arguing that a plural form franchise has an advantage over a single form arrangement regarding innovation. Lewin-Solomon (1999) argues that franchisors keep a proportion of company-owned units as a commitment device in order to give franchisees enough incentives to innovate. As the interest of the franchisor is aligned with the franchisees', the franchisor can testify the innovations' profitability by testing them first in company-owned units, thereby persuading franchisees to implement it. Cliquet and Nguyen (2004) stress that plural form play an important role in the three stages of innovation process, such as innovation generation, innovation testing and innovation implementation. They argue that franchisees are quite important in generating new ideas because they are closer to local markets and have higher incentives to improve performance than the company managers. On the other hand, company-owned units are considered to important in testing and implementing the innovations.

This article addresses dual distribution in franchising from a governance perspective. Governance concerns the organization of transactions, whereas a governance structure consists of a collection of rules structuring the transactions between the various stakeholders. Franchising is an example of a governance structure. It is a vertical relationship between parties in two stages of a production chain. Other examples of governance structures are investor owned enterprises, worker-controlled firms, cooperatives, mutuals, joint ventures, networks, foundations, and public enterprises.

A standard way of delineating a governance structure is to distinguish income and decision rights (Hansmann, 1996).[2] Income rights address the question 'How are benefits and costs allocated?', i.e. they specify the rights to receive the benefits, and obligations to pay the costs, that are associated with the use of an asset. For example, a franchise has to choose the level of the royalty rate and the franchise fee. Other important themes regarding income rights are financing, cost allocation schemes, and the effects of horizontal as well as vertical competition.

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[2] Saloner e.a. (2001) uses the distinction incentives and authority.

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Decision rights in the form of authority and responsibility address the question 'Who has authority or control?', i.e. they concern all rights and rules regarding the deployment and use of assets. Governance is relevant next to (formal) contracts because contracts are in general incomplete, due to the complexity of the transaction or the vagueness of language.[3] Contractual incompleteness is dealt with by (the choice of) organization because it allocates authority to somebody to decide in circumstances not covered by the contract. Important themes regarding authority are its allocation ('make-or-buy' decision), formal versus real authority, relational contracts, access, decision control (ratification, monitoring), decision management (initiation, implementation), task design, conflict resolution, and enforcement mechanisms.

The focus in this article is on the allocation of decision rights in franchises. There are system-specific assets, like the brand name, and decisions have to be taken regarding the network's production, marketing, and service in order to improve its brand name value and maintain system-wide standardization. There are also local-specific assets, like knowledge about the local market, and decisions have to be taken regarding local operations. Plural form franchising is special because there are two decision rights regimes within one organization, i.e. local managers as employees of company-owned outlets and managers as employers/entrepreneurs of independent outlets, as well as different income rights for these two classes of franchisees.

Transaction cost economics argues that the costs differences that are measured by asset specificity, frequency and uncertainty may explain the different ownership structure of the individual units. Brickley, Dark, and Weisbach (1991), Gallini and Lutz (1992), Mathewson and Winter (1994) and Lutz (1995) point out the importance of ownership in determining the incentives under different structures. Primarily the influence of transaction specificity on the tendency toward vertical integration by company-owned units was investigated. The risk of opportunism by the franchisor is reduced by the franchisee's outlet-specific investments; as a result, the percentage of company-owned units decreases.

According to the property rights theory, the allocation of residual income rights depends on the importance of intangible system-specific and local market assets. The percentage of company-owned outlets (PCO) is expected to be higher when franchisor's intangible assets are more important than franchisee's intangible assets for generating residual income, because more property rights should be transferred to franchisor. Therefore, PCO is positively related to the intangible system-specific assets and negatively related to the intangible local market assets. Ownership redirection cannot be accomplished because of the non-contractibility of both franchisor and franchisee's intangible assets, and consequently leads to a stable dual distribution of company-owned and franchised outlets (Windsperger, 2004). Franchising increases franchisors' and franchisees' ex ante incentives; and at the same time it also creates ex post incentive conflicts between them. Under a dual ownership structure, the allocation pattern of decision rights may alleviate the incentive conflicts. For example, franchisee receives higher investment incentive from a low royalty, which weakens franchisor's incentive.

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[3] Contracts are usually distinguished between complete and incomplete contracts (Hart, 1995). Complete contracts specify all relevant aspects of an exchange, whereas an incomplete contract assigns authority to somebody to decide in circumstances not covered by the formal contract.

Franchisor may compensate this disincentive effects through keeping a proportion of company-owned outlets (Windsperger and Yurdakul, 2005).

In this article, an incomplete contracting model of dual distribution in franchising is presented along the lines of Hart and Moore (1990). Three parties are distinguished: the franchisor with investment opportunity of value A, a franchisee with investment opportunity of value B and a franchisee with investment opportunity of value C (>B). A parameter σ captures an externality being specific to the plural form. Complete franchising is the unique, efficient governance structure only when the plural form externality is limited and the costs of investment are low for both franchisees. Governance structure choice is irrelevant when the costs of investment are high for all franchisees, because no franchisee will invest. Finally, a plural form governance structure is the unique, efficient equilibrium in all other cases because the power allocated to independent franchisees makes them confident that they will be able to recoup their investments. Not locational or other differences between units are necessary for the emergence of plural form franchising, but positive externalities being specific for the plural form.

The paper is organized as follows. Section 2 presents the model. In section 3, the incentive to invest is determined for each party in each governance structure. Section 4 addresses the choice of governance structure. Section 5 concludes.

