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„Allocation of authority in intra- and interorganizational networks"

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"THE WISEST HAVE THE MOST AUTHORITY"

PLATO

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1. Introduction

The allocation of authority is without a doubt a key component of organizational architecture and moreover necessary for the grasp of organizations. This statement already dates back to the organizational theorists Coase (1937) and Simon (1951) who explained the existence of authority with the concept of incomplete contracts deriving from uncertainty and intangibility of assets (in this case mostly knowledge). The concept of authority was enhanced in the mid 1980's by Grossmann and Hart's (1986) definition of authority as a decision right over the use of an asset. They state that "…a firm that owns a machine may not be able to sell it without the permission of the lenders for which the machine serves as collateral; more generally, a firm may give another firm specific authority over its machines…" (Grossmann and Hart, 1986), which distinguishes ownership rights from authority.

In 1997, the researcher duo Aghion and Tirole enhanced the view of Grossmann and Hart by distinguishing real and formal authority. The theory shows that an agent (lower level employee) could be granted the effective control over decisions (real authority), while her boss (principal) still keeps the formal authority, the actual right to decide. Hence, formally, she rubberstamps the agent's decision. Accordingly, the decision making structure in an organization not only depends on formally integrated structures, like organizational charts or job descriptions, but also on the allocation of real authority.

Despite the existence of a great deal of theoretical contributions to the allocation of authority in intra- (Aghion & Tirole, 1997; Baker et al., 1999; Brickley et al., 2003; Dessein, 2002; Fehr, 2010; Malone, 1997; March 1991; Nagar, 2002; Stein, 2002) and interorganizational networks (Azevedo, 2009; Elfenbein & Lerner, 2003; Hendrikse & Windsperger, 2011; Higgins, 2006) empirical research on the allocation of authority falls behind. The huge gap between theory and empirical studies could be explained by the difficulty in

acquiring useful large-scale data on the allocation of authority. Most commonly, empirical studies are based on surveys asking one party (either the principal or the agent) about their influence on certain decisions in respect to the other party. As this measurement neither indicates a clear measure of real authority, nor formal authority, there is a strong suspicion that calculating both, real and formal authority, on the same sample is a big challenge for researchers. (Christie et al. (2003); Nagar (2002); Foss (2005)) So far, only two empirical studies try to measure both authorities, namely Li et al. (2011) and Hippmann et al. (2012). Li et al. (2011) determine the allocation of formal and real authority in intraorganizational networks. They measure CEO's real authority counting the amount of words spoken in conference calls. Hippmann et al. (2012) on the other hand, test Aghion and Tirole's view on allocation of authority in interorganizational networks, namely joint ventures. For the measure of real authority, they rely on survey data obtained from a questionnaire about the joint venture partner's influence on decision-making on different topics.

Main determinants on the allocation of real and formal authority found in empirical researches are intangible knowledge assets, uncertainties and incentive compensation (Alvarez & Barney, 2005; Bester et al., 2008; Elridge, 2007; Fehr, 2010; Itoh, 2001; Jensen & Meckling, 1992; Nonaka, 1994; Paola et al., 2010). Aforementioned determinants are also not the easiest to measure accurately.

As can be seen, the difficulty in acquiring useful data sets, the complicated measurement of authority and the countless approaches for measuring the independent variables are some of the reasons empirical testing remains elusive.

Therefore, the goal of this work is to give a complete overview of existing researches and studies that empirically assess the allocation of authority within and between firms as well as networks. Based on the conceptualization of authority proposed by Aghion and Tirole (1997), as formal and real authority, determinants and measurement issues of authority are reviewed and discussed. As already mentioned, albeit the existence of an impressive amount

of literature bearing on allocation of decision making rights and authority, little empirical studies are found, which could derive from the fact that collecting useful data to empirically test these theoretical constructs is very cumbersome. Another possible problem could be that the necessary data to test hierarchical designs is based on intrafirm dynamics, which are rarely recorded. Although you may get access to rich data sets, the challenge of discovering plausible exogenous variation in hierarchical architecture remains.

The organization and structure of the work will be as follows. In the next section I will describe three of the theories of new institutional economics, as most of the theoretical and empirical works on authority rely either on agency, property rights or transaction cost theory. Section 3 presents an overview of the concept of decision rights and determines the main variables influencing the allocation of decision rights in organizations, namely knowledge and uncertainties. In continuation, section 4 will distinguish and define intra- from/and interorganizational networks. In the following section 5, the most important theoretical models trying to explain authority with main focuses on either knowledge processing, incentive schemes or real & formal allocation of decision rights are specified. As keystone of this paper, a list of the latest empirical researches on the allocation of authority/decision rights with special emphasis on their variable measurements is provided in section 6. The list gives a near-complete overview of the types of data and measurements used in empirical studies on authority. Detailed explanations of most of the empirical papers mentioned in the list are given and are classified based on measurement of either real or formal authority and on either intra- or interorganizational networks and their underlying main theoretical conceptualization. Finally, findings will be discussed and implications for future research will be addressed.

2. New institutional economics

According to new institutional economics, institutions are formally formulated with informal described rules and their implementation. These rules restrict individuals in their transactions. The three most important theories of new institutional economics are discussed now in more detail, as this work will come across these theories in the second part.

2.1 Transaction cost theory

The transaction cost theory was constituted by Coase (1937) and 50 years after its constitution, still heavily discussed in literature. His theory was refined by Williamson (1973, 1975, 1991) who analyzed the efficiency of transactions in more detail. According to Williamson, a transaction is efficient if the organizational structure is selected where the sum of production costs and transaction costs are lowest.

Furthermore, the theory differentiates between ex-ante and ex-post transaction costs. Ex-ante costs occur before the contract is accomplished and include search, information and bargaining costs. Ex-post costs may occur after the contract is signed and may include policing and enforcement costs.

Theorists include behavioral assumptions in the view of transaction costs, such as bounded rationality, opportunistic behavior and risk neutrality of the contracting parties. Klein, Crawford and Alchian (1978) introduced an asset specifity view to transaction cost economics. Specific investments give rise to hold-up problems. If a contracting party (A) makes a specific investment for working together with another firm (B), the specific investment of A gives rise to the bargaining power of B. Also if cooperating would be more efficient for both of them than working "alone", the possible loss of bargaining power restrains them from cooperating. Many researchers studied the hold-up problem and

Klein (1995) showed that when a so-called self-enforcement mechanism is implemented in the contract, hold-up problems are reduced.

Williamson (1973) states that the factors that influence transaction costs are asset specific investments, uncertainty and the frequency of identical transactions. The higher the asset specific investments and uncertainty, the more efficient the hierarchical organizational structure will be. Which in turn means that the lower the asset specifity and the uncertainty, the higher the efficiency for transactions over the market (decentralized organizational structure).

2.2 Agency theory

The agency theory has its roots in papers by Berle and Means (1932), Jensen & Meckling (1976), Holmström (1979) and tries to solve problems which arise "between two (or more) parties when one, designated as the agent, acts for, on behalf of, or as representative for the other, designated the principal, in a particular domain of decision problems." (Ross 1973) Problems arise when the principal and the agent do not regulate the same objectives and for the principal it is hard to monitor the actions of the agent. Moreover, problems will occur when the agent and the principal do not have the same propensity for risk.

Agency theory implicates the delegation of tasks and decision right assignments in the case of information asymmetry. This asymmetry of information provokes opportunistic behavior or self-interested behavior on the side of the party with privileged information.

The problems which can arise between principal and agent, can arise because of hidden characteristics, hidden action, hidden information and hidden intention and can be categorized in adverse selection, moral hazard and hold up. To overcome these problems, agency costs (costs for signaling, screening and welfare loss between the best and the actual alternative) arise. From an agency

theory perspective, costs have to be lower than the welfare loss for not choosing the best alternative.

Solutions to these problems can be provoked through hierarchical control, information systems, incentive-schemes, organizational culture, reputation or trust (Eisenhardt, 1989).

In the network theory, Lafontaine and Slade (1997) found out that networks often use agency theory as an explanation of their growth strategy. Organizations are able to grow faster than the increase of monitoring costs during the process of expansion. Moreover, monitoring costs also increase with geographic and cultural distance.

2.3 Property rights theory

The property rights view was first discussed by Coase (1960), Demsetz (1967) and Alchian (1965) and got newer contribution from Grossman and Hart (1986), Hart and Moore (1990), Christie (2003) and Baker et al. (2006; 2008). The property rights theory basically examines the ownership rights of a good.

According to the first discussers, property rights consist of the right to use a good, the right to change it, the right to capture the profit or suffer the loss and the right to sell it and receive the revenues. The fist two rights are referred to as residual decision rights, whereas the last two are referred to as residual income or ownership rights.

According to Hart and Moore (1990) the contractibility of intangible assets determines the ownership structure of the firm. The most important difference to the transaction cost theory is the relevance of intangible and non-contractible assets in the property rights approach. Demsetz (1967) stated that the property rights theory supports the transaction cost theory in the proper alignment of resources.

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Intangible assets cannot be codified and transferred and therefore contractibility for intangible assets is low, whereas tangible assets are easy to transfer and therefore count as high contractible. Examples of intangible assets are local market knowledge or special skills and capabilities. Hart and Moore (1990) show that property rights theory disregards tangible assets and is only based on intangible assets, therefore depends on incomplete contracts.

According to property rights theory, the individual with the greater amount of intangible assets (e.g. local market knowledge) should have more property rights in order to generate a higher profit. (Windsperger et al. 2006)

2.4 Others

Another theory that focuses on resources is the *resource scarcity view*. Barney (1991) states that by holding more and better resources that increase in some way the benefit for costumers, a firm can achieve competitive advantage. It is crucial that this firm is and stays the only one with the core competences, which generate the competitive advantage. Barney (1991) lists requirements for resources in order to generate sustainable competitive advantage. According to the resource scarcity view, firms' resources have to be: valuable, unique or rare, immobile, non substitutable and not easy to imitate.

A complement to the resource-based view is the *relational view*, which focuses on network resources instead of the firm's resources (Duschek, 2004). The relational theory implies that network resources achieve competitive advantage if the network relies on idiosyncratic interorganizational resources, knowledge sharing routines, complementary resources and competences and institutional frameworks of controlling and managing the network.

Another theory that is allied to the resource scarcity view is the organizational *capabilities view*. Organizational capabilities can be used to perform firms' basic operations, improve firms or apply new strategies before the competition does.

This theory is closely linked to the exploration and exploitation approach. (Collins, 1994)

3. Decision rights

The allocation of decision rights in organizations is a key determinant of the design of hierarchical arrangements. According to Grossman & Hart (1986) the principle of decision rights is based on the authority to use and evolve the assets of a firm. Therefore this chapter will focus on the allocation of decision rights and their determinants.

Figure 1 gives a good and simple overview of the determinants of business strategy, structure (in figure 1 referred to as "architecture") and the value of the firm and highlights the importance of the allocation of decision rights, the reward system and an evaluation system for group or individual performance – named "Organizational Architecture" from Brickley et al. (2007).

This figure shows that information and production technologies, market conditions and regulations determine the business strategy, which in turn has an important influence on the organizational architecture. The first and foremost target of a firm is reflected in its organizational strategy, but as it is shown, Alfred Chandlers (1962) "Structure follows Strategy" is just half the story. As strategy can be affected by architecture as well, there is a two-way arrow drawn to emphasize the interdependent effects of the two. Hall and Saias (1980) were one of the first ones to claim that structure also partly determines strategy. After all, strategy and architecture bias the incentives and actions of employees within the firm thus have major influence on the firm's value.

Now as coherences within an organization are outlined and decision right assignment is shown to be a key component of organizational design, decision rights should be discussed in more detail.

Business environment		
Technology	Markets	Regulation
• Computers • Telecommunications • Production methods	• Competitors • Customers • Suppliers	• Taxes • Antitrust • International

Strategy

- Choice of industries
- Basis for competition
  (price, quality, service)

Organizacional achitecture

- Decision-right assignment
- Reward system
- Performance-evaluation system
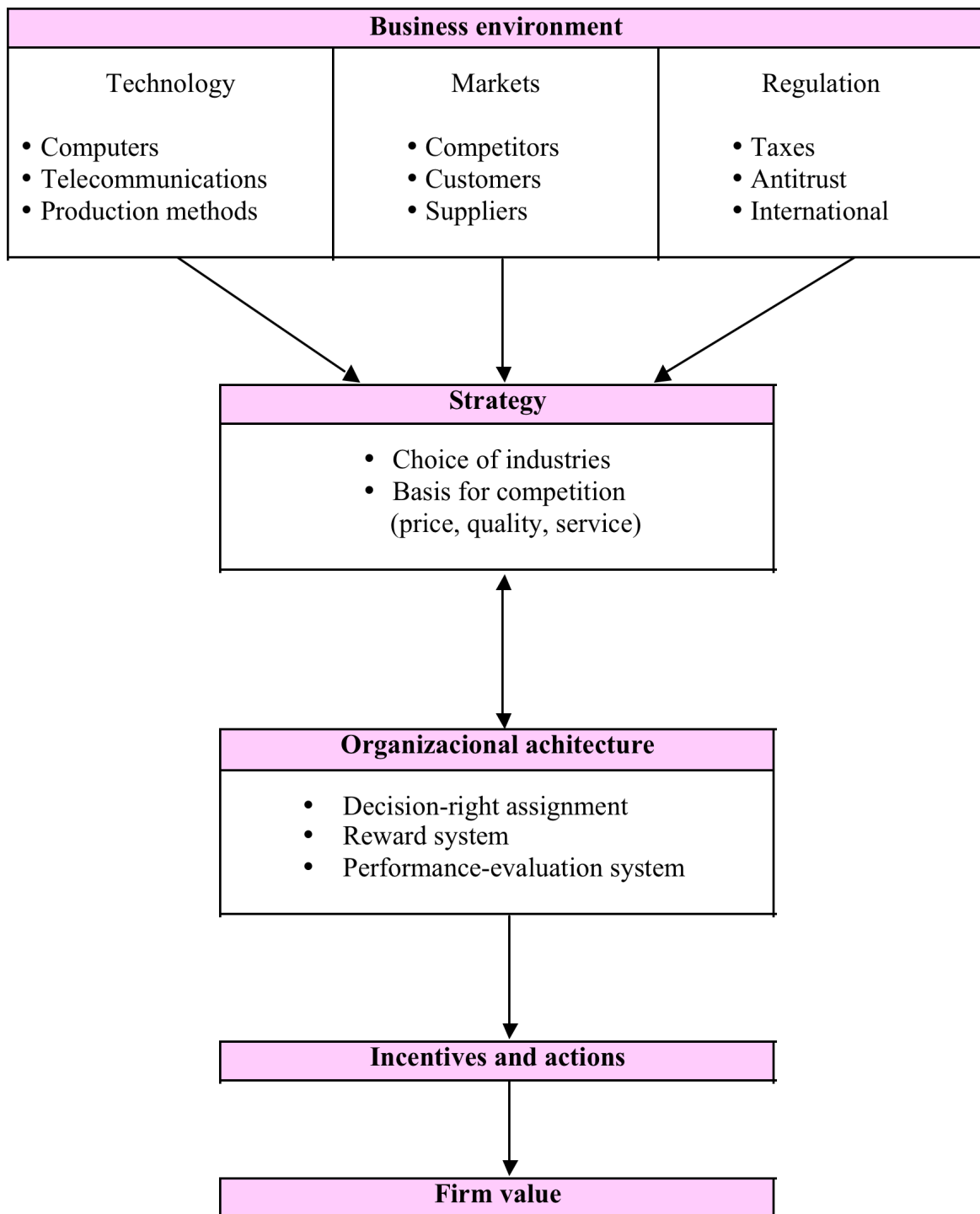
Incentives and actions

Firm value

Figure 1: The Determinants of Strategy, Organizational Architecture, and Firm Value (modified from Brickley et al.,2007, p. 310)

Jensen & Meckling (1992) stated that the right to make a decision is the right to act and decide over a specific action and that decision rights are the economic bases for expressing that individuals have the "power" to decide on a certain topic.