2.   Model

The choice of governance structure and the incentive to invest is analyzed from an incomplete contracting perspective. The incomplete contracting perspective argues that a distinction has to be made between observable and verifiable actions, i.e. not all observable actions are also verifiable by a third party (Grossman and Hart, 1986). Only verifiable actions can be included in a meaningful contract. The classic incomplete contracting model of Hart and Moore (1990) consists of a non-cooperative game of two stages: a governance structure stage and an investment stage. The choice of governance structure determines the bargaining strength of each party in the first stage, while bargaining positions are determined by the choice of the level of investment in the second stage. The relationship between the first and the second stage is that the allocation of bargaining power by the choice of governance structure in the first stage determines the incentive to invest in the second stage.

We consider the choice of franchising or company ownership in a two-store chain. Three parties are distinguished: a franchisor choosing to produce a brand / trademark of value A, a seller deciding to add value B to the product / service of the franchisor, and a seller deciding to add value C (>B) to the product / service of the franchisor. Figure 1 presents these three parties. The top box is the franchisor, while the bottom-left (right) box is seller B(C).
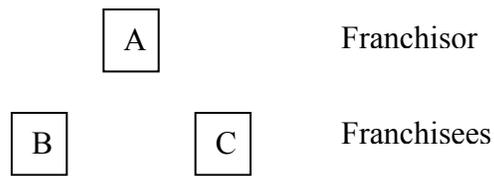
Figure 1: The three parties

The focus is on the ownership of the local units and the trademark. Figure 2 distinguishes four governance structures. Governance structure I entails that all outlets are company owned. There are two plural form governance structures. The high value franchisee is independent in governance structure II, while the low value franchisee is independent in governance structure III. All franchisees are independent in governance structure IV. A cross in a box indicates that this party has the residual control / power / authority to decide in unforeseen circumstances (Grossman and Hart, 1986; Hart and Moore, 1990).
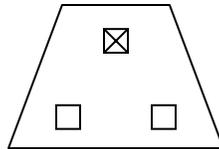
I. Wholly company owned
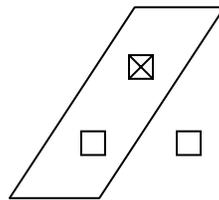
II. Plural form with low value manager
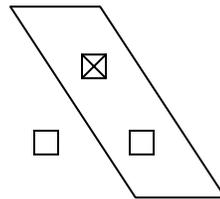
III. Plural form with high value manager

IV. Wholly franchised

Figure 2: Four governance structures

It is assumed that both parties sell one unit of the product. They decide only about adding additional value to the product. A parameter σ is introduced to capture positive externalities being specific to the plural form as described by Bradach (1997), like system wide learning ($\sigma > 1$) and competition / ratcheting / benchmarking ($\sigma > 1$). (The case $\sigma < 1$ will also be analyzed, i.e. negative externalities being specific to the plural form.) Define x_1 (x_2, x_3) as the sunk costs by the franchisor (franchisee B, franchisee C), where x_i is either 0 or 1. Table 1 summarizes these ingredients of the model by presenting the characteristic function form when all parties invest for all governance structures (G).

x	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)
G	I	II	III	IV
v(1)	A+B+C	A+σB	A+σC	A
v(2)	0	0	σB	B
v(3)	0	σC	0	C
v(12)	A+B+C	A+σB	A+σB+σC	A+B
v(13)	A+B+C	A+σB+σC	A+σC	A+C
v(23)	0	σC	σB	B+C
v(123)	A+B+C	A+σB+σC	A+σB+σC	A+B+C

Table 1: Characteristic function form when all parties invest

3.   Investment

This section consists of two parts. Section 3.1 determines the payoff for each player in every governance structure when all parties invest. Section 3.2 presents the subgame perfect equilibrium investment choices.

3.1   Investment incentives

The characteristic functions of the previous section determine the incentive to invest. We use, like Hart and Moore (1990), the Shapley value (Shapley, 1953) in order to determine the value of each player in each governance structure for all combinations of investment decisions. 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 2 presents the Shapley values belonging to the characteristic functions of table 1.

x	G	Shapley value franchisor	Shapley value seller B	Shapley value seller C
(1,1,1)	I	A+B+C	0	0
(1,1,1)	II	A+σB	0	σC
(1,1,1)	III	A+σC	σB	0
(1,1,1)	IV	A	B	C