In the world of politics, the allocation of decision rights work different: A political party can gain the power to decide by election or a country broadly defines its decision right framework with its political system. The concept of decision rights in political systems varies intensively. In developed social systems, individuals or organizations mostly hold the decision right over specific tangible assets or physical objects. Contrary to communist systems, where the state or the ruling party holds most of these rights.

According to Brickley et al. (2007) the economic price system is based on the existence of private property rights that include two dimensions: the right to sell/give the resource and the right to participate in the sales profits. The use of private property rights is an important attribute of a market economy. Especially the existence of alienable rights gives incentives to individuals to take suitable actions without any guidance. Which is explained by the self-regulating nature of the market and Adam Smiths' concept of the "invisible hand".

In modern society it is mostly by law that decision rights get allocated and then reselling, buying or new contractual agreements restructure these rights. (Jensen et al. 1992)

3.1 Residual and specific decision rights

Compliant with Demsetz (1998) the property rights theory distinguishes between two decision rights, namely residual and nonresidual (also referred to as specific) decision rights.

Specific decision rights

As for specific decision rights, contracts are used to specify the assigned rights precisely. These specific decision rights assign an individual in a specific situation under specific circumstances, rights and obligations. Furthermore nonresidual decision rights bear on the use of *tangible (explicit) knowledge*. Explicit knowledge can be transferred, codified and captured easily. This implies that organizational processes are documentable and can be transferred to another individual without a lot of effort (Grossmann et al 1986). Cowan et al. (2004) describe explicit knowledge as codes or standards, which can be written down in manuals or rules and be distributed by authorities or it can also be consented through constant use.

Residual decision rights

On the contrary, residual decision rights relate to the authority to affect the use of knowledge, which is not as easy to transfer, capture or codify as tangible knowledge. Residual decision rights are rights, which are not agreed by contract and often refer to market or system specific knowledge. Cowan et al. (2004) imply that *tacit knowledge* is mainly personal knowledge, which consists of information and social knowledge and thus is undefined and undifferentiated. Grossmann and Hart (1986) describe it as individual abilities and skills which are being developed by individuals during the work process without them noticing. In other words they are not aware of developing abilities and therefore they cannot describe or transfer their knowledge to others. Windsperger et al.

(2004) investigated networks, more precisely franchising networks: "in franchising, residual decision rights refer to the authority to influence the use of the franchisor's system-specific assets and the franchisee's local market assets, which are intangible and hence difficult to specify in contracts."

Jensen and Meckling (1992) intensively worked on "specific and general knowledge" and they refer to specific knowledge as cost intense to transfer and general knowledge as very inexpensive to transfer. Therefore they use these terms to differentiate "between knowledge at the extremes of the continuum measuring transfer costs".

3.2 Centralization and Decentralization

The question whether to decentralize or not derives from the allocation of decision rights. A relatively large literature has examined the choice between centralization and decentralization and literature about this topic celebrated resurgence with the advent of new communication and information technologies. Information technology simplifies the exchange of information and moreover makes it easier and cheaper to transfer and store knowledge and information and therefore favors centralization.

But this is also true the other way round: information and especially enhanced telecommunication technology facilitated also the communication flow from headquarters to the local markets and as a result improves decentralized decision-making. (Malone, 1997)

In other cases it favored decentralization because of fast changing market conditions and production technologies. Firms have to adjust promptly to these changes in order to stay competitive and if lower management or local employees hold the knowledge of the newest technologies, decision rights need to be delegated to them. Another factor preferring empowerment of employees is the fact that over the last decades competition has grown due to globalization

in many industries, therefore forced companies to take preferences into account local in order to stay competitive.

Another recent trend is that new technologies helped firms to flatten their hierarchy, as they do not need the middle management as carrier of information and rules from senior managers to employees on a lower level in the hierarchy (Brickley et al. 2007).

The assortment of centralization versus decentralization depends on the compromise between efficient use of knowledge available to agents derived from decentralized decision-making and the benefit of coordination and control allowed by a centralized structure. (Paola et al. 2010).

Decades ago, Hayek (1945) already pointed out two major problems in the design of efficient economic structures. The first major problem is the optimal use of knowledge and the other one is the question who should design the decision making structure of a firm. The choice of one structure over the other depends on the possibility to transfer knowledge, which is distributed among many individuals to just one central authority and on agents using their knowledge in a way so that the use of it maximizes the firm's value.

Before deciding on the decision making structure it is essential to know the characteristics of human decision-making:

-What is the objective of the decision maker?

-Which alternatives does the decision maker have?

-Which restrictions does the decision maker face?

A rational decision as a result of these questions would be the one, which correlates best with the decision maker's objectives.

But as humans are not rational by nature, the final decision depends on more factors. Brickley et al. (2007) derive two factors crucial for the election of alternatives: knowledge factor (depends on the knowledge and information the

decision maker holds) and the motivation factor (depends on the objectives of the decision maker).

Brickley et al. (2007) point out that the world of decision making is not just black and white, but mostly grey. Which means that a firm almost never (if it has a certain size) completely centralized nor completely decentralized. Some decision rights might be delegated to a lower level and others might stay at the CEO. Also, one decision can be split in different components and some components can be delegated and others are maintained on a higher level in the hierarchy (Christie et al. 2003). So as for Brickley et al. (2007) "the decision authority of an employee can be increased without granting the employee all rights to a particular decision."

Brickley et al. structured the components of decisions as follow:

-Initiation

-Ratification

-Implementation

-Monitoring

Fama et al. (1983) merge the components of initiation and implementation in the term "decision management", whereas ratification plus monitoring is summarized by the term "decision control". Which completely makes sense because of incentive problems. Since an employee has both of the aforementioned decision rights for one decision, dysfunctional behavior can be provoked and it is likely that the agent will make a decision that maximizes his own benefit and not the one of the firm.

3.2.1 Benefits of Decentralization

Local Knowledge (Brickley et al. 2007)

As mentioned before, if a firm is decentralized and competes in an industry where local market knowledge is important, one of the big advantages is that a firm is able to respond faster to changing market conditions, because decision rights are delegated to local managers who probably have more local market knowledge than principals at the headquarter. Furthermore, local knowledge is likely to be tacit and therefore expensive and time consuming to transfer. In a centralized system the local manager would have to ask for permission to the headquarter and in return, the headquarter has to inform the local manager how to act. These actions are time consuming and could result in delays in production, loss in sales or other negative impacts. Brickley et al. state "…*granting decision rights to the local managers promotes more rapid decision making and quicker responses to changing market conditions."* This benefit is especially true for networks as they traditionally work in many different surroundings.

Management time (Brickley et al. 2007)

Whenever decision rights are delegated to lower level employees, managers are relieved of work and thus have more time to concentrate on other decisions. Brickley et al. (2007) state that generally it is more efficient to delegate operative decisions to agents or lower level managers and centralize strategic decision making rights.

Motivation (Brickley et al. 2007)

Delegation of decision rights to local managers or lower level employees gives employees a good training in decision-making. Moreover, a higher degree of

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responsibility attracts and maintains talented employees. Furthermore the incentive of searching for new projects is increased by delegation.

3.2.2 Costs of Decentralization

Incentive Problems – Agency Costs (Brickley et al. 2007)

As described the role of knowledge in the decision of centralization and decentralization, it always seems better to delegate decision-making rights to the level where the knowledge is present. This would be true if the best alternative for the agent and for the firm were the same. But in reality, this will only occur if the owner and the decision maker are the same person. As a result, the principal has to set the right incentives for the agent in order to assure that he makes the decision that maximizes the firm's value. Therefore, the firm has to develop a monitoring and control system in order to measure the effect of the agents' decisions on the firm. However, it is nearly impossible to find out to what extent an agent individually affects the firm's profits. Hence firms have to develop the most accurate incentive systems and compensation schemes in order to get close to the perfect situation. There is no incentive system that will remove these troubles completely. However, one has to take into account that compensation systems have their price as well.

Coordination (Brickley et al. 2007)

If decision rights are delegated, local managers in different outlets are likely to make all decisions independently although some of the decisions have to be made for every outlet. If decisions which have to be made many times or for more outlets (e.g. price decisions) were to be centralized, costs could be decreased. These costs derive from either internal competition (if nearby outlets set different prices) or by redundancy (interaction effects on advertisement or market analysis for nearby outlets).

Central Information (Brickley et al. 2007)

Central managers often have valuable knowledge and experience that can be useful for the local manager. Local managers are likely to have tacit knowledge about their specific markets, however central managers have a different tacit knowledge, which is often neglected in decentralized systems. The central manager gains experience and knowledge over time from different markets whereas the local manager is limited to the information he gains from one market. This unused knowledge could lead to repeating errors and reoccurring mistakes. The contempt of economics of scale could be very cost intense. Therefore also in decentralized firms there should be a top-down information flow and a coordination of relevant information for the local manager. As this work already pointed out, transfer of knowledge can be very expensive. The more important information is held by local managers and the more independent the product demands and costs for the local market, the lower the costs of coordination. Therefore, every firm has to find a trade off between information and coordination as well as a trade off between the loss of local knowledge and a loss of economies of scale.

3.3 Determinants of the allocation of decision making rights

In this chapter, the factors influencing the degree of hierarchy or decentralization are explained. These factors are crucial for the empirical studies, which concentrate on the calculation of authority and are discussed in the second part of the work.

There are numerous different factors determining the degree of authority discussed in literature, though this work will stick mainly to the determinants formulated by Malone (1997). He sets his focus on the influence of information technology on centralization and decentralization. He formulated decision information, trust and motivation as the main factors of influence on where and how decisions are made.

Malone (1997) describes more factors, which can have an effect on the degree of centralization and decentralization of decision rights. Among others, communication costs, competitive dynamics, information, personal motivation, former hierarchical structure of the firm, government regulations, tradition of the firm, individual characteristics of employees, national culture, managerial egos, can all have a tremendous influence on hierarchical structures.

Hendrikse and Windsperger (2011) predict the influences of "behavioral uncertainty (negatively), trust (positively), franchisees' specific investments (negatively), environmental uncertainty (negatively), intangibility of system specific know-how (negatively) and contract design capabilities (positively)" on contractual completeness in franchise systems. They provided evidence of the negative influence of behavioral uncertainty, the positive influence of trust and the negative influence of specific knowledge on the complete contracts.

As shown in figure 2, the costs and benefits of these influencing factors determine the degree of centralization.
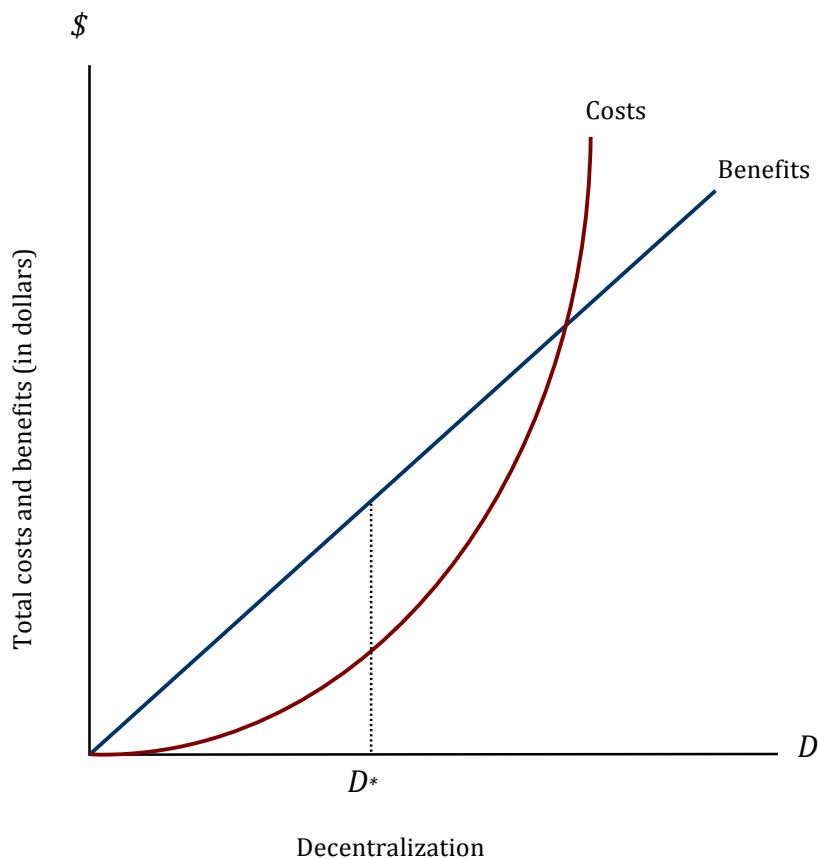
Figure 2: Trade off between total costs & benefits and the degree of decentralization (modified from Brickley et al. 2007; p. 335)

Assuming that decisions can be decentralized in varying degrees we can find the degree of decentralization (D) on the horizontal axis. If D=0, all decisions are centralized. The higher D, the more decision rights are owned by local or lower level managers. D* represents the degree of decentralization where the net benefits are maximized. The costs of decentralization include incentive problems, coordination costs and the knowledge transfer from the senior manager to the lower-level employee, whereas benefits of decentralization include the use of local knowledge, motivation factor for lower level employees and the economization of time for the senior management. If the benefits decrease (local knowledge gets less important because of changes in demand), D* will shift to the left, ergo the firm should centralize more decisions and vice

versa. If the costs decrease (information technology makes knowledge transfer more inexpensive), D* will shift to the right, which means decision rights should be more decentralized. If there are shifts in the degree of decentralization, it is crucial to make corresponding changes in the performance measurement and reward system. (Brickley et al. 2007)

3.3.1 Information and knowledge

As previously stated in many parts of this work already stated, knowledge or information is a crucial object in the organization economics or as Malone (1997) states "making good decisions requires good information." The work "The use of knowledge in society" by F.A. Hayek was pioneer work on this topic and he was the first in finding out that: "…it is a problem of utilization of knowledge not given to anyone in its totality."

To have an efficient organization, it is crucial to unite decision rights with the necessary knowledge and there are two different ways of doing so: You can delegate the right to decide to the individual with the corresponding knowledge or you can transfer the knowledge to the individual who possesses the corresponding decision rights (Windsperger, 2002; Jensen & Meckling 1992). This point indicates that the cost of knowledge transfer determines the degree of centralization.

Li et al. (2009) express problems, which arise at these 2 alternatives. If a firm prefers transferring knowledge to transferring decision rights, it will face costs of knowledge transfer. On the contrary, the firm will face losses in control, as a self-interested agent may not take an optimal decision for the firm.

To find the most efficient degree of decision right allocation, costs of bad decisions because of insufficient knowledge have to be in balance with the costs of knowledge transfer.

Influencing factors on knowledge transfer costs

As pointed out earlier, the cost of knowledge transfer determines the degree of centralization. Therefore it is necessary to know which determinants affect the cost of knowledge transfer. This in turn, depends on the different types of knowledge. If a firm mainly produces information that is very expensive to transfer to the principal, firms tend to decentralize decision rights to lower level employees (Li et al. 2009). On the other hand, the CEO will stick to his decision rights if the transfer of knowledge to the headquarter is inexpensive (Windsperger, 2002; Paola et al. 2010).

Types of Knowledge and their capabilities of transfer

Information vs. knowledge:

In organization theory information and knowledge are used synonymous, but eventually one has to differentiate. Nonaka (1994) describes information as a flow of messages, whereas knowledge is being created out of information and the effort of the information holder.

Explicit vs. tacit knowledge

Explicit knowledge is easy to transform to a formal and systematic language and therefore uncomplicated to transfer. Quite contrary to tacit or sticky knowledge, which is hard to transmit to another person (Nonka 1994).

General vs. specific knowledge

Jensen & Meckling (1992) use the terms general and specific knowledge, which are equitable to explicit and tacit knowledge respectively.

Idiosyncratic knowledge

This kind of knowledge is similar to specific knowledge but the particularity is that it is related to products or services and it depends on time and location. Therefore this knowledge can get useless if it does not get utilized in time. The

factor time makes it even more expensive and complicated to transfer (Brickley et al. 2007; Jensen & Meckling 1992).

Assembled knowledge

This kind of knowledge is gained with experience or through repetition of the same work. Therefore it is not as easy to transfer as explicit knowledge but not as hard as idiosyncratic knowledge. (Brickley et al. 2007)

Scientific knowledge

Scientific knowledge is hard to transfer if the receiver is a non-scientist, because he does not have the relevant background knowledge to understand the information. (Brickley et al. 2007)

Thus if an agent or a local manager has tacit, specific and idiosyncratic knowledge, he should as well have the decision rights to maximize the income, as this is the kind of knowledge that is not easily communicably and is hard to specify in contracts because of high transaction costs. (Windsperger 2002). On the other hand, Aghion et al. (1997) state that it is always (whether general or specific knowledge) more efficient to assign the decision rights to those "who are best able to use the intangible resource assets" (Windsperger 2002).

Information technology plays an important role in minimizing costs of knowledge transfer. Moreover it made a structure of decision rights in an environment, that requires intense communication, even possible. Furthermore it decreased the importance of physical distance. In the case of tacit knowledge, information technology should be used to bring decisions to the places where this specific knowledge is located and not the other way round. Because as stated above, there is information that is hard to transfer even with the help of latest information technology (Malone 1997).

Hendrikse and Windsperger (2011) predict a negative relation between the intangible knowledge and a complete contract in networks. This means in other

words, the higher the intangibility of knowledge of one part of a contract, the more incomplete is the contract. This leads to the allocation of decision rights to the part with the specific knowledge.

Exploration and Exploitation

As already mentioned, the concept of exploration and exploitation is important in the theory of organizational capabilities (Collis, 1994).

March (1991) defines two types of learning, namely exploitation and exploration. The organization has to balance the exploration of new knowledge and the exploitation of existing knowledge, which have the same importance. March (1991) therefore defines exploration as "things captured by terms such as search, variation, risk taking, experimentation, play, flexibility, discovery and innovation." On the other hand there is exploitation, defined as "refinement, choice, production, efficiency, selection, implementation and execution."

3.3.2 Trust

As Malone (2007) states in his paper, "trust is fundamental". Common sense tells us, that you do not want another person make decisions on your behalf if you do not trust this person. Employed on organizational design, this means that senior managers will beware to allocate decision rights to lower level employees, who in the eyes of senior managers are not trustworthy. Indeed, if the senior manager has to delegate, he will control the lower level employee extensively which will result in high monitoring and controlling costs.

Within the huge amount of different definitions for trust, they all have two basic ideas in common: positive expectations towards the intentions and the behavior of the other party and the acceptance of being vulnerable (Rousseau et al. 1998; Sabel 1993; Meyer et al. 1995).

The aspect of trust is closely linked to the incompleteness of contracts. In transaction cost theory analysis is oriented on the "Organizational Failure Framework" (Williamson 1975). Williamson has made two basic assumptions on trust of partners: bounded rationality and opportunism. If complete contracts exist, these two assumptions would not pose any risk at all. But many researchers found out (eg. Hart & Holmström 1987) that it is almost impossible to reach contractual completeness thus general contracts are seen as incomplete.

There are two different approaches in the relational governance view on the influence of trust in contractual relationships: substitutability view and the complementary view. In the complementary view, trust can have a positive influence on the completeness of contracts, because trust provokes better and more honest communication and therefore enables the formulation of more precise and specified contracts. The substitutability view, as its name already reveals, looks at trust as a substitute for contractual completeness. As residual decision rights can hardly be formulated or written down, trust has to have an influence on the distribution of residual decision rights. If contracting partners trust each other, they will be more comfortable using less complete contracts (Hendrikse & Windsperger 2011).

3.3.3 Motivation

The factor "motivation" will become more important as modern technology will cause a lot of physical work to vanish and therefore in the future the number of knowledge jobs will increase and innovation becomes more vital for the success of a firm (Malone 1997; Manson 2007).

Fehr et al. (2010) argue that economists often forget about the psychological effects of economic models, such as authority and hierarchical structures on employees. Some studies have deduced that autonomy (decentralization) can have a positive impact on well-being, job satisfaction and on the health of

employees (Benz and Frey 2003, Baard, Deci, and Ryan 2004; Marmot and Wilkinson 1999: in Fehr et al. 2010).

Fehr et al. (2010) state: "The self-employed are also willing to accept lower risk-adjusted returns on investment and accept lower wages for work. These findings suggest that there may be non-pecuniary value to having power which could influence the effects of authority and generate frictions in the delegation of authority."

Malone (1997) explains, that it highly depends on the kind of work if empowerment increases the motivation of workers. For workers who purely exercise physical work or a work with a high degree of repetition, autonomy won't have a big influence on their motivation. Workers in these kind of jobs mainly prefer a centralized system. In other words, they will improve efficiency if they have somebody who tells them what to do. In more academic jobs, employees will be more motivated if they have a certain degree of autonomy and decision making rights. The researcher illustrates this with the idea that when individuals are allowed to make their own decisions on how and when to do their work they tend to be more delighted with their jobs and thus put more time, effort and thinking into it. Therefore the quality of decisions will increase as their motivation increases and to induce a higher degree of motivation a firm has to empower their local managers.

3.3.4 Uncertainties

In transaction cost theory the influence of uncertainties on decision-making in an organizational scope is a crucial point. (Williamson 1975) In strategic management science, uncertainties also play a key role in strategic important decision-making. In 1985 March et al. highlighted that uncertainties are important variables to explain a firm's behavior.

Windsperger and Jell (2005) also showed that uncertainties have a big impact on the decision making structure of organizations. They state that a high degree

of environmental and behavioral uncertainties make a centralized decision making structure difficult because of an increased demand for control and monitoring. Thus an organization has to face higher costs for control.

Uncertainty is a condition that describes a certain situation of decision-making in a certain environment. According to the principle of cause and effect of organizational decisions, uncertainty describes a situation, where an action is already taken or a decision is made due to forecasts about the possible outcome. Thus, the better the forecasts, the smaller the uncertainties (Leblebici et al. 1981).

3.3.4.1 Uncertainties versus Risk

Transaction cost theory (Williamson, 1975) and incomplete contract theories (Grossmann & Hart 1986) employ on conditions of risk but both should be modified for conditions of uncertainty.

Alvarez and Barney (2005) examined in their paper the differences between uncertainty and risk and state that most strategic management literature talks about risk and uncertainties synonymously, but to differentiate between these two concepts has long practice and dates back as far as 1921 when Knight wrote about the distinction. Conditions of uncertainty and risk can have a high influence on how firms organize their processes and their structures. A strategic decision, which is either made under risk or uncertainty, will differ depending on the chosen concept (risk or uncertainty) and therefore organizational theory should take into account the difference between those two.

Some examples from Alvarez and Barney (2005) include the business planning techniques, which under risk seem to apply but under uncertainty not. For this case and the concept on uncertainty, agility and flexibility will be more vital. Another example stated, shows that in a risky environment, the primary source of capital will be banks and venture capital firms, whereas in an uncertain environment a relation of trust for exchanging capitals and resources will be

more valuable than banks or venture capital firms. They also point out that "under risk, it may be reasonable to think of opportunities as objective phenomena waiting to be discovered by unusually alert entrepreneurs (Kirzner, 1973; Shane, 2003). However, under uncertainty, entrepreneurs do not "discover" opportunities as create them through their organizing efforts."

3.3.4.2 Environmental uncertainties

Environmental uncertainties are uncertainties, which derive from economic, cultural, political and legal unpredictability from an unknown market and this kind of uncertainties affect the contract design as well as the governance structure (Williamson 1975).

Economic uncertainties can be changes in the organizational or economic environment of a region or country. Whereas political and legal uncertainties derive mostly from transferring property or investments or from the lack of legal protection of property and ownership rights for foreign organizations. Cultural uncertainties proceed from differences in the culture of countries or regions. The bigger the cultural differences are, the greater the uncertainty becomes (Alvarez et al. 2005).

The degree of environmental uncertainty of a firm is determined by its complexity. Examples of drivers of environmental uncertainty could be increasing demand, fluctuating prices, problems deriving from acquisition or high competition. From heterogeneity and quantity of external elements derives the complexity of the environment, which is crucial for organizational transactions (Daft 1998).

Diversification derives from the approach to minimize the influence of uncertainties in the environment. Organizations try to control and regulate uncertainties with diversification (Boyle, 1999).

Environmental uncertainty also makes it more difficult to set up complete and detailed contracts and therefore it enhances the requirement of ex-post adaptations by assigning residual decision rights (Hendrikse & Windsperger 2011).

3.3.4.3 Behavioral uncertainties

According to Williamson (1985) and the theory of transaction costs, behavioral uncertainties derive from the complexity of controlling the contractual efficiency of the contract partner. This increases the costs of performance measurement, because it is difficult to verify if the other party stuck to the contractual agreements.

The complexity of managing behavioral uncertainty is to forecast the actions of the other party, in particular the capability of opportunistic behavior ex-ante or ex-post. Williamson (1975) describes opportunistic behavior with self-interest, fraud, giving incorrect and faulty information and making wrong statements to the opponent in order to make more profit at the cost of the opponent. It is a strategic non-announcement and distortion of information.

According to Hendrikse and Windsperger (2010) opportunism and asymmetric information lead to an increase in agency costs. There are two alternatives to lowering agency costs again: increase monitoring and control or increase empowerment. The higher the behavioral uncertainty, the more residual decision rights should be delegated to agents but the less specific rights can be contracted. However, as specific rights are not formulated in contracts, behavioral uncertainty evokes contractual incompleteness.

At the end of this chapter the factors, which influence the degree of hierarchy and delegation are summarized and it is shown how each factor can affect the trend to either centralization or decentralization. To illustrate these dependencies, a figure from Malone (1997) is used. (Figure 3)

Factor	Centralization *is desirable when ...*	Decentralization *is desirable when ...*
Information	Remote information is valuable in decision making, and can be communicated to central decision makers at moderate cost	Local decision makers have access to important information that cannot be easily communicated to central decision makers *OR* Remote information is not valuable in local decision making ("Cowboys") *OR* Remote information is valuable in decision making and inexpensive to communicate ("Cyber-Cowboys")
Trust	Central decision makers do not want to (or cannot) trust local decision makers to make important decisions	Local decision makers do not want (or cannot) trust central decision makers to make important decisions
Motivation	Local decision makers work harder or better when told what to do by someone else	Local decision makers work harder or better when they make decisions for themselves

Table 1: When (de)centralization is desirable (modified from Malone, 1997).

As one can see, the factor of uncertainty is missing in this table. As stated above, the higher the uncertainties, the more desirable is decentralization due to difficulties and costs that arise because of increased demand for control. (Windsperger and Jell 2005)

4. Intra- and interorganizational networks

As this work will distinguish empirical studies discussed in chapter 6 on their organizational design, in this chapter a definition of the terms intra and interorganizational networks will be given.

4.1 Intraorganizational networks

Network organizations or intraorganizational networks consist of members of the same organizational entity, which are interrelated either horizontally or vertically and are used to organize subunits. These subunits or teams can be organized by work groups depending on function, geography or specific projects. The foundation of internal networks can be either based on organizational hierarchies described in organizational charts (formal hierarchy) or on friendships and personal contacts (real hierarchy). However, Brickley et al. (2007) state that "relationships among these work groups are determined by the demands of specific projects and work activities rather than by formal lines of authority." Thus they are mostly informal relationships, which can't be seen on organizational charts or official job descriptions. These informal relationships complement or sometimes also interfere with the existing formal organizational structure. Therefore, a differentiation of formal and real authority is essential to explain dependencies in organizational architecture.

When there are changes in the environment, these groups are likely to change as well. Their biggest advantage lies in the fast and easy flow of information inside the groups as well as in the speed of reaction to changes. Their main disadvantages are their implicit trust in their agreements and their informal relations, which can give rise to opportunistic behavior and misapprehension.

As one can see, informal relationships have different advantages and disadvantages than formal relationships, which indicates that empirical researchers on the topic of allocation of authority should pay regard to that.