Table 2: Shapley values when all parties invest

3.2   Investment choices

The above results are incomplete regarding the choices that will be made by the various parties. The reason is that the investment decisions are exogenous. The costs of investment have to be taken into account in order to determine the investment decisions. Define k_1 (k_2, k_3) as the sunk costs by the franchisor (buyer B, buyer C). All payoffs in the game are now specified. Appendix 1 depicts the extensive form of the game. The subgame perfect equilibrium investment decisions are determined by the method of backward induction. These decisions and the associated payoffs are presented in figure 3 (when $k_1 \leq A$ and $\sigma > 1$).[4][5]
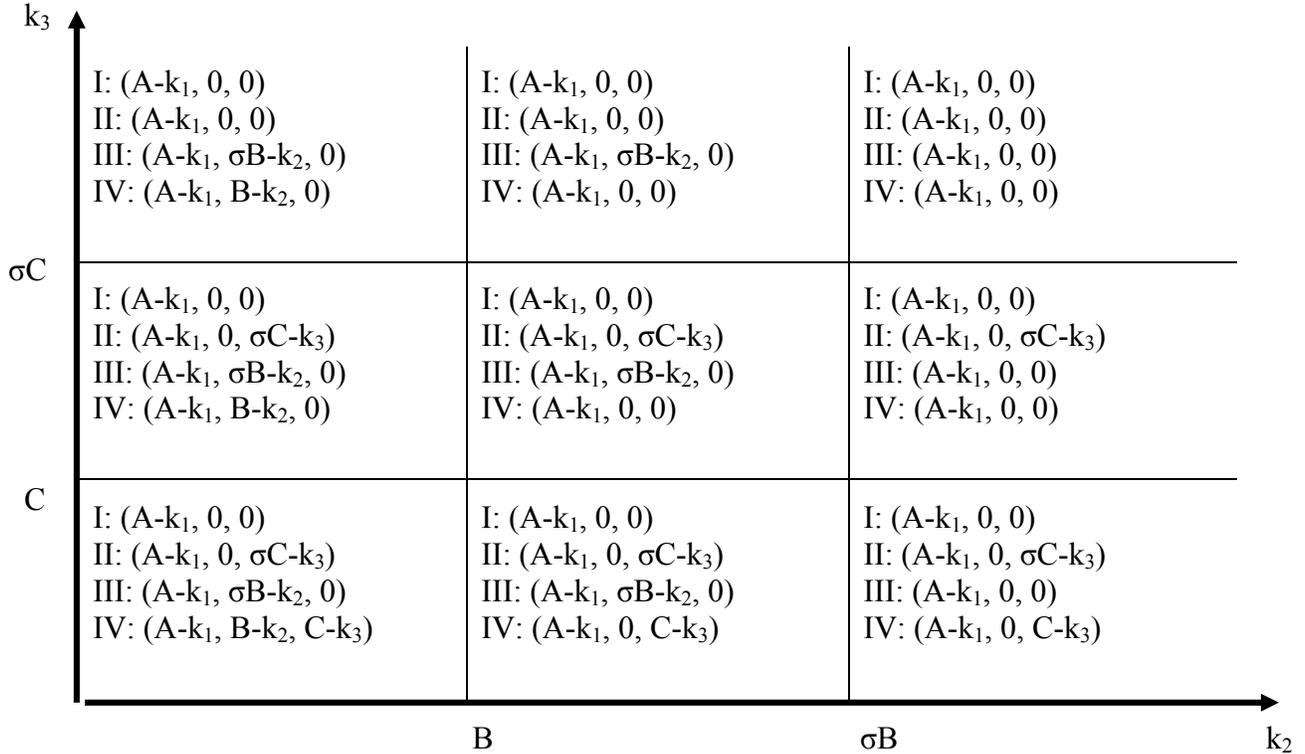
k_3

I: $(A-k_1, 0, 0)$ II: $(A-k_1, 0, 0)$ III: $(A-k_1, \sigma B-k_2, 0)$ IV: $(A-k_1, B-k_2, 0)$	I: $(A-k_1, 0, 0)$ II: $(A-k_1, 0, 0)$ III: $(A-k_1, \sigma B-k_2, 0)$ IV: $(A-k_1, 0, 0)$	I: $(A-k_1, 0, 0)$ II: $(A-k_1, 0, 0)$ III: $(A-k_1, 0, 0)$ IV: $(A-k_1, 0, 0)$
I: $(A-k_1, 0, 0)$ II: $(A-k_1, 0, \sigma C-k_3)$ III: $(A-k_1, \sigma B-k_2, 0)$ IV: $(A-k_1, B-k_2, 0)$	I: $(A-k_1, 0, 0)$ II: $(A-k_1, 0, \sigma C-k_3)$ III: $(A-k_1, \sigma B-k_2, 0)$ IV: $(A-k_1, 0, 0)$	I: $(A-k_1, 0, 0)$ II: $(A-k_1, 0, \sigma C-k_3)$ III: $(A-k_1, 0, 0)$ IV: $(A-k_1, 0, 0)$
I: $(A-k_1, 0, 0)$ II: $(A-k_1, 0, \sigma C-k_3)$ III: $(A-k_1, \sigma B-k_2, 0)$ IV: $(A-k_1, B-k_2, C-k_3)$	I: $(A-k_1, 0, 0)$ II: $(A-k_1, 0, \sigma C-k_3)$ III: $(A-k_1, \sigma B-k_2, 0)$ IV: $(A-k_1, 0, C-k_3)$	I: $(A-k_1, 0, 0)$ II: $(A-k_1, 0, \sigma C-k_3)$ III: $(A-k_1, 0, 0)$ IV: $(A-k_1, 0, C-k_3)$

σC, C labels on left axis; B, σB labels on bottom axis; k_2

Figure 3: Subgame perfect equilibrium payoffs when $k_1 \leq A$ and $\sigma > 1$

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[4] The case $k_1 > A$ is presented by replacing the payoff $A-k_1$ of the franchisor by 0 in all governance structures in figure 1.
[5] The case $\sigma < 1$ is presented in appendix 2.

4. Efficient governance structure

This section formulates results regarding the efficient governance structure choice in the first stage of the game. 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. We limit ourselves to the case $k_1 \leq A$ and $\sigma > 1$.

The efficient governance structure choice, and its feasibility, is determined by figure 3. All governance structures are efficient in the north-east rectangle, i.e. they all result in a surplus of $A-k_1$. The franchisor is the only party investing in specific assets because its costs of investment are sufficiently low. Governance structure III is the unique efficient governance structure in the north-west and north rectangle (because $\sigma B-k_2 > B-k_2 > 0$). The franchisor invests again in every governance structure. Franchisee C never invests when $k_3 > \sigma C$ because the costs of investment are too high. This is efficient. Franchisee B 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 franchisee B is larger than its costs. However, franchisee B invests in the governance structures III and IV because sufficient power is allocated to this franchisee. Governance structure III is the unique efficient governance structure because it generates the dual distribution externality, whereas governance structure IV does not. A similar reasoning applies to governance structure II being uniquely efficient in the east and south-east rectangle.

Governance structure I is never efficient in the remaining four rectangles, while governance structure IV is only efficient for certain parameter values in the south-east rectangle. Governance structure IV is efficient when $\sigma B-k_2 < B-k_2+C-k_3$ and $\sigma C-k_3 < B-k_2+C-k_3$, i.e. $k_3 < C-(\sigma-1)B$ and $k_2 < B-(\sigma-1)C$. Figure 4 presents the situation where $B-(\sigma-1)C < 0$, i.e. there are substantial positive dual distribution externalities.[6] There are no parameter values for which governance structure IV is the unique efficient governance structure. The intermediate investment incentives for both franchisees in governance structure IV are not strong enough to override the strong investment incentives for either franchisee B in governance structure III or franchisee C in governance structure II.