4.2 Interorganizational networks

Network is a broad term to define. Many talk about partnerships, cooperative arrangements, coalitions or interorganizational relationships. Despite all these different names, all definitions have some characteristics in common, namely relationships, social interaction, trust, collaboration and collective action.

Brass et al. (2004) give a very broad definition and state that a network is a batch of "nodes and ties" which represent relationships between the nodes. Podolny et al. (1998) include forms of cooperations in their definition of networks, like joint ventures and strategic alliances. As for Tuunanen, Windsperger, Cliquet and Hendrikse (2011), franchising, alliances and cooperatives form part of networks. Barringer and Harrison (2000) for example define networks as "constellations of organizations that come together through the establishment of social contracts or agreements. "

Therefore this paper will not provide the reader with a single definition of networks, but use the term network in a broad sense as collaboration between at least two firms.

In section 6 of this work, we will come across two prominent entrepreneurial forms of networks, namely franchising and joint ventures. Therefore, a short description of these kinds of networks will be given.

In general terms, franchising is a relationship between a franchisor, who is the founder of the franchising and developed a certain business format and franchisee, who buys rights for using the franchisors business format. The franchisor evolved either a specific product or service and is responsible for the management of the network of different independent franchisees. Whereas the

franchisee buys a royalty fee for using the franchisors operating systems, products or brand name (Norton, 1988).

Joint ventures are enterprises that are operated by at least two legal and economic independent partners. A joint venture is characterized by congruent goals and shared management activities from both participating parties. Also, both partners share the possible risk resulting from the joint venture (Weder, 1989).

5. Theoretical concepts

This work has already given a comprehensive overview of the literature on the allocation of authority. The basic theories and general ideas underlying the empirical papers have been explained, but now this work will specialize on recently published literature treating the topic of authority. Furthermore, the amount of theoretical models and concepts on this topic is much higher than their corresponding empirical research. This fact could derive from the difficulties of suitable large-scale data for empirical tests. In chapter 7, this problem will be discussed in more detail.

The main theoretical models of the last decade on delegation, centralization, authority and the allocation of decision rights are presented in this paper. The election of models in this paper is far from being complete, as there are countless theoretical frameworks about this topic. However, emphasis is placed on the models and frameworks mostly used by the empirical articles that will be discussed in the second part.

The basic problem when allocating decision rights resides in the fact that decisions made in an organization affect not only the decision maker himself, but also other members of the organization. Common sense tells us, that if others have an influence on one's well being, problems are likely to arise. Simon (1951) already pointed out that "the worker has no assurance that the employer will consider anything but his own profit in deciding what he will ask the worker to do". In other means, one with the power to make a decision will behave opportunistically and always choose the decision that is his best interest. This can be the decision, which brings him the least amount of work or the highest profit, depending on his preferences. While others, who are affected by this decision, are likely to have other preferences and therefore the decision taken by another person will not be optimal for them.

Members could write a complete contract, which ensures that everybody takes the decisions that lead to the maximum joint surplus. But literature found out,

that it is impossible (due to high costs and the fact that decisions are unverifiable to outsiders) to legally specify all of a firm's future decisions in advance. (Grossman and Hart 1986; Hart and Moore 1990)

There are numerous works addressed to investigate the allocation of authority and decision making power in organizations. These works approach two basic ideas: one part concentrates on the organization of knowledge and its acquisition, transfer, storage and communication, while the other part investigates the incentive issues which arise due to agency problems.

5.1 Theories on authority in intraorganizational networks

This section distinguishes studies on authority in intra and interorganization networks and their main subject of investigation.

5.1.1 Theories on knowledge processing

All the papers which investigate the organization of knowledge are based on the concept of congruent objectives of the principal and the agent. They consider factors like the cost of information transfer and communication, advantages in decision-making and costs of wrong or late decision-making. Therefore they ignore the problem of diverse objectives of the principal and the agent. According to Simon (1973) and the concept of bounded rationality, information is not the scarce resource, but the capacity to attend this information is.

Sah and Stiglitz (1986) indicate that in a centralized structure, a smaller quantity of projects is selected compared to more decentralized organizations. According to their study, when projects or alternatives are mostly of a good type (positive outcome), decentralization is favorable.

As for Bolton et al. (1994) a decentralized structure allows agents to specialize in tasks. Therefore firms can fully deploy their economic opportunities arising from local resources and task specialization by delegating decision rights to the local manager with the needed knowledge.

The work of Dessein (2002) also follows the first approach and made an important contribution to the studies of the relationship between authority and communication in organizations. His paper emphasizes on delegation as an alternative to communication and shows that as long as the incentive conflict and the principals' uncertainty regarding the environment is not too large, the principal will always prefer to delegate decision rights over communicating with the agent. Additional research on this topic can be found from Alonso et al. (2008). Aghion et al (2004) are showing that the transfer of authority can facilitate communication.

Other literature on information processing, like Radner (1993) and Van Zandt (1999) imply that in centralized systems, errors and delays in the disclosure of information from top to bottom arise frequently. Thus, projects defined by the principal and implemented by the agent might just be different because of inefficiencies in intraorganizational communication and may not bring the planned benefit because of delays. Therefore, they state that decentralization reduces delays and as a result, may increase benefits.

5.1.2 Theories on incentive problems

The second approach focuses on the dissolution of the agency problem with the help of incentives. One of the most influential works in the last decades is the one from Aghion and Tirole (1997). They derived a principal agent model, which tries to show how delegation of authority can have an impact on the performance of individuals through incentives for the agent to acquire information. Delegation allows the agent to choose an alternative that maximizes his own benefit and therefore increases the effort of searching

information regarding the projects. Which in turn for the principal results in a loss of control as the projects chosen by the agent do not maximize the profit of the principal. Opportunistic behavior of agents can be controlled only to a certain extent by allocating some decision rights to the agent, as this theoretical model neglects monetary compensation and assumes different preferences and objectives of agent and principal.

The same problem was investigated by Stein (2002) who tried to determine the effects of decision-making structure on the incentives to obtain information and knowledge. He makes allowances for the distinct information types, namely hard (verifiable) and soft information (not verifiable). He shows that a decentralized approach is preferable when information about projects is soft whereas "large hierarchies perform better when information can be costlessly "hardened"." Stein shows in his work that the agent has more incentives to search for information in a decentralized model as there is nobody who can overrule his decision and therefore his effort to gather information won't be useless. On the contrary, an agent does not have strong incentives to put a lot of effort into information gathering as his principle can always alter the agent's decision and consequently the effort the agent puts into the search of information becomes useless.

Prendergast (2002) investigates the relation between uncertainty and incentives and found, contrary to his assumption (which he drew from findings of other empirical researches in this scope, among others a research from Aggarwal et al.; 1999), a positive relation. Prendergasts' argument that many researchers before him found negative correlations is, that most of them ignored a variable essential for calculating the relationship between risk and uncertainties, namely the allocation of authority. His idea is that if a firm operates in an uncertain environment, they are more likely to delegate authority to a person who holds more knowledge of this uncertain environment. Also an uncertain environment makes it harder to set up complete contracts, which also favors delegation. At the end, the firm will insert a higher degree of incentives for the person with

higher Authority in order to assure that this person acts in the firms' best interest.

Another paper by Itoh (2001), which deals with the tradeoff between delegation and centralization, shows that the choice of delegating tasks to multiple agents is the right one when there is perfect information. In other words, a coalition of agents is preferred when agents can monitor each other because of perfect information. Whereas when there is a lack of perfect information and when outcomes from tasks cannot be measured apart, from an incentive perspective it is considerably better to delegate a broad range of tasks to one agent. If one task remains in the principals' rights and another one is delegated to an agent, incentives have to be given to both the agent and the principal. If the incentives given to the principal and the incentives given to the agent are not the same, a conflict may arise. This conflict can be avoided by allocating all the tasks to one agent, with the handicap for the agent to sustain the whole risk alone.

Bester and Strausz (2007) also study the effects of delegation on incentives, when the success of a project depends on the effort of the agent. They state that delegation is becoming less likely the higher the degree of effort needed. Which is contrary to the predictions of Aghion & Tirole (1997). In a similar model from Bester and Krähmer (2008) the agents' effort level depends also on monetary incentives and not only on the outcomes of the selected projects.

5.1.3 Theories on real authority

There is a new stream in literature trying to distinguish formal and real authority. Aghion et al. (1997) define formal authority as "the right to decide" and informal authority as "the effective control over decisions". The allocation of information determines the degree of real authority in an organization and the information structure in turn depends on the formal authority structure. Baker et al. (1999) have a similar view and state, "decision rights cannot be formally delegated, they might be informally delegated through self-enforcing relational contracts."

The key problem of the theory of real authority is the difficulty of its measurement. Researchers in the past heavily relied on organizational charts, surveys, job titles and descriptions to measure authority. But for Aghion et al. (1997) all this empirical analysis measure formal authority instead of real authority. Real authority holds the individual who occupies the subjective knowledge, because subjective or "soft" knowledge is not easy to transfer from a subordinate (who in many cases possesses this tacit knowledge) to a principal (the one who has the formal authority on decision making). Therefore the principal often just "rubber-stamps" the subordinate's decision, hence the subordinate gains real authority.

Therefore, to measure real authority you have to measure subjective knowledge. Li et al. (2009) state that it is almost impossible to find out who and to which extent an individual possesses subjective knowledge in an organization with the traditional measures of authority.

Despite all these difficulties measuring real authority, Li et al. (2009) tried to measure real authority with the help of communication via conference calls. Past literature support their idea that human interactions and communication are the best mechanisms to find the existence of subjective knowledge.

Except the empirical research from Li et al. (2009) and Hippmann et al. (2012), which strictly emphasize on the empirical distinction of real and formal authority, there are many other empirical studies that emphasize partly on the concept of real authority. Numerous citations show that the work of Aghion and Tirole, founders of the concept of real and formal authority, is one of the most important contributions from the last decade regarding the allocation of authority.

In the collection of empirical studies in chapter 7 of this work, we will discuss empirical assessments on the measure of real authority as well as the measure of formal authority in detail.

5.2 Theories on authority in interorganizational networks

Few important works based on the allocation of decision rights in networks have been published recently.

Brickley et al (2003) found out that managers of smaller and more local banks have more decision rights than managers of large multinational banks due to the fact that local knowledge is more important and therefore decisions are decentralized. These small and local banks may lag behind in terms of conditions but make up for it with catering for the local needs thanks to their decentralized structure. Whereas managers of larger banks might score with better conditions but lack the decision making rights in order to specialize in their markets.

Others argue that the allocation of decision rights depends mostly on the bargaining power of the parties. This was observed by Elfenbein et al. (2003) between internet portal owners and their suppliers of content as well as by Higgins (2006) between pharmaceutical and biotechnology firms.

A study by Lopez & Lopez (2011) looked at the determinants of delegation of decisions in franchising networks. They hypothesized that delegation of decision rights to franchisees correlates negatively with the franchisors intangible assets and the brand name as well as with the amount of specific investments taken by the franchisees. On the other hand, the autonomy of franchisees correlates positively with the franchisees intangible assets and the interorganizational trust.

Another study into the allocation of decision rights in franchising networks was done by Arruñada et al. (2005). Their article focuses on the franchising contracts between car manufacturers and their dealers and tries to give solutions to the moral hazard problem. The research analyzes the entire process and system of the allocation of decision rights including monitoring, punishment and reward and compensation schemes.

Arruñada et al. (2005) state that manufacturers grant more rights when the moral hazard of dealers is higher and the manufacturers reputation over opportunism is better.

Azevedo (2009) explores in his paper the influence of the brand name on the distribution of decision rights on franchisor and franchisee and finds that the more important the brand name the more decision rights stay with franchisor.

Another important name in the research on decision right allocation in franchise relationships is Windsperger. He did extensive research on this topic. In 2004 he derived a study in the Austrian franchise sector and found out that intangibility of franchisors system specific assets and the franchisees local market assets determine the allocation of decision-making rights. In 2011 he investigated together with Mumdziev the German franchise sector and found that the contractibility of local market assets have a great impact on the decision making structure and makes a first step towards the measurement of real authority.

As already stated in the chapter before, the only work measuring real and formal authority in interorganizational networks is the one by Hippmann et al. (2012). They argue that formal and real authority have a complementary relationship in joint ventures.

To summarize this chapter, a paper of Eldridge (2007) gives a good overview of the different decision structures and their implications.

Decision structure	Examples	Implications
Decisions are contractible (e.g. Aghion and Tirole)	Formal authority	Authority influences the decision-making process by changing the formal authority structures
Delegation of decision rights is largely informal (e.g. Baker *et al.*)	Empowerment, reputation, mechanisms for employee participation (e.g. information sharing)	Informal organizational structures are important
Interdependency and complementarity determine the scope of decision rights	Venture capital, franchising, self-centred teams	Activity bundles provide the basis for allocation of decision rights

Table 2: Allocation of decision rights in organizations (modified from Eldridge; 2007)

6. Empirical Studies and their measurement

As already shown in the first part, there are numerous recently written theoretical papers on the allocation of authority. Nevertheless and unfortunately, empirical studies are much less numerous and one can find many "empirical studies", which rely more upon indications and experiences than on empirical evidences. An explanation could be that researches have troubles collecting suitable data for testing theoretical hypotheses empirically. Therefore it was not easy to find enough empirical studies that address the same key question and as a result it was necessary to dig deeper and broaden the research. Consequently empirical investigations that have their main focus on incentives or knowledge instead of the delegation of decision-making rights are included in the research list.

The following table gives a good overview of the existing empirical investigations. The reader has the possibility to see the paper's main scopes, their underlying theoretical concepts and their key variables used at one glance. Main attention is drawn on the formalization of variables as well as the data collection and the statistical methods used to calculate authority. The main goal of this collection of empirical studies is to find the most accurate formula for the measurement of authority in organizations by comparing existing intentions of the measurement of authority and their limitations. As a result, it is shown that there is still a lot of empirical research to do and implications how to assess future researches in means of the quality of data sets and the formulation of variables are given. In other words, this list should clear the way for future researches.