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[6] The upward sloping line in the figures 2 and 3 is characterized by $k_3 = \sigma(C-B)+k_2$.

k₃ is shown on the vertical axis; the diagram contains the following labels:

k_3

σC

$\sigma(C - B)$
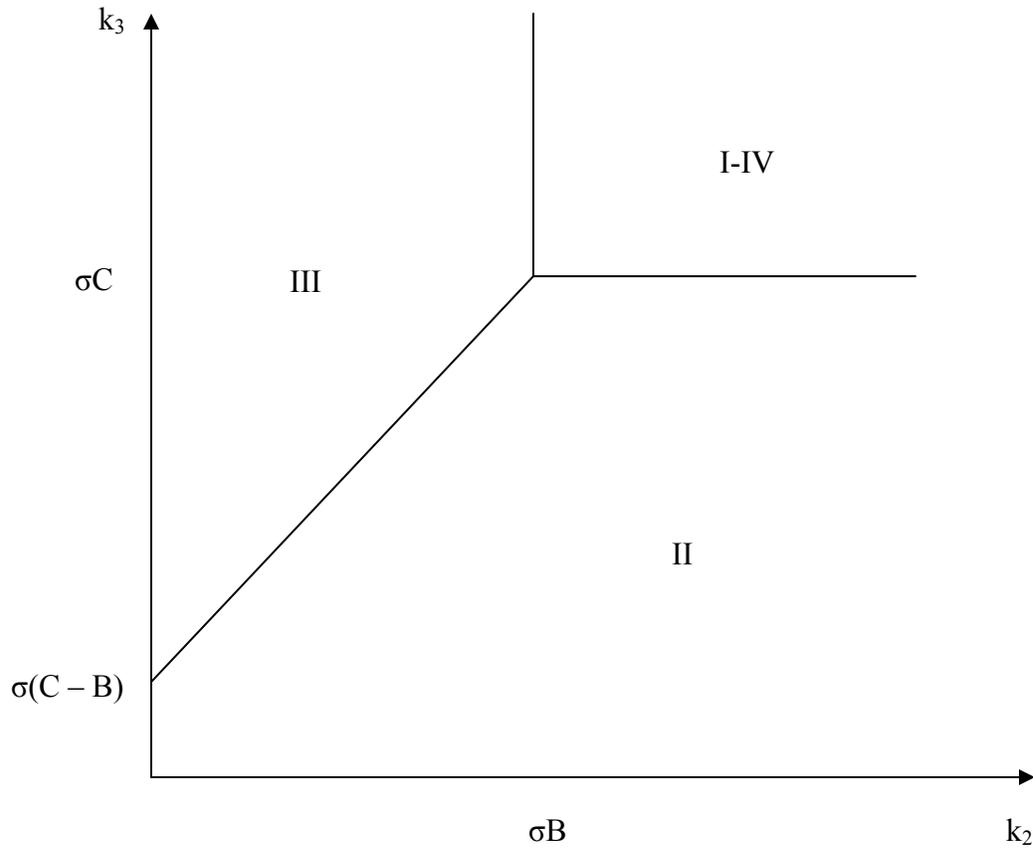
I-IV

III

II

σB

k_2

Figure 4: Efficient governance structures when $\sigma \geq 1+B/C$

Governance structure II is the unique efficient governance structure in the south-east. It discourages efficiently investment by franchisee B with its relatively high costs of investment, while franchisee C invests and generates the dual distribution externality. The reverse holds in the north-west. Governance structure III is efficient because discourages investment by franchisee C with its relatively high costs of investment, while franchisee C invests and generates the dual distribution externality.

Figure 5 presents the efficient governance structure choices when $B-(\sigma-1)C > 0$. The intermediate investment incentives for both franchisees in governance structure IV create more value than the strong investment incentive for either franchisee B in governance structure III or franchisee C in governance structure II when the plural form externality is limited.
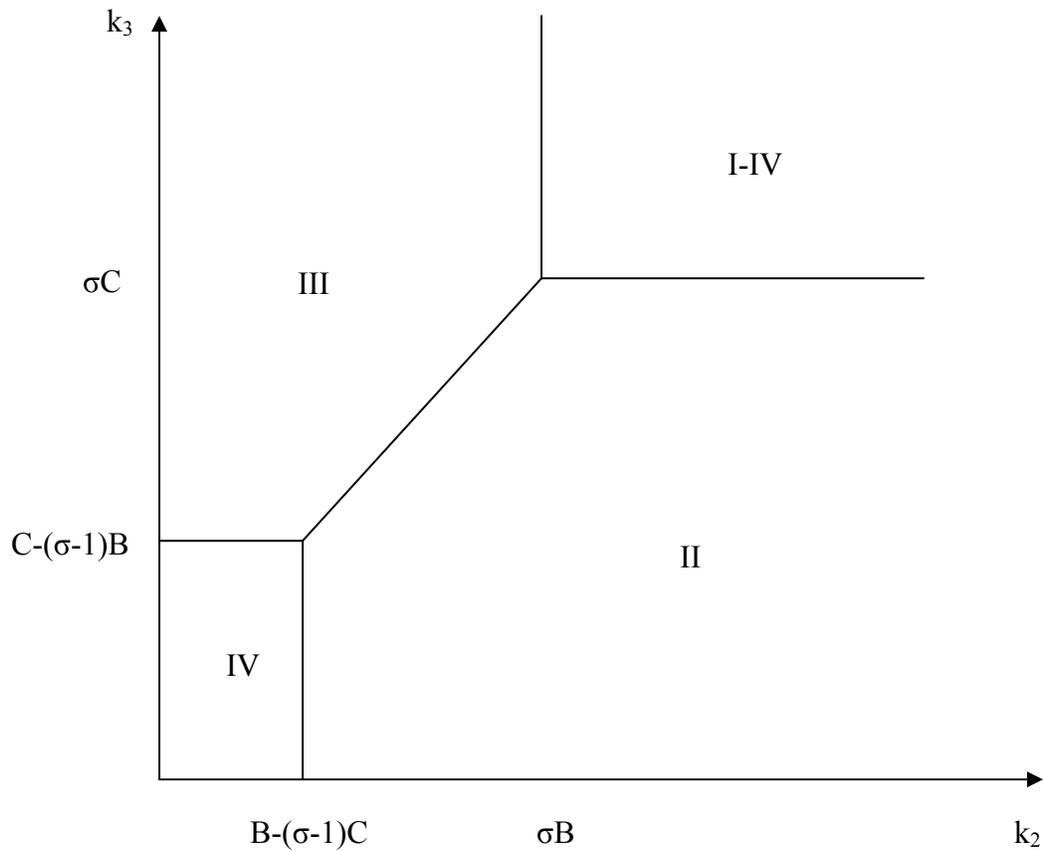
Figure 5: Efficient governance structures when $1 < \sigma < 1+B/C$