Author(s) Year Journal	Main Scope	Theory	Key Variables	Measurement	Authority is…	Sample	Statistics	Key Results
Abernethy, M. & Bouwens, J. & VanLent, L. 2004 The Accounting Review	Investigate decentralization and performance measure as two complementary choices for control systems of divisionalized firms. Which in turn depend on information asymmetries between corporate and divisional manager as well as division interdependences.	property rights theory	• decentralization • performance	• level of decentralization (real authority measured by 7-point scale on division managers' influence relative to superiors' influence on 5 different decisions) • divisional summary measures (divisional manager had to assign weights to the relative importance of this measures relative to other performance measures) ○ financial measures ○ quantitative measures • interdependencies (to which extent "his" division activities impact other divisions activities and vice-versa) • information asymmetries (7-point scale on how manager rate their information relative to superiors in their area) • control variables ○ performance measurement characteristics (sensitivity allocation to different performance measures) ○ decision-specific factors (growth, size) ○ moral hazard ○ divisional managers characteristics (trust measured as experience with years in current position and ability as managers' education)	dependent variable	• questionnaire data of divisions listed in Amsterdam Stock Exchange (CEO - divisional manager) • 78 questionnaires	• descriptive statistics • two OLS	In decentralized decisions, use of divisional summary measures are higher; if focal division influences performance of other divisions, use of divisional summary measures decrease; if other divisions influence performance of focal unit, divisional summary measures increase; no relation between information asymmetry and use of divisional summary measures; information asymmetry and interdependencies are determinants of decentralization: higher levels of information asymmetry increase level of decentralization (even in presence of moral hazard).
Agarwal, S. & Hauswald, R. 2010 AFA 2011 Denver Meetings Paper	Investigate influence of authority allocation on production, transmission, and strategic use of subjective intelligence in investment decisions	incentive view of authority	• allocation of authority	• authority (whether headquarters request loan-review and; • decision occurs at headquarters or branch; hierarchical level of decision maker; whether loan officers include notes in review; banks own credit assessment) • information sharing (distance of headquarters to branches; acquisition; experience of branch officer) • nature of business • costs of interacting with bank	independent variable	• loan approving data from U.S. bank (branch-headquater) • 21.827 credit requests in 1.214 branches	• T-tests • OLS	The headquater is more likely to delegate authority when line units are further away; more autonomous branches produce more soft information; the more information branches produce, the more real authority they enjoy; Overall, optimal allocation helps overcome distance-related obstacles to decision making.
Arruñada, B. & Gariciano, L. & Vázquez, L. 2001 Journal of Law, Economics and Organizations	Investigate the allocation of decision rights and incentives in franchise contracts and analyze the entire system of allocation of decision rights in relation to monitoring, punishment and reward mechanisms.	agency theory and transaction cost theory	• allocation of decision rights	• manufacturer discretion (adding number of decision rights per domain to manufacturer) • quality of cars sold (average retail price) • number of dealerships in network • length of relationship • use of discounts (stronger monetary incentives used when potential for opportunism higher) ○ discount range ○ measures of incentive intensity (use of sales/service discounts, level of dicounts and range of discounts)	dependent variable	• automobile dealership contracts of 23 main networks in Spain (franchisor-franchisee) • contracts of 23 networks	• descriptive statistics • OLS • ordered logit • tobit	Contracts limit decision rights of franchisees while giving implementation and enforcement power to manufacturers; degree of contractual asymmetry varies consistent between different networks and the impact of moral hazard.

Reference	Theory	Research goal	Dependent variable	Description / Independent variables	Data	Methods	Key findings
Baiman, S. & Larcker, D. & Rajan, M. 1995 Journal for Accounting Research	agency theory	Investigate allocation of tasks from the parent firm to its business units and the level of compensation risk imposed on business unit managers.	• allocation of tasks • compensation risk	• compensation risk imposed on the manager • task allocation from the corporation to the business unit • relative importance of business unit to corporation • parent firms expertise about business unit.	• human resource consulting firms provided questionnaire data (business units-headquater) • 373 firms	• descriptive statistics • OLS • T-tests • Z-tests	Key variables vary systematically as a function of expertise and relative importance; compensation risk increases with the business units relative importance; compensation risk is a decreasing function of the principal's relative expertise when business unit's relative importance is high; fewer tasks are allocated to a business unit manager when business unit is relatively more important and when owner is relatively more expert.
Christie, A. & Joye, M. & Watts, R. 2003 Journal of Corporate Finance	property rights theory	Investigate characteristics of investment opportunity sets of a firm that influence transfer and control costs and study relations between these characteristics and the firms decision to decentralize.	• decentralization	• knowledge transfer costs ○ specialized knowledge (depends on growth, uncertainty, size, industry) ○ incremental knowledge specialization (related to number of lines) • control costs and externalities ○ business is single/ dominant/related/ unrelated ○ firms lines fall withing a single two -digit SIC group ○ price regulation (depend on primary industry listing in Dun's Million Dollar Directory)	• questionnaire data on Compustat firms (CEO-second level managers) • 121 questionnaires	• descriptive statistics • T-tests • F-tests • regression analysis	Larger organizations with growth options and higher uncertainty an less external-ities among investments generate more soft knowledge and are therefore more decentralized; knowledge transfer costs are relatively more important than control costs for decision to decentralize.
Colombo, M. & Delmastro, M. 2004 Journal of Industrial Economics	informal Authority	Investigate determinants of the allocation of decision making power through estimates of ordered probit models with random effects.	• allocation of decision making rights	• Delegation (plant managers as agents where asked if strategic decisions concerning introduction of new technologies, investment in new production lines, investment in stand-alone machinery, hiring and dismissal of personnel, career paths, and design of individual and collective incentive schemes are: ○ centralized (parent firm manager takes decision) ○ partial delegated (plant manager in charge but formal authorization by parent firm manager) ○ fully delegated (plant manager can decide autonomously without intervention by parent firm manager).	• questionnaires from Italian manufacturing plant managers (parent companies - plants) • 438 manufacturing plants	• descriptive statistics • T-tests • Ordered probit models	The higher complexity of plants operations and the use of advanced communication technologies, the higher delegation of decision rights; strategic decision involving substantial externalities result in greater centralization due to need of close coordination; centralization or delegation differs among types of strategic decisions; delegation depends on the importance of individual decision to principal and agent (private benefits), extent of intrafirm externalities and the need to take advantage of local knowledge and capabilities.

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Reference	Research question	Theory	Variables	Variable measurement		Data	Method	Findings

Demers, E. & Shackell, M. & Widener, S.
 	
2002
 	
Working Paper
	Investigate if the three components of organizational architecture (performance measurement, rewards and allocation of decision rights) are complementarities in a human capital and intangible asset-intensive B2C sector.	agency theory and property rights theory	• incentive compensation
			• allocation of decision rights
			• performance measurement
				• incentive compensation (ratio of cash bonus plus stock option compensation on total pay)
				• allocation of decision rights (4 survey questions on 7-point scale about delegation with respect to new sales, hiring personnel, modify personnel policy and promoting employees
				• performance measurement (weighted ratio survey question on 7-point scale to identify top five measures used for annual cash bonus and stock option compensation
				• control variables
				  ○ percentage on stock holding founder
				  ○ financial distress
				  ○ knowledge specificity
				  ○ if founder is CEO
				  ○ number of employees
				  ○ firms focus on customer-related goals
				  ○ firms revenues relative to competitors
					dependent and independent variable	• Questionnaires on U.S. internet based B2C firms and objective data from standard sources
						• 53 questionnaires
							• descriptive statistics
							• structural equation model
								Allocation of decision rights has direct influence on incentive compensation and indirect influence on performance measurement; performance measurement is direct determinant of incentive compensation and allocation of decision rights; performance measurement has direct effect on incentive compensation and allocation of decision rights: knowledge specificity, department and firm size and customer related goals have a significant impact all of the 3 components.

DeVaro, J. & Kurtulus, A. 2010 Industrial and Labor Relations View	Investigate if there is evidence of risk-incentives tradeoff and whether predict a positive relationship between incentive pay and the delegation of worker authority as well as a positive relationship between risk and authority. Another prediction is that the risk-incentives tradeoff is strengthened when authority controls are added.	agency theory	• worker authority • incentive pay • risk	• performance pay (if any workers at the establishment receive payments from performance -related schemes) • risk (if current state of market for the main product of the establishment is described as "turbulent") • authority of workers (from the question with a 4-point scale on how much influence one has about the range of tasks in his/her job).	dependent variable	• questionnaires from British Workplace Employee Relations Survey (management-workers) • 2191 questionnaires	• descriptive statistics • probit models	Negative relationship between risk and incentives; positive relationship between performance-related pay and the degree of worker authority over the range of tasks performed, and positive relationship between risk and the degree of worker authority; when measures of worker authority are included in a risk-incentives model, the evidence favoring a negative relationship between risk and incentives strengthens.

DeVaro, J. & Prasad, S.
 	
2012
 	
Working Paper
	Investigate the relation between delegation and incentives on the concept of exploration and exploitation and different risk affinities of principal and agent.	agency theory	• incentive pay
			• delegation of authority
				• Employer survey key variables
				  ○ incentive pay (if any employees receive performance-related monetary incentives)
				  ○ exploration and exploitation jobs (exploration if largest occupational group is "professional occupation")
				• Worker survey key variable
				  ○ delegation of authority (4 point scale on influence on range of tasks)
					independent variable	• questionnaires from British WERS (management- workers)
						• 2191 questionnaires
							• descriptive statistics
							• probit models
								Delegation and incentive pay have a negative relationship for exploration jobs in which selecting high-return projects is more valuable to the employer than worker effort; whereas a positive relationship is found for exploitative jobs in which selecting high-return projects is less important to the employer than worker effort.

Reference	Theory	Aim	Construct	Operationalization	Variable type	Data	Statistics	Findings
Fehr, E. & Herz, H. & Wilkening, T. 2010 Working Paper	informal Authority	Investigate the motivation and incentive effects of authority based on the model of authority developed by Aghion et al.	• delegation of authority	• Experimental game consisting of 1 principal and 1 agent and 36 cards: o 1 card: positive payoff for both o 1 card: principals preferred project o 1 card: agents preferred project 33 cards: zero payoff for both • 6 stages of the game o 1-principal can choose wether to transfer formal right to decide to the agent or not o 2- both players choose their effort levels simultaneously and private o 3-elicit beliefs of both players o 4-agents get informed if principal delegated decision right at the beginning of the game o 5-agent can recommaend a project to principal o 6-party with the decision right selects a project.	independent variable	• computerized authority-delegation experiment (principal-agent) • 380 participants (mostly students)	• Wilcoxon Signed Rank test • T-test • Fishers exact tests • Mann-Whitney-Wilcoxon test	Authority structures lead to an under-provision of effort by subordinates and an over-provision of effort by controlling parties; individuals retain authority even when it is strongly in their interest to delegate; findings cannot be explained by preferences defined over monetary outcomes only, suggesting a preference for power that goes beyond monetary incentives.
Foss, N. & Laursen, K. 2005 Economic Behaviour & Organization	agency theory	Investigate the trade-off between risk and incentive payment.	• performance pay • delegation	• pay-for-performance • delegation of responsibility (question with range on how many % of workforce is used) • uncertainty o innovation o increase in competition o industry variance in profitability o control variables (size; existence of subsidiary)	dependent variable	• questionnaire from DESKO in Danish firms • 993 questionnaires	• descriptive statistics • ordered probit models	Positive relation between environmental uncertainty and use of performance pay; positive relation between delegation and environmental uncertainty; no evidence on the assumption that flexibility of agents is restricted as risk increases.
Hippmann, P. & Windsperger, J. 2012 Working Paper	property rights theory	Investigate the allocation of real and formal authority in interorganizational networks, namely Joint Ventures.	• allocation of real and formal authority	• formal and real authority (questions regarding which JV partner holds different management positions) • Uncertainty (5 point Likert scale concerning variation of market prices, number of competitors, product development, predictability on demand) • Intangible Knowledge (7-point Likert scale on knowledge contribution of both partners concerning different value chain activities)	dependent variable	• questionnaires of Austrian companies that established JVs with eastern European partners • 60 questionnaires	• descriptive statistics • multivariate regression models	Higher delegation of real authority if local environmental conditions are uncertain; higher delegation of real and formal authority when cultural distance provokes higher uncertainty; if a partner gains more intangible knowledge than the other, the partner will gain real and formal authority; there are other factors which impact the allocation of both, real and formal authority: real and formal authority are complements.

Reference	Objective	Theory	Concept	Variables	Variable type	Data	Methods	Results
Li, F. & Minnis, M. & Nagar, V. & Rajan, M. 2009 Working Paper	Measurement of CEO's real authority over top management.	informal Authority	• real authority	• real authority (amount of text spoken by CEO as a percentage of text spoken by all company personnel in conference calls) • formal authority (CEO is also company founder; CEO is in Board of Directors and President; CEO only employee in Board of Directors) • CEO characteristic measures (ownership, tenure, prestige and overconfidence) • determinants of real authority (agents incentives, decision making urgency; agents technical knowledge; CEOs span of control; importance of task) • compensation • control variables	dependent and independent variable	• transcripts from conference calls and governance data (CEO-manager) • 17.400 transcripts	• descriptive statistics • pearson correlations • regressions	CEO's real authority over top management is affected by the incentive levels of the top management, the degree of decision-making urgency, the importance of the task, the extent of the top management's technical competency or expertise, and the CEO's span of control; managers with more real authority receive higher wages.
Liberti, J. & Mian, A. 2009 Oxford University Press	Investigate the effect of hierarchy on information use, the effect of geographical location on information flow, the effect of experience on communication of subjective and objective information.	agency theory	• information use	Collecting loan approving data as part of the loan review process: • hierarchical level of approve (depending on geographical location of approve; quantity of loan) • information (collection of subjective and objective information) • credit approval measures	independent variable	• Information on credit folders of clients of an Argentinean bank • 424 clients	• descriptive statistics • OLS • ordered probit	The greater the hierarchical distance, the harder the use of subjective information; the less control a loan officer has over the use of his information, the less incentives he has searching information.
López-Fernández, B. & López-Bayón, S. 2011 Management Science	Investigate the determinants of decision right authority in franchise chains.	agency theory	• delegation	• delegation (franchisors rating on level of authority of franchisee in terms of pricing, assortment, local advertising, decoration and employee training) • franchisors knowledge assets (brand name value) • self enforcement (specific investments, multi-unit ownership; age of chain) • franchisees local knowledge (industry measure)	dependent variable	• questionnaires of Spanish franchising (franchisors- franchisees) • 163 questionnaires	• descriptive statistics • regression models (OLS)	Franchisors that invest more in their system restrict franchisees authority more; the value of the information held by local franchisees does not have an impact on the decision to delegate decision rights; the duration of relationships (trust) influences positively the delegation of authority to franchisees.
Marino, A. & Matsusaka, J. & Zabojnik, J. 2009 Journal of Law, Economics and Organisation	Investigate the allocation of authority in organizations where centralization is limited due to agents ability to disobey the principal. They extend the concept of real authority from Aghion et al. (1997) by disobedience of authority by agents.	agency theory	• allocation of decision making authority	• delegation (principals rating on the choice of workers to accomplish a task) • replacement costs (expenditures in recruitment, training) • control variables (firm size, either product or service oriented firm; salaries)	dependent variable	• Questionnaires from National Organizations survey • 450 questionnaires	• descriptive statistics • regression model	Degree of workers autonomy depends on the cost of separating the worker and the firm and the cost of finding replacement.

Author / Year / Journal	Research objective	Theory	Constructs	Variable description	Variable type	Sample / data	Methods	Results
Moers, F. 2006 The Accounting Review	Investigates how delegation choice is affected by the ability to resolve the incentive problem caused by delegation.	agency theory and property rights theory	• perform-ance	• delegation (rating on decision making authority in 5 different tasks) • incentive use (financial performance measures by five-point scale on importance for evaluation purposes, monetary compensation and nonmonetary rewards) • performance (15 statements related to extent of performance measurement is influenced by the managers actions, factors outside the control of manager and measurement process) • control variables ○ knowledge transfer costs ○ environmental uncertainty	de-pendent variable	• question-naires and proprietary archival data of managers in 6 firms (managers-subordinates) • 105 ques-tionnaires	• descrip-tive sta-tistics • t-tests • f-tests • OLS	If financial performance measures have relatively high sensitivity, precision, and verifiability, using these measures for in-centive purposes can complement dele-gation choice, which results in increased delegation; delegation is affected by variables related to the internal and ex-ternal environment; delegation increases when marginal benefits of delegation are higher.
Mumdziev, N. & Windsperger, J. 2011 Book: Entrepre-neurship. The-ory and Practice	Investigate how decision rights of franchisees vary with contrac-tibility of local market assets and system-specific assets. They predict that less contractible in-novation assets of franchisees have a greater influence on de-cision rights allocations than on contractible operation assets.	Property rights theory	• allocation of decision rights	• decision rights (franchisors rating on franchisees influence on decisions in 9 different areas) • franchisors system specific assets (annual training days and annual number of outlet visits) • franchisees intangible local market assets (franchisors rating on franchisees intangible assets) • control variables ○ outlet size ○ sector	de-pendent variable	• question-naires of German fran-chise sys-tems (fran-chisor-franchisee) • 153 ques-tionnaires	• descrip-tive sta-tistics • multiple regres-sion	Franchisors intangible assets have negative impact on franchisees decision rights; local market assets which are harder to contract (innovation and local know-how) have more influence on fran-chisees decision rights than local market assets which are more contractible (quality control, human resource man-agement and administrative work).
Nagar, V. 2002 The Accounting Review	Investigates whether top man-agement makes delegation and incentive compensation deci-sions jointly.	agency theory	• delegation of authority • incentive compensa-tion	• delegation (branch managers rate their authority relative to top management on different decisions) • incentive compensation (proportion of pay as bonus) • environment (firm growth, volatility of earnings and innovation) • exogenous variable on delegation (number of acquisitions with effect on delegation) • exogenous variable on incentive compensation (risk aversion based on education and experience)	de-pendent and inde-pendent variable	• Question-naires from Wharton Fi-nancial Insti-tutions Cen-ter on retail banks • 200 banks	• descrip-tive sta-tistics • 2SLS regres-sion	High-growth, volatile and innovative banks delegate more; branch-managers with authority receive more incentive based pay; no evidence for explaining degree of delegation with the amount of incentive compensation.
Shi, L. 2010 Working Paper	Investigates if incentive com-pensation gets higher in a risky environment when the agent puts more effort in information gathering about a project (re-spondable risk).	agency theory	• incentives • risk	• incentive (pay-performance sensitivity is the change in CEO's firm-specific wealth with a $1000 change in shareholders value) • risk (calculation of risk of environments where agent can col-lect information and act on his knowledge) • control variables (size, market-to-book ratio, firm age; CEO's tenure)	x	• Question-naire and ob-jective Data of Executive Compensa-tion database • 17.233 firm year observa-tions	• OLS • median regres-sion • robust regres-sion	Incentives for CEOs increase with indus-try-wide responable risk; the increase gets lower when: definition of industry gets broader (as CEO has less experi-ence in information gathering); operating industries with greater capital intensity (CEO faces more rigidity & less discre-tion in acting on information); if CEO has less control using company resources.

Source	Theory	Variables	Variable details		Sample	Method	Findings
Vázquez, X. 2004 Organization Science	transaction cost theory	• centralization	• centralization (of strategic and operational decisions rated by principal) • teamwork and specialization • uncertainty • worker and managerial opportunism (rated by manager) • frequency of main tasks • human specificity (time which takes one to learn task) • temporal specificity (investments in specific design of production process) • control variables (size, age of firm, dependence on other firm, unionism)	de-pendent variable	• question-naires on Spanish food and electron-ics industries • 329 ques-tionnaires	• regres-sion models (OLS, ML) • multi-variate models	Evidence for influence of firm size, property, age, and unionism on centrali-zation; allocation of decision rights is re-lated to a particular mix of labor transac-tion traits: employer opportunism offers greater explanatory power than em-ployee opportunism.
Investigates the allocation of authority and decision rights on the shop floor based on transac-tion costs and exploits some background information of orga-nization theory. First one to take manager opportunistic behavior in account.							
Windsperger, J. 2009a Managerial and Decision Eco-nomics	property rights theory	• allocation of decision rights	• intangible knowledge assets (JV1 rates knowledge contribution of JV2 concerning different value chain activities) • residual decision rights (JV1 rates JV2's influence on different decisions) • control variables ○ firm size ○ technological uncertainty	de-pendent variable	• question-naires of Hungarian Joint Ven-tures (part-ner- partner) • 80 question-naires	• descrip-tive sta-tistics • ordinal regres-sion	The more knowledge advantage one partner has over the other, the more de-cision rights are hold by him; the bigger a partners firm, the more decision rights he owns.
Investigates allocation of deci-sion rights in Joint Ventures. Tests his theory if residual sur-plus derives mostly from intan-gible knowledge of a JV partner, this partner holds more residual decision rights.							
Windsperger, J. 2002a Journal of Mar-keting Channels	property rights theory	• decision rights • ownership rights	• knowledge assets ○ franchisors assets (number of annual training days and outlet visits) ○ franchisees assets (local market knowledge advantage rated from franchisors) • decision rights (franchisors rating on franchisees influence on decisions in 6 different areas) • ownership rights ○ income rights (initial fees and royalty fee) ○ ownership surrogates (exclusive territory, exclusive cus-tomer, option right, alienation rights)	de-pendent variable	• question-naires on Austrian franchise networks (franchisor-franchisee) • 83 question-naires	• descrip-tive sta-tistics • H-test • median test	Co-location of knowledge assets and decision rights and complementarity be-tween decision and ownership rights is found.
Investigates how intangible knowledge assets of franchisor and franchisee influence the structure of decision and owner-ship rights in franchising net-works.							
Windsperger, J. 2003 Journal of Man-agement and Governance	Property rights theory	• knowl-edge as-sets • decision rights • ownership rights	• knowledge assets ○ franchisors assets (number of annual training & meeting days and outlet visits) ○ franchisees assets (local market knowledge advantage rated from franchisors on 3 topics) • decision rights (franchisors rating on franchisees influence on decisions in 6 different areas) • ownership rights ○ income rights (royalty rate) ○ ownership surrogates (exclusive territory, exclusive cus-tomer, lease rights, alienation rights)	de-pendent variable	• question-naires on franchisors in Germany (franchisor-franchisee) • 153 ques-tionnaires	• descrip-tive sta-tistics • t-tests • regres-sion analysis	Differences in residual decision right al-location attributed to differences in fran-chisors knowledge asset distribution; re-sidual decision rights and ownership surrogates are complements; residual income rights and ownership surrogates are substitutes.
Investigates the property rights structure in terms of comple-mentarity and substitutability be-tween the variables residual de-cision and ownership rights as well as between residual income rights and ownership surro-gates.							

Source	Objective	Theory	Dependent variable	Variables		Data	Method	Results
Windsperger, J. 2004 Journal of Business Research	Investigates degree of centralization in franchise systems. He predicts that the more residual surplus a franchisors systems specific knowledge creates, the more rights are assigned to franchisors and the more centralized is the network.	Property rights theory	• decision rights	• knowledge assets ○ franchisors assets (annual training days and advertising fees as investments in brand name) ○ franchisees assets (local market knowledge advantage rated from franchisors on 3 topics) • decision rights (franchisors rating on franchisees influence on decisions in 6 different areas) • control variables (number of outlets, sector: service or product)	de-pendent variable	• questionnaires on Austrian franchise networks (franchisor-franchisee) • 83 questionnaires	• descriptive statistics • regression analysis (logistic, ordinal)	Degree of centralization depends on distribution of intangible knowledge; stronger impact of franchisors intangible knowledge and brand name on allocation of decision rights than franchisees local market knowledge; differences in allocation of decision rights derive from differences in distribution of intangible knowledge between them.
Windsperger, J. & Jell, M. 2005 Managerial and Decision Economics	Investigate the allocation of residual income and decision rights in contractual relations between truck driver and carrier under internal governance by emphasizing the driver's intangible knowledge assets and monitoring costs as explanatory variables.	agency theory and property rights theory	• residual income • decision rights	• income (variable proportion on drivers total income depending on freight bill, miles and hours) • decision rights (drivers rate their own influence on 6 decisions) • intangible knowledge assets (drivers rate their knowledge on 3 topics) • monitoring costs (length if carriage, days required and number of different destinations) • control variables (size with number of trucks, drivers experience in years)	de-pendent variable	• questionnaires on Hungarian trucking industry (carrier-drivers) • 126 questionnaires	• descriptive statistics • 2SLS regression	Drivers intangible assets are positively related to decentralization of decision rights; allocation of residual income and decision rights depends on monitoring costs; residual income rights and residual decision rights are substitutes under an employment contract.
Windsperger, J. & Kocsis, E. & Rosta, M. 2009b International Studies of Management and Organization	Investigate if distribution of intangible knowledge assets between joint venture partners has influences on structure of residual decision and ownership rights.	Property rights theory	• residual decision • ownership rights	• intangible knowledge assets (JV1 rates knowledge contribution of JV2 concerning 10 different value chain activities) • residual decision rights (JV1 rates JV2's influence on 10 different decisions) • ownership rights (percentage of ownership) • control variables ○ firm size ○ joint venture experience ○ technological uncertainty	de-pendent variable	• questionnaires of Hungarian Joint Ventures (JV partner-JV partner) 80 questionnaires	• descriptive statistics • regression analysis	Joint venture partners intangible assets have a positive influence on a higher proportion of residual decision rights; relationship between residual decision and ownership rights is complementary.
Windsperger, J. & Yurdakul, A. 2005 EMNET Conference Paper	Investigate influence of intangible knowledge assets on residual decision rights and the relationship of residual decision rights and ownership rights.	Property rights theory	• decision rights	ownership rights (income of franchised outlets in initial fees and royalties; percentage of company-owned outlets); number of outlets; outlet size; age of franchise system. • knowledge assets ○ franchisors assets (annual training days and advertising fees) ○ franchisees assets (rated by franchisors on topics of exploration (innovation and local market knowledge) and exploitation (quality control and administrative capabilities) • decision rights (franchisors rating on franchisees influence on decisions in 6 different areas) • ownership rights (company owned outlets, residual income rights as initial fees and royalties) • control variables (number of outlets, outlet size; age of system)	de-pendent variable	• questionnaires on Austrian franchise networks (franchisor-franchisee) • 83 questionnaires	• descriptive statistics • regression analysis (logistic, ordinal, OLS, 2SLS)	System specific knowhow and brand name are important for residual surplus ergo network is more centralized; franchisees higher intangible local market assets lead to more decentralization and more tangible local market assets lead to less decentralization; royalties and percentage of company owned outlets are substitutes; residual decision rights and ownership rights are complements.

Reference	Theory	Research question	Construct	Variables		Data/Sample	Method	Findings
Wu, Y. 2011 Working paper	informal authority	Investigates how allocation of authority affects worker incentives and performance through redistribution of real authority and the changes in their incentives for ex ante investments (knowledge acquisition).	• allocation of authority	• personnel information (title, age, position) • internal quantity and quality score (number of words and writing style, readability) • external score (codified by author: news content and editorial activities)	independent variable	• internal and external measures of journalists in China (managing editor-reporter) • 200 journalists over 3 years	• descriptive statistics • K-S Test • OLS	Centralization improves the journalists' quality performance and initiative for journalism activities and reduces incentives for private activities and editorial activities conducted by managing editors; distribution of formal authority affects workers' incentives in acquiring information to attain real authority; centralization gains from control of workers' distortions in action and project selection, at cost of depressing their initiative.
Wulf, J. 2007 Journal of Industrial Economics	agency theory	Investigates the performance incentives which vary by decision making authority of managers.	• performance incentives	• incentives (annual salary and bonus paid) • risk (firm sales growth, sensitivities) • authority (officer status and level in position of hierarchy)	independent variable	• compensation survey by Hewitt Assoc. on US firms (division manager) • 10,000 manager of 250 firms	• descriptive statistics • regression analysis • A&S	Performance pay of division managers has positive relationship with global and local performance (sales growth); sensitivity of pay to division and firm performance is decreasing in risk; performance pay sensitivities vary by authority of decision making of managers; no relation between performance pay and the level in the hierarchy of manager.

After providing the list of empirical studies with their parameters, every work will be discussed in more detail and compared in means of their specific formalization of variables and the different methods of measurement used in order to connect the numerous theories to corresponding empirical findings.

The following part is structured on the concept of real and formal authority from Aghion and Tirole (1997). Most empirical studies on the allocation of authority do not explicitly distinguish between these two authorities in their papers, but treat them as one and the same. Therefore papers were classified in either studies on real or formal authority due to their measurement of delegation. If the formalization of the variable authority relies on objective data such as job descriptions or organizational charts, they are obviously measuring formal authority. If the allocation of authority is measured by questions responded to by agents, the outcome will be closer to real than to formal authority. As agents are asked to rate their influence on certain decisions, they will do so by rating their actual influence and not the influence they should have according to their job description. If principals like CEO's are asked to rate the influence of their lower-level employees on certain decisions, the answers will reflect mostly the official decision making structure determined by organizational charts and job descriptions and are therefore counted as measure of formal authority. As for these classifications, one has to bear in mind that boarders between real and formal authority are blurry. Furthermore if subjective data (like in this case the rating on one owns influence on decisions) is used for the calculation of real and formal authority, it is almost impossible to assign findings definitely and without fail to either one of the two authorities.

However, as shown in this study, the variables influencing the allocation of formal and/or real authority are similar for both measures. Thus, this paper will first discuss the latest empirical studies on the allocation of formal authority and then concentrate on the studies, which are based on the theory of real authority.

6.1 Studies on formal authority

The work will distinguish not only between real and formal authority, but also between empirical studies made on intraorganizational networks and empirical studies made on interorganizational networks. It will do so, because authority and decision right allocation are more sensitive in interorganizational networks and face slightly different problems due to different organizational designs, architectures and strategic plans of two autonomous, but yet interrelated entities.