The above results will now be summarized in a number of results.

Result 1: Governance structure I is never a unique efficient governance structure.

Explanation: The franchisees have no power in governance structure I, and therefore no incentive to invest. Governance structure I is only as efficient as the other governance structures when the costs of investment discourage investment by all franchisees in all governance structures.

Result 2: Governance structure II is the unique efficient governance structure choice when $\sigma > 1$, k_2 is above a certain level, and k_3 is below a certain level.

Explanation: Franchisee B will not invest because its costs of investment are too high, regardless whether it has power or not. The costs of investment of franchisee C are low, but some power is needed in order to cover these costs. Governance structures III and IV remain. Governance structure III strictly dominates governance structure IV when there are positive plural form externalities, i.e. $\sigma > 1$.

Result 3: Governance structure III is the unique efficient governance structure choice when $\sigma > 1$, k_2 is below a certain level and k_3 is above a certain level.

Explanation: Similar to the explanation of result 2.

Result 4: Governance structure IV is the unique efficient governance structure choice when k_2 and k_3 are small and $\sigma < 1+B/C$.

Explanation: The attractiveness of governance structure IV is that both franchisees have an incentive to invest because each of them has power. However, the positive plural form externality is not captured. Governance structures II and III have the advantage of generating the positive plural form externality, but only the independent franchisee invests. The value of having both franchisees investing dominates the generation of the plural form externality by one investing franchisee when plural form externality is not too high.

Result 5: Governance structure IV is never a unique efficient governance structure choice when $\sigma > 1+B/C$.

Explanation: The reverse of the explanation of result 4.

Result 6: Plural form franchising, i.e. either governance structures II or III, is the unique efficient governance structure for the parameter values specified in the results 2 and 3, even when $B = C$.

Explanation: This result covers special cases of the results 2, 3 and 5. The value generated by the independent franchisee in a plural form governance structure is higher than the value generated by either one or two franchisees in governance structure IV. This result shows that it is not necessary for the emergence of the plural form that there are locational differences, or other differences between the franchisees. System wide externalities are responsible for the plural form being a unique, efficient governance structure.

Result 7: If $\sigma=1$, then governance structure IV is efficient for all values of the parameters k_2 and k_3.

Explanation: Figure 6 illustrates the result. Governance structure IV is always efficient because the incentive to invest for each franchisee in governance structure IV is always at least as strong as in the governance structures I-III. This result indicates that the positive plural form externality is crucial for a plural form governance structure to be a unique, efficient governance structure.
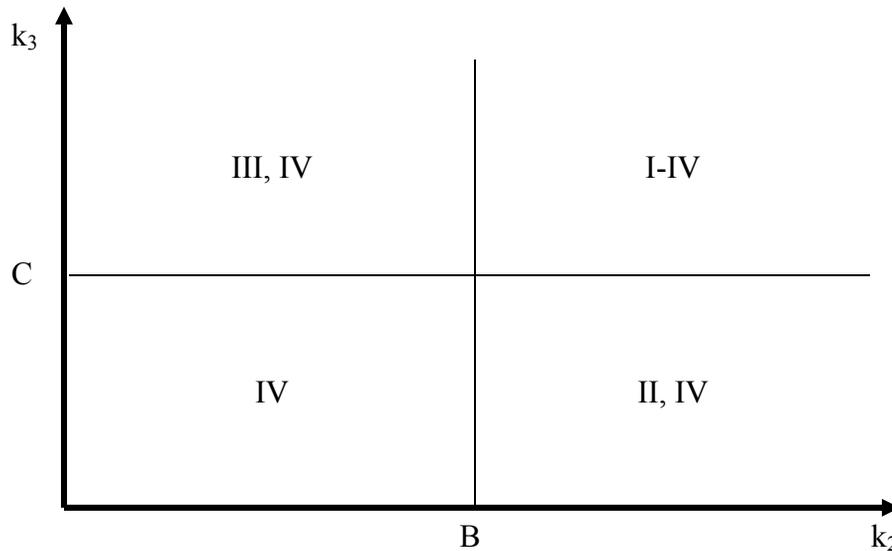
Figure 6: Efficient governance structure choice when σ = 1

5. Conclusions and further research

Lutz (1995, 129) stated: 'A multiple unit model can determine whether locational differences are necessary for dual distribution, or whether dual distribution can arise as a solution for incentive problems even when all units are ex ante identical. The most important extension will be to examine the choice of ownership for individual units within a multiple-unit chain. Since we observe franchise relationships almost exclusively in these chains, this extension is crucial for developing empirical predictions'. We have presented a multiple unit model with the plural form being a unique, efficient governance structure. Not locational or other differences between units are necessary for the emergence of plural form franchising, but positive externalities being specific for the plural form.