6.1.1 Formal authority in intraorganizational networks

As most of the researches rely on well known, already mentioned, main theoretical and conceptual foundations, this work will try to classify the examined empirical studies into their underlying main theoretical concept. As the reader will notice, many of the researchers use ideas from more than just one theoretical framework. Therefore the work will always indicate if the authors use more than one theory.

Property Rights Theory

The first empirical study to discuss is a work of Christie et al (2003) who based their study on the theory of property rights and used decentralization as a dependent variable. They formulate two main variables: first, specialized knowledge that consists of growth, uncertainty, size and knowledge specialization. Second, externalities and regulation based on the firm's primary industry. Their variable for decentralization is based on objective data about the scope of the second level – if the second level in the hierarchy is either a cost or a profit center. According to Christie et al. (2003), cost centers have fewer rights over decisions than profit centers. Profit center managers mostly have control over revenues and costs whereas cost center managers mostly just

have decisions rights over either revenues or costs. Conducting a regression analysis with decentralization as dependent variable, Christie et al. (2003) found that firms facing higher uncertainties, holding more specialized knowledge, having higher growth measures, being bigger and unregulated tend to be less centralized.

Demers et al. (2002) likewise investigate the concept of complementarities vs. substitutes in organizational design by applying both, agency and property rights theory. Using data collected via face-to-face or telephone interviews with internet based B2C (business to consumer) firms in the U.S., they defined three key variables and a long list of control variables. These variables are incentive compensation, performance measurement and the allocation of decision rights.

Special attention will be drawn to their formulation of decision rights, as for this work it is the most important one. In accordance with the work of Windsperger et al. (2005), also Demers et al. (2002) used a survey-based measure to calculate the allocation of decision rights. But as they state in their paper they use a method developed by Nagar (2002) because *"…Nagar (2002) improves on the measures in the prior literature by using the factor score extracted from an analysis of four survey questions related to hiring, promotion, branch hours, and sales process changes as his metric for the delegation construct."* Furthermore, the variable includes three proxies that might have an influence on the allocation of decision rights, namely knowledge transfer costs, the span of control of a department and if the CEO is also the founder of the firm. This questionnaire asked CEO's to rate the delegation of different rights to lower-level employees. This is more a measure of formal authority because the CEO will mostly stick to official job descriptions and organizational hierarchies while answering questions. In contrast to agents, who are more likely to rely on personal sensations and feelings. However, the principal could also give subjective information but probabilities will be lower for a principal than for an agent to rely on real authority.

With the help of a structural equation model they tested interdependent relationships between the three elements of organizational design. Findings result in a strong relationship between performance measurement and the delegation of decision rights to lower-level employees. Which is not a big surprise as financial measures act also as a control mechanism and therefore enhances delegation. Moreover they found out that incentive pay and delegation are alternatives, meaning that if incentive payments increase, delegation of decision rights decline. They found no significant evidence that delegation decreases if the founder of the firm is also the CEO, yet they empirically identified that a higher span of control leads to an increase in delegation of decision rights.

Agency Theory

Venky Nagar (2002) also contributed with his research on delegation and incentive compensation to the empirical understanding of the relationship of these two organizational design components. He provides first empirical evidence for the theoretical assumption that the choice of delegation and incentive compensation happens simultaneously. He granted access to rich data sets from an existing survey on senior executives and branch managers of retail banks and matched it with another source providing bank call reports. Finally the sample size contained data from 100 different banks.

He defined delegation as "the sum of the branch managers authority in hiring, promoting, setting hours and changing selling processes", as already described above in this work. He chooses the number of acquisitions the bank made as exogenous variable, which makes sense because the purchases should lower the degree of delegation. Incentive compensation is seen as the percentage of the wage that is bonus-based and branch manager's education and experience is the corresponding exogenous variable. Furthermore he introduces firm's growth, innovations and volatility of earnings as determinants of the two variables.

After running empirical tests (descriptive statistics, correlations) and a 2SLS regression analysis with both components as dependent variables (delegation and incentive compensation) he shows empirical evidence that the choice to delegate decision rights to lower level employees and the extent of employees wages depending on incentives, are dependent. Nagar (2002) found that the more unstable, fast growing and innovative banks are, the more they tend to delegate decision rights. On the other hand, employees with more decision rights have a greater amount of incentive payments. What is interesting, is that he did not find any effect of incentive pay on delegation choice, as predicted by agency theory.

Similar to Nagar (2002), also Baiman et al. (1995) investigated the allocation of tasks and compensation choices, with the difference of analyzing them separately. He granted access to the data used from two major human resource-consulting firms who by themselves collected the data via survey and their target groups were CEO's of corporations, groups and divisions. They collected information concerning salaries and annual bonus of executives and the extent to which tasks are allocated to business units. After classifying the surveys in industry codes they could work with a sample of at least 50 observations in 16 different two-digit SIC codes.

Their variables include compensation risk ("*ratio of contingent annual remuneration to total annual remuneration*"), task allocation (which is either one or zero as found in the research of Christie et al. (2002)), relative importance of a business unit (which they calculate by dividing business unit sales by total sales of the corporation) and the principals relative expertise (which is either one or zero depending if the corporation acts in the same two-digit code than the division or not). As one can see, Baiman et al. (1995) only construct a binary proxy for delegation, which is prone to erroneous results. After testing the statistical difference of their variables with t- and z-tests they conduct a OLS regression with the allocation of tasks as dependent variable. However, his results are not very surprising as he found *"…strong evidence that*

compensation risk increases with the business unit's relative importance and that compensation risk is a decreasing function of the principal's relative expertise when business unit's relative importance is high." (Baiman et al. 2005). Regarding the decision right allocation he found empirical evidence that the allocation of tasks to division managers increase when the corporate CEO's relative expertise is low, ergo the division is less important to the headquarter.

Foss et al. (2005) also investigate predictions from the agency theory, namely relations between delegation, performance pay and risk relying on a database with data from questionnaires of 2000 Danish firms in all industries with more than 20 employees. Results of their probit models confirm the theories of Prendergast (2002): environmental uncertainty favors pay-for-performance compensation, more dynamic firms with a higher innovation level tend to be more decentralized and delegation and environmental uncertainty have a positive, significant relation.

Like Foss (2005), Demers (2002), Nagar (2002) and DeVaro (2010), also Wulf (2007) investigated the correlation of authority, risk and incentive payment in the concept of agency theory. The data set is similar to the one Nagar used in 2002 for his research, namely longitudinal compensation data on U.S. firms and their divisions, but their measurement is rather weak. Measurement for authority is a combination of the divisional manager's status as an officer (or not) and his level in the hierarchy. Incentive measurement is derived from a manager's annual salary and bonus. Results obtained from regression analysis with compensation pay as dependent variable and the allocation of authority as independent variable, are consistent with other findings mentioned earlier and the predictions of the agency theory.

Liberti et al. (2009) is using a data set that is different to all empirical studies already mentioned, investigating the effect of hierarchies on the information use. Information of credit folders of over 400 clients of a multinational Bank in Argentina is used as well as the information on which hierarchical level the actual approval of the loan is taking place. The interesting part is that the hierarchical level, where the loan will be approved is determined before a loan officer has to go to the bank to collect information. This knowledge of who will decide over the loan will impact the loan officer's incentives for the information search. Like Wulf (2007), also Liberti et al. (2009) uses the allocation of authority as independent variable in their regression analysis and ordered probit model. The dependent variable in this case is the use of information. And the findings confirm this idea: a loan officer has fewer incentives to search for information when he has limited control over the use of the information collected by him. Furthermore the use of subjective (soft) information gets harder, the greater the hierarchical distance between sender and receiver of the information.

Transaction cost theory

An innovative approach to examine the allocation of decision rights based on transaction cost theory was chosen by Vázquez (2004). He argues that by now, almost all researches were based on organization theory, which has limitations such as the complete contracting view or the ignorance of opportunistic behavior of principals. Therefore he tries to link these two theories in order to gain new empirical insights on the theory of delegation.

Data for this study was collected via questionnaires and was sent to all firms operating in the Spanish electronics and food industries with a certain size (over 3 million Euros turnover in 2000). Vázquez (2004) chose these two industry sectors in order to have the required diversity to represent the whole industrial sector of any country - the electronics industry for their dynamic characteristics and the food industry for its stable nature. At the end he collected 329 valid

responses. Variables include centralization of strategic and operational decisions, teamwork, specialization, parametric uncertainty, worker opportunism and frequency (average time operators spend to conduct their main task) to name the more common ones. Explanations of their measurement are needed for the following variables: managers opportunism is measured by questions about the disrespect concerning before agreed upon limits, for example one question is "some operators cannot always use up their holidays because of production needs"; human specificity is the time a new worker needs to catch-up with their working colleagues in terms of productivity; temporal specificity is "*related to investments in a specific design of the production process that cause lock-in effects among different work stations*", asked for with questions such as "getting zero stock is a primary objective for the firm". He added also control variables derived from organizational theory, such as firm size and age, dependencies on other firms and the degree of unionism of the firm (Vázquez, 2004).

For his regression analyses, centralization was used as dependent variable on the independent variables uncertainty, opportunism and knowledge specificity. OLS and ML regression analyses proved the variables derived from organization theory to be significant. More interesting are the results of the variables based on the transaction cost theory, for example, he found that less strategic decisions are being delegated in firms where managerial opportunism is higher. Significant evidence is also found for the relation of managerial opportunism and human specificity – if the opportunism of a manager in a firm is relatively low, human specificity is relatively high. Also, temporal specificity correlates negatively with centralization of decisions with short-term consequences. An interesting finding is that frequency has a relationship with more centralization of operating decisions and higher degree of specialization. The author explains this outcome with the possibility of standardizing reoccurring transactions and decisions and therefore cut costs.

6.1.2 Formal authority in interorganizational networks

As already explained in Chapter 4, the term network has a broad meaning and many different definitions. In this chapter, which deals with empirical studies on the allocation of authority and decision rights in interorganizational networks, we will stick to the two types of networks mostly discussed in literature, namely franchise networks and joint ventures.

Property Rights Theory

One researcher who did extensive work in this field is Josef Windsperger (2002a; 2003a; 2003b; 2005; 2009a; 2009b; 2011). With his empirical studies on German and Austrian franchise networks and on Hungarian joint ventures he contributed to the empirical understanding of decision right allocation and the relation of ownership and decision rights in networks according to the property rights theory.

All of Windsperger's works discussed here are classified as measures of formal authority because he measures authority based on responses of just one partner of a network. In the cases were allocation of authority was tested in franchising networks, "*decision rights were measured by asking franchisors to assess the influence of franchisees on decisions in the following areas: procurement, price, product, advertising, recruitment, training, investment, finance decisions, and accounting system.*" (Windsperger 2011:p.453; 2002a; 2003; 2004; 2005;). The same question was asked to partners in joint venture relations in order to study the allocation of decision rights in Hungarian joint ventures. (Windsperger 2009a; 2009b). I believe by asking for the influence of franchisees on certain decisions and not for their contractual agreements upon decision making, researchers can draw some conclusions and make theoretical assumptions about the allocation of real authority. However, to get empirical evidence a data set should also include information about how agents (in this case franchisees) rate their own influence on certain decisions.

Nevertheless, in the view of property rights theory, intangible assets are the key to understanding the decision making structure of organizations and networks. In Windsperger (2003) empirical prove is searched for the following hypothesis: more decision rights should be centralized (stay with the franchisor) if system-specific assets which are hardly contractible are higher in relation to the non-contractible local market assets of the franchisee. With survey data collected in 1998 from 153 questionnaire-responses of German franchisors, three variables were measured: *Decision rights* (measurement as explained above); *Knowledge assets*: measured by franchisors intangible knowledge assets (composed of annual training and meeting days and the number of outlet visits per year) and franchisees intangible knowledge assets. (rated by the franchisor on a 5-point scale); *Ownership rights* (measured as percentage on total sales of the royalty rate). He tested his hypothesis with the help of logistic regression analysis and used decision rights as dependent variable on knowledge assets and ownership rights. Empirical support was found for the prediction that franchisors system specific assets have a direct influence on the allocation of residual decision rights. Also, Windsperger (2003) found with correlation statistics that ownership rights and decision rights act as complements.

In a second paper (Mumdziev & Windsperger 2011) the same data set was used to show that specific assets of franchisor and franchisee only have an influence on the decision making structure if their assets are not easily contractible (in other words, if they are based on tacit knowledge). Put differently, if specific knowledge of franchisor and franchisee is contractible, system and local market assets have no impact on the allocation of authority in franchising. Moreover, results show that the more system specific knowledge a franchisor owns, the less decision rights will be delegated to a franchisee. Also this time, decision rights were used as dependent variable in a multiple regression while specific assets of both parties were used as explanatory variables.

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With another data set of 83 valid questionnaires received from Austrian franchisors in 1997, Windsperger (2002a; 2004; 2005) continued searching for empirical support on the allocation of decision rights in franchising under the view of property rights. He used the same measurement for the variables knowledge assets, decision rights and ownership rights as in the before described studies.

The results from his work in 2002 show that in a property rights view, system and market specific assets are strongly interrelated with the structure of decision rights as well as that ownership and decision making rights act as complements. He tested that with non-parametric tests, namely with an h-test and a median test. In 2004, Windsperger extended the knowledge about decision making authority in franchising by another empirical research on the same data with the evidence that the system specific assets of the franchisor have a greater impact on decision right allocation than franchisees local market knowledge. This time using logistic and ordinal regression analysis both, with and without control variables, to determine the dependent variable, namely decision right allocation. In 2005, Windsperger and Yurdakul found another prove according to the complementary view of ownership and decision making rights by adding SLS and 2SLS regression analysis to their measurement methods with respect to the work in 2004 – the party which holds more decision rights that "create a large part of the residual income", gets more ownership rights assigned.

Windsperger (2009a; 2009b) also did some research on the allocation of authority under property rights view in Hungarian joint ventures. Data was collected via questionnaires from CEOs of joint venture companies between 2004 and 2005. The final sample size was 80. The variable for intangible knowledge assets was defined by the question on how much specific knowledge of different value chain activities one partner holds in relation to the other partner. The variable residual decision right, again, was measured by asking one partner about the extent of decisions rights the other partner holds

on certain decisions. Ownership rights were calculated as the percentage of ownership held by partners. Control variables such as firm size, joint venture experience and technological uncertainty are introduced in the empirical research. Both empirical test results (in 2009a and 2009b regression analysis with decision rights as dependent variable) were concordant on the positive relationship of intangible assets and the allocation of decision rights. In other words, the more intangible assets (specific knowledge) a partner holds, the more residual decision rights are granted to him. Also, the allocation of residual decision rights correlates positively with technological uncertainty and the size of the joint venture. Which is explained respectively by *"knowledge spillover risk"* and "*economics of scale of coordination*" (Windsperger 2009a).