Our model is too simple to capture the richness of franchising practices. For example, Lutz (1995, 129) continued: 'Such a multiple-unit model should have several key features. First, at least some of the central firm's effort creates a public good: improvements in the trademark will increase profits at all stores in the chain. Second, any local manager's action may also affect the profits at other units: this will be the case when a local manager's action affects the value of the trademark. Thus incentives for all parties are interdependent.' These two features are not incorporated is the current model. However, these and other several extensions are possible.

First, notice that the parameter σ depends in the current model on governance structure, but in rudimentary way because σ(G)= σ when G=II, III or σ(G)= 1 when G=I, IV. There are various possibilities to model the parameter σ as the outcome of an equilibrium process, where σ is either smaller, or equal, or larger than one, like the modeling of 'ratcheting' by the literature regarding relative compensation (Lazear and Rosen, 1981 and Green and Stokey, 1983), or complementarities along the lines of Bradach (1997) by the systems of attributes literature (Holmstrom and Milgrom, 1991 and 1994). This extension entails that an additional stage is added between the current

two stages of the game. Second, the percentage of company owned outlets can be only one of three levels in our model in the various governance structures, i.e. 0% (IV), 50% (II, III), or 100% (I). Incorporating more sellers will allow for more variability regarding the percentage of company owned outlets.

Third, the focus has been on the allocation of decision rights. However, many authors refer to the monitoring and free riding problems in franchising. The relationship between these income rights aspects of franchising and the plural form has to be determined. A similar observation holds regarding the use of royalty rates. Fourth, the extent of incompleteness is not endogenous. A franchise has to decide how much discretion is assigned to the activities of the franchisees. The standard way of dealing with this issue in franchises is the choice of the business format. Given the business format content in our model and making it endogenous along the lines of Tadelis (2002) is a challenging line of research. The extent of coverage of the business format may turn out to vary with the choice of governance structure.

Fifth, Lafontaine and Shaw (2005) highlight the importance of the trademark in dual distribution franchises. Their empirical evidence indicates that there is a strong tendency that the number of company-owned outlet increases when the value of the brand/trademark (A) increases. The comparative statics results in the current model are independent of the value (A) of the brand. However, if other governance structures are also taken into consideration, e.g. mirror images regarding authority of governance structures I-III in figure 2, then our model may be able to account for this relationship between the value of the brand and governance structure choice. This will be a topic for future research.

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Appendix 1: Extensive form

The first stage of the game consists of the choice of governance structure. There are four possible choices. The second stage of the game consists of the investment decisions of the three players. Each player decides between investing or not investing in specific assets. The sequence of their decisions does not matter in our specification of the payoffs. We depict the choice of the franchisor first, subsequently the choice of franchisee B, and finally the choice of franchisee C. The total number of choice sequences is therefore 4x2x2x2=32. The extensive form is presented in the figures 7-10 due to this large number of possible decision sequences. The payoffs are based on table 2. The payoffs below branch YYY are composed of revenues and costs. The revenues are taken straight from table 2, while each player carries it costs of specific investments. Similarly, branch NYN corresponds to investment vector (0, 1, 0), i.e. only franchisee B invests. Benefit B is generated and taken by the franchisor, while franchisee B carries the costs k_2.
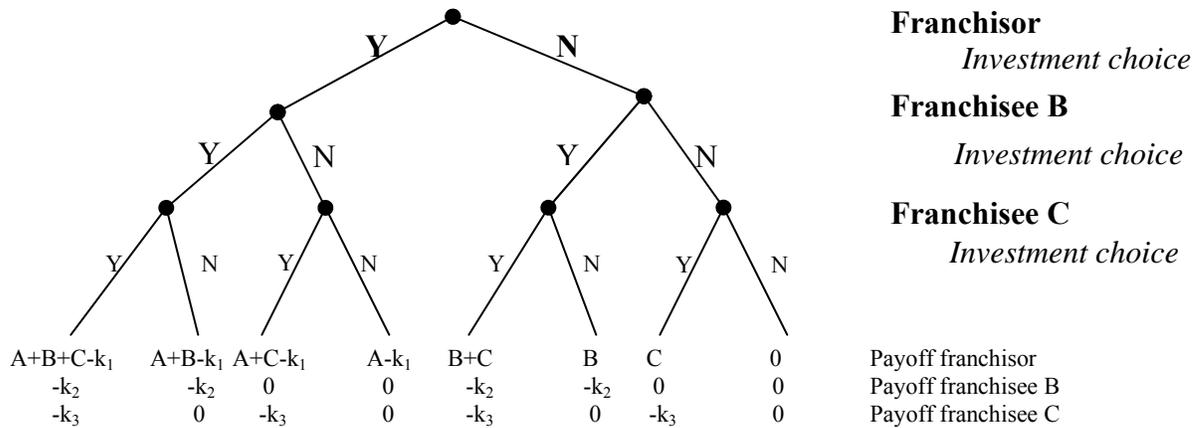
Figure 7: Extensive form when governance structure I has been chosen

Franchisor

Investment choice

Franchisee B

Investment choice

Franchisee C

Investment choice

$A+B-k_1$	$A+B-k_1$	$A-k_1$	$A-k_1$	B	B	0	0	Payoff franchisor
$-k_2$	$-k_2$	0	0	$-k_2$	$-k_2$	0	0	Payoff franchisee B
$C-k_3$	0	$C-k_3$	0	$C-k_3$	0	$C-k_3$	0	Payoff franchisee C
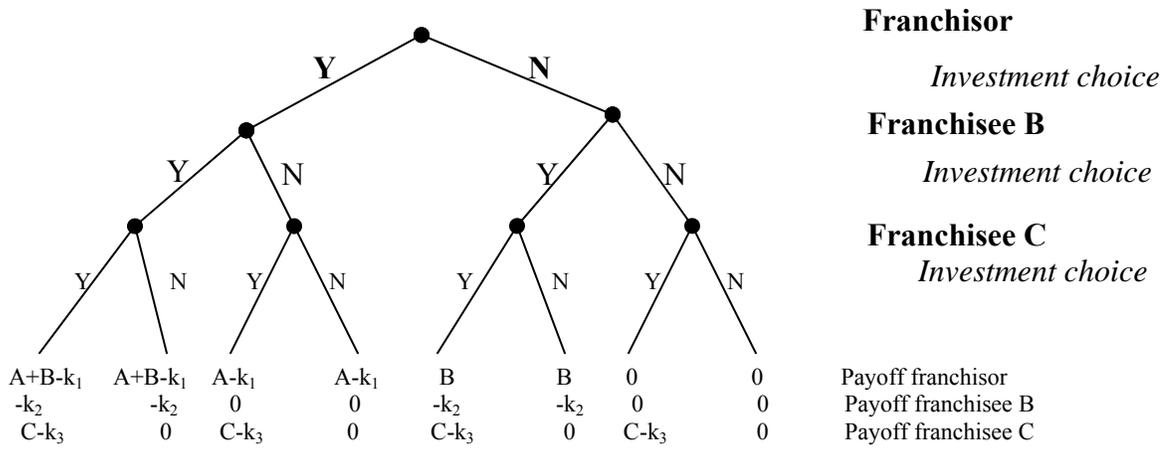
Figure 8: Extensive form when governance structure II has been chosen

Franchisor

Investment choice

Franchisee B

Investment choice

Franchiseee C

Investment choice

$A+C-k_1$	$A-k_1$	$A+C-k_1$	$A-k_1$	C	0	C	0	Payoff Franchisor
$B-k_2$	$B-k_2$	0	0	$B-k_2$	$B-k_2$	0	0	Payoff franchisee B
$-k_3$	0	$-k_3$	0	$-k_3$	0	$-k_3$	0	Payoff franchisee C
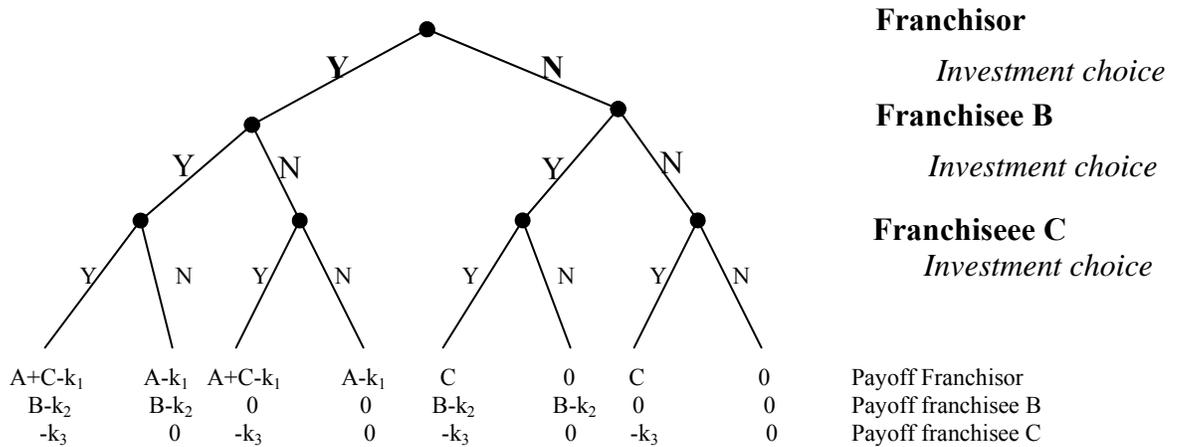
Figure 9: Extensive form when governance structure III has been chosen

Franchisor
Investment choice

Y   N

Franchisee B
Investment choice

Y   N   Y   N

Franchisee C
Investment choice

Y   N   Y   N   Y   N   Y   N

$A-k_1$	$A-k_1$	$A-k_1$	$A-k_1$	0	0	0	0	Payoff Franchisor
$B-k_2$	$B-k_2$	0	0	$B-k_2$	$B-k_2$	0	0	Payoff franchisee B
$C-k_3$	0	$C-k_3$	0	$C-k_3$	0	$C-k_3$	0	Payoff franchisee C

Figure 10: Extensive form when governance structure IV has been chosen

Appendix 2: Subgame perfect equilibrium payoffs when σ<1
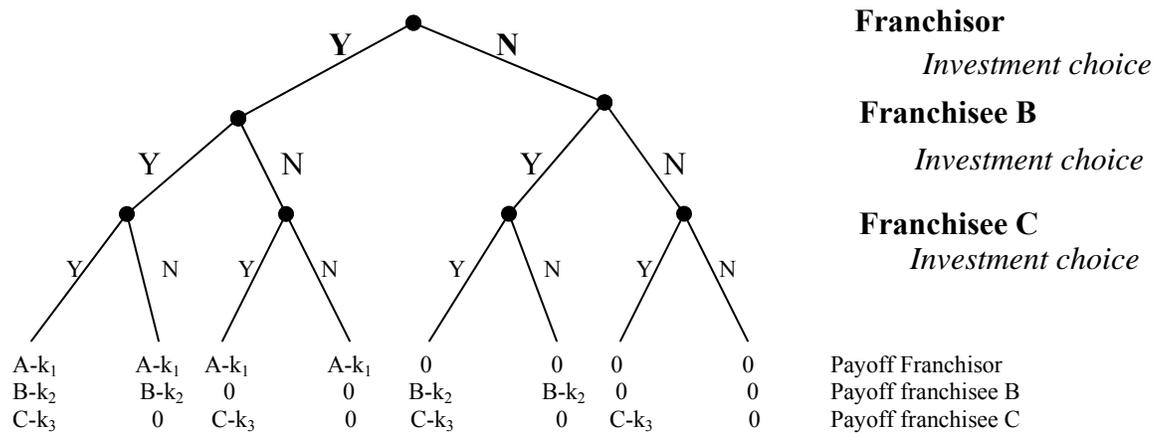
k_3