López-Fernández et al. (2011) also examined the determinants of the allocation of decision rights between franchisors and franchisees. Their research is based on a sample of 163 questionnaires answered by Spanish franchisors. Like most of the other researchers, the level of delegation is used as dependent variable and is measured by a rating from franchisors on the decision rights of franchisees. Independent variables include franchisors system specific assets (called "brand-name value" by the authors and include advertising expenditure by outlet, percentage devoted to franchising from the business model of the franchisor and the number of employees in the headquarter); system specific investments of franchisees, possibilities of franchisees to own multiple outlets, the age of the chain as a measure of trust and the franchisees local knowledge, which is measured by industry. With these variables, an ordinary least square regression model is conducted. Their most significant finding is that the more valuable the brand name, ergo the more franchisors invest in advertising and the larger the headquarters, the less decision rights are delegated to franchisees.

Another interesting piece of research on the contractual allocation of decision rights in manufacturer-dealer relations in Spain is done by Arruñada et al. (2011). The analysis is based on almost all car dealer contracts in Spain. This data set differs from the rest of the empirical studies discussed, because the information is only based on objective data and therefore we get the fist measure of strictly formal authority in interorganizational networks. The theory to be tested is "…the level of discretion available to manufacturers should increase with the risk of dealer moral hazard…" (Arruñada et al., 2011). The dependent variable formulated is the amount of rights assigned to the manufacturer, which is clustered in completion, monitoring and termination. As independent variables count: the quality of the car (measured by retail list price), the quantity of dealers in the network as well as the duration of the relationships. As control variable, the origin of the manufacturer was added since decision right assignment varies strongly in different continents (e.g. Asia). After running regression analysis they came to the finding that in the car industry exists contractual asymmetry with respect to decision rights. Manufacturers are granted implementation and enforcement rights while limiting decision-making rights of dealers tremendously. Also, a variation depending on the network is found: manufacturers in larger networks selling more expensive cars are granted more rights than to manufacturers in smaller networks selling lower quality cars.

6.2 Studies on real authority

Most of the empirical researches in this section did not distinguish between real and formal authority, actually, they did not even mention the concept of real vs. formal authority. But they are classified as "studies on real authority" because of their measure of delegation/allocation of decision rights. All of these papers formulated the variable by questioning the agents (lower-level employees) how much influence they have on different decisions in relation to their superiors. As answers to these questions were given by the agents themselves and since they were asked about their influence and not about their contractual decision rights, the author classified this measure as a measure of real authority. Furthermore, as the author could not find empirical researches on the allocation of real authority in interorganizational networks, this chapter will only discuss the allocation of real authority in intraorganizational networks.

The first empirical study to discuss is a work by Abernethy et al. (2004) which focuses on the property rights theory and investigates two complementary concepts of control: decentralization and performance measures. In their research they use the same two main determinants for both concepts, namely information asymmetry between two levels in the hierarchy and divisional interdependencies, which can occur when decision rights are passed on to a division manager who has incentives to improve his own performance no matter which effect his action has on other divisions.

They gained their data by personal questionnaires using Likert scales asking division managers of firms listed in the Amsterdam stock exchange. A sample size of 78 valid questionnaires was reached. They measure the level of decentralization by the relation of the division manager's influence and their superior's influence on 5 different decisions. Measuring this way, they tried to capture real authority in the concept of Aghoin et al (1997). The performance measurement for the division is calculated as own-level measures from Keating

(1997). To formulate the variable interdependences they were asked how much influence has an activity of their division on other divisions and the same question the other way round. They use as well the variables of total outgoing and incoming goods and services to/from other divisions and the extent to which they could work as an autonomous firm. To calculate the variable of information asymmetries they asked division managers to which extent they are better informed than their superiors. They also added the managers age and experience to this variable. Finally Abernethy et al. (2004) used division-specific factors, moral hazard and the characteristics of the division manager as control variables.

Their most interesting finding after running descriptive statistics and two OLS regressions (one with performance measures and another with decentralization as dependent variable) is that both main determinants have a significant impact on the choice to decentralize. Information asymmetry correlates positively and interdependencies negatively with decentralization. Similar findings can be found in the paper of Christie et al. (2003) whose measure for decentralization (allocation of authority to profit and costs centers) was realized in the concept of formal authority, as he captured this variable based on the type of center, cost or profit, of the second level.

Another important contribution to the topic of decision right allocation is from Windsperger et al. (2005) who investigated the allocation of residual income and decision rights in the Hungarian trucking industry. They collected their data with a survey for truck drivers in the Austrian-Hungarian border and finally had a useful sample of 126 questionnaires. Applying property rights theory, they formulated three variables: residual income (proportionally to their total income), residual decision rights by asking them to rate their influence on a 7-point scale on certain decisions (which refers to the drivers real authority) and the drivers intangible knowledge assets. Windsperger et al. (2005) applied agency theory for his fourth main variable, namely monitoring costs that consist of the distance and days of transport and the number of different destinations. Furthermore,

two control variables are added, namely the size of the company the drivers are working for and their experience measured in active working years in this job.

Analyzing the data with descriptive statistics and 2SLS regressions with the prediction of interrelation of residual income and decision rights, they confirmed their hypothesis that the more intangible assets a driver owns, the more decision rights are being delegated to him. Furthermore, monitoring costs are influencing income and decision right allocation in terms of duration and number of destinations of a single carriage. Another interesting finding of this paper is that under work contracts, residual income and decision rights are substitutes, meaning that the more residual income rights a driver owns, the less decision rights the company has to allocate to the driver.

Another extensive researcher in this field is Jed DeVaro et al. (2010; 2012) who also tested Prendergast's theory empirically. Their sample is drawn from the British Workplace Employee Relations Survey from 1998 covering random workplaces with at least 10 employees. Data was collected via two different questionnaires for two different respondent groups, namely managers and employees. This is a crucial point, because so far DeVaro (2010) is the first whose data set includes information from both, principals and agents, which in turn makes his findings more comprehensive than many others. Their final sample size counted 1590 questionnaires.

Furthermore his measurement for risk in comparison with the measurement used by Foss (2005) is more accurate and therefore not as prone to errors. Foss (2005) assigned every firm in their sample to one out of 70 industries and then calculated the variance of the profits of all firms belonging to the same industry. In contrast, DeVaro (2010) measured risk/uncertainty for every single firm included in the data set by deciding if *"the current state of the market for the main product or service of the establishment is described as turbulent"*. The other two measures are quite similar to the ones used by Foss in 2005. Incentive pay is measured by a binary proxy on whether employees receive

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payments according to their performance. Worker authority is measured by a 4-scale question in the survey for the agents on how much influence agents have according to their range of tasks. Congruent with earlier studies (Foss (2005); Demers (2002); Nagar (2002)) his different probit regressions (with depend variables performance pay and authority) confirmed a strong and positive dependency of incentive pay and risk on the degree of authority of lower-level employees.

Jed DeVaro used the same data again in 2012 to prove his hypothesis that the relationship between incentives and delegation of authority depends on the type of job occupied. The same variables as in his empirical research of 2010 are used, with the difference that he classified jobs into "complex" jobs and "simple" jobs with the codes provided by the Standard Occupational Classification. He ran 3 probit models with 3 different measures for incentive pay as dependent variables and as key independent variable, delegation of authority was used. He confirmed a positive relationship of incentives and delegation of authority for jobs classified as "simple" but a negative relationship for jobs classified as "complex".

The last empirical study to mention in this chapter is a work of Colombo et al (2004). His data set is based on a questionnaire on plant managers (agents) of Italian manufacturing plants. The questionnaire includes questions regarding the level of hierarchy where strategic decisions about "introduction of new technologies, investments in new product lines, investments in stand-alone machinery, hiring and firing personnel, career paths and designs of incentive schemes" are made. Variables determining the allocation of decision rights are the size and the complexity of the plant, if the plant has sub-contractual relations to costumers, the urgency of decisions (just-in-time production), the use of information technology to connect headquarters with plants and the capital intensity (which is the use of expensive equipment). After determining all

variables that could have an effect on the allocation of authority, ordered probit models tested the influence of explanatory variables on either labor or capital decision-making rights as well as for both. Results of the empirical tests show that the more information (measured by complexity and size of the plant) is held by the plant manager, the more decision rights will be delegated to him. If a firm holds more plants, decision rights will be more centralized. Finally, Colombo et al. (2004) also found empirical evidence that the use of information technologies to connect plants with their headquarters tend to favor decentralization of decision rights to plant managers.

6.3 Studies on real and formal authority

In this chapter the reader will find information on empirical researches, which tried to capture both, real and formal allocation of decision rights, in order to see the gap between real and formal authority.

6.3.1 Intraorganizational networks

The first researcher who tested the model of Aghion et al. (2007) and tried to measure both real and formal authority was the researcher-group of Li, Minnis, Nagar and Rajan in 2009. They measure real authority with conference calls under the assumption that the more a CEO talks in conference calls in relation to lower-level managers, the more knowledge he posses ergo the more real authority he is holding. Finally, 17400 CEO conference calls were recorded and analyzed with an average of 1142 annual observations within one firm. As determinants of CEO's real authority, stock based incentives, the urgency of decision-making (measured for industries), the degree of technical expertise (measured by the research and development expenditures of the firm), the span of control (measured as number of direct reports to the CEO) and the task importance are used. As stated before, not only the CEO's real authority was measured but also the CEO's formal authority. Formal authority measure is based on three binary proxy variables: if the CEO is also the founder of the firm; if the CEO is also in the Board of Directors and is also the president of the organization; if the CEO is the only employee in the Board of Directors. Moreover, CEO characteristics were measured including "ownership of the firm, tenure, prestige and overconfidence". Finally, CEO's compensation was added as a variable.

After conducting pearson correlations for all variables stated above and regression analysis for two dependent variables separately (CEOs' real authority and CEO's compensation), first empirical proof is provided for the

theoretical assumption that formal and real authority differ in their measure. They found that the variables they used to determine CEO's real authority are all significant to the measure of real authority. Furthermore, their results show that the more real authority a CEO posseses, the more he earns.

6.3.2 Interorganizational networks

Another "first-timer" is Hippmann et al. (2012) who distinguish the allocation of formal authority and the allocation of real authority in the case of interorganizational networks, namely joint ventures (JV). The obtained data comes from a questionnaire answered by 60 different Austrian-East European joint ventures. The variable formal authority is based on different management positions held by JV partners. The more positions are held by one JV partner, the more formal authority is held by him. The allocation of real authority to the JV partner is defined by the comparative influence of the two JV partners on decisions concerning different value chain activities. Environmental uncertainties are based on the percipience of the JV partner concerning "variation of market prices, number of competitors, product development and predictability of demand" in the other JV partner's home country. A binary proxy, depending on whether cultural distance between the two countries of the JV partners is seen as high or low, determines cultural uncertainties. Measurement of the variable intangible knowledge is based on the knowledge assets both JV partners are contributing to the joint venture concerning different value chain activities. The experience of JV partners outside their own countries and the type of industry JV partners belong to, are added as control variables.

To be able to "simultaneously analyzing two correlated dependent variables (i.e. formal and real authority) among the same set of independent variables" they used a multivariate regression model to empirically test both measures of authority under the same explanatory variables. (Hippmann et al. 2012)

Evidence is shown that cultural uncertainties influence the allocation of both, real and formal authority whereas uncertainties deriving from the environment just have an influence on the allocation of real authority. Hippmann et al (2012) states that this could be explained by the fact that environmental uncertainties are not easy to predict and therefore hard to formalize in contracts. Another interesting finding is the significant positive correlation between knowledge and real authority. In other words, if the JV partner's intangible knowledge grows, more real and formal authority are granted to him. Another finding is the complementary relationship between formal and real authority, meaning that if real authority increases, formal authority will increase too. Finally, a higher variance of real authority with respect to formal authority was found, which suggests that there are more variables influencing the allocation of formal authority.

7. Conclusive evidence

In this chapter, a summary of the three most important components of empirical researches discussed in this work is given. These three components include the description of data sets, the formalization of the main variables and the statistical methods used to test the hypothesis.

Data sets are mostly obtained from questionnaires, which are either send out by the researchers themselves or bought from third parties. Most of these questionnaires contain both, objective and subjective data. Whereas the objective data mainly serves for formulating control variables and the objective data for formulating the main variables (Abernethy et al., 2004; Baiman et al., 1995; Christie et al., 2003; Demers et al., 2002; Foss et al., 2005; Hippmann et al., 2012; Windsperger 2002, 2003a, 2004). A different data set was used by Agarwal et al. (2010), namely loan-approving data from a major North American bank. Similar to the empirical study of Agarwal et al. (2010), also another empirical study was based on credit information of an Argentinean bank (Liberti et al., 2009). Another researcher (Arruñada et al., 2001) extracted the data used in their research from franchising contracts, therefore they just used objective data which in turn means that all their variables rely on formal authority. Li et al. (2009) collected their data via transcripts of conference calls and coded them to have numbers for their empirical research. As one can see, many different forms of data was used to investigate the same topic.

Already knowing where the data comes from, the formalization of the main variables will be discussed. Main variables throughout my sample of empirical studies include the allocation of authority, incentive compensation, knowledge assets and uncertainties.

Allocation of authority

In most of the empirical researches discussed, allocation of authority is used as dependent variable and researchers had different ways of formulating this variable. In most of the empirical studies, either principals or agents were asked to rate the others or one selves influence on certain decisions on a likert-scale. This could either indicate a formulation of more real (if agents were asked to rate their own influence) or more formal (if principals were asked to rate the influence of agents) authority (Abernethy et al., 2004; Colombo et al., 2004; Demers et al., 2002; DeVaro et al. 2010; Marino et al., 2009; Lopez et al., 2011; Moers, 2006; Nagar, 2002; Vázquez, 2004; Windsperger 2002, 2003, 2005, 2009). There was only one study asking both, principals and agents, for their perception of authority allocation, namely DeVaro et al. (2012). As already mentioned, no strict boarder can be drawn between real and formal authority by formulating the variable in this way. However, other approaches of formulating the allocation of authority is by counting the official hierarchical levels where decision are actually made and also a binary variable assigned either 0 or 1 if the principal requests a review of lower-level employees or not, was used. (Agarwal et al., 2010; Liberti et al., 2009). Arruñada et al. (2001) counted the decision rights allocated to franchisees defined in franchising contracts. The last three formulizations are strictly a measure of formal authority as they rely on contracts and organizational charts. Li et al. (2009) distinguished between the variables for real and formal authority, where real authority was determined by the amount of spoken words of CEO's in conference calls and formal authority was formulated by double-functions (either the CEO is also the founder of the company, a member of the board of directors or acts also as president of the company) of the CEO in his organization.

Incentive compensation