I: $(A-k_1, 0, 0)$ II: $(A-k_1, 0, 0)$ III: $(A-k_1, \sigma B-k_2, 0)$ IV: $(A-k_1, B-k_2, 0)$	I: $(A-k_1, 0, 0)$ II: $(A-k_1, 0, 0)$ III: $(A-k_1, 0, 0)$ IV: $(A-k_1, B-k_2, 0)$	I: $(A-k_1, 0, 0)$ II: $(A-k_1, 0, 0)$ III: $(A-k_1, 0, 0)$ IV: $(A-k_1, 0, 0)$
I: $(A-k_1, 0, 0)$ II: $(A-k_1, 0, 0)$ III: $(A-k_1, \sigma B-k_2, 0)$ IV: $(A-k_1, B-k_2, C-k_3)$	I: $(A-k_1, 0, 0)$ II: $(A-k_1, 0, 0)$ III: $(A-k_1, 0, 0)$ IV: $(A-k_1, B-k_2, C-k_3)$	I: $(A-k_1, 0, 0)$ II: $(A-k_1, 0, 0)$ III: $(A-k_1, 0, 0)$ IV: $(A-k_1, 0, C-k_3)$
I: $(A-k_1, 0, 0)$ II: $(A-k_1, 0, \sigma C-k_3)$ III: $(A-k_1, \sigma B-k_2, 0)$ IV: $(A-k_1, B-k_2, C-k_3)$	I: $(A-k_1, 0, 0)$ II: $(A-k_1, 0, \sigma C-k_3)$ III: $(A-k_1, 0, 0)$ IV: $(A-k_1, B-k_2, C-k_3)$	I: $(A-k_1, 0, 0)$ II: $(A-k_1, 0, \sigma C-k_3)$ III: $(A-k_1, 0, 0)$ IV: $(A-k_1, 0, C-k_3)$

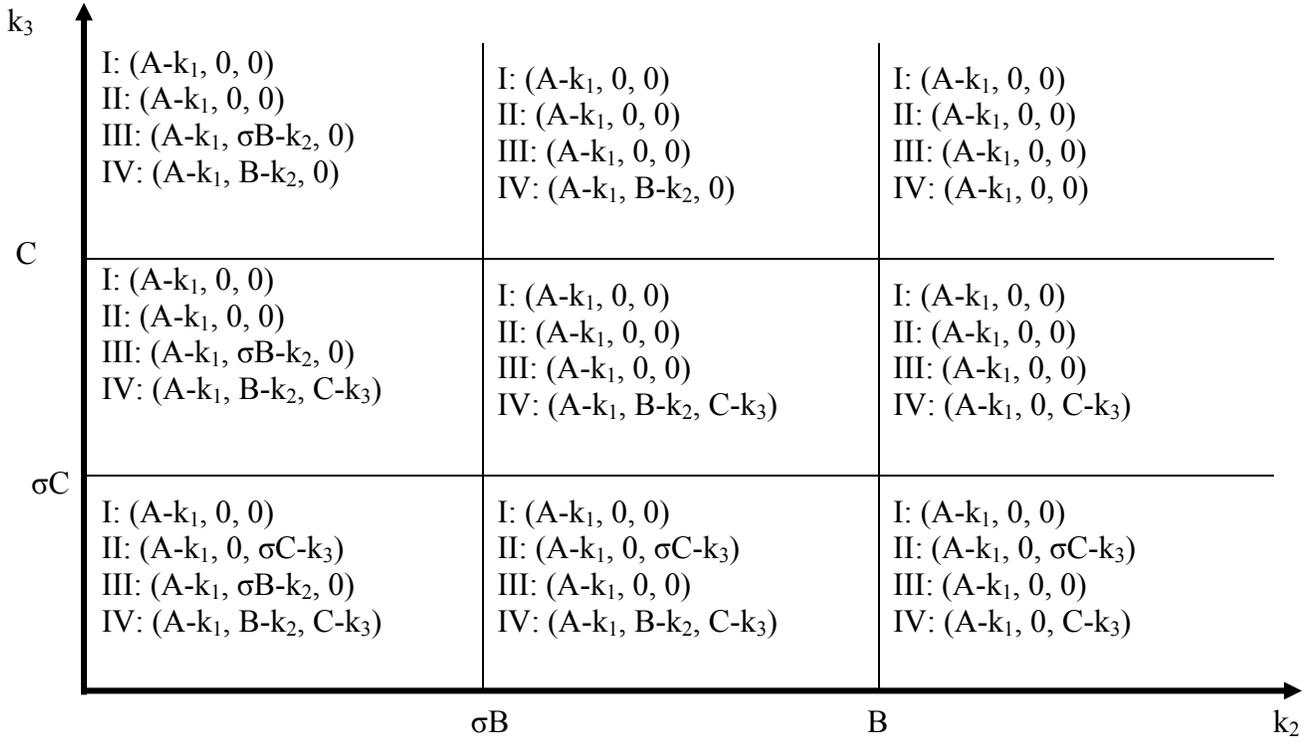Vertical axis labels (top to bottom): C, σC. Horizontal axis labels (left to right): σB, B, k_2.

Figure 11: Subgame perfect equilibrium payoffs when $k_1 \leq A$, σ<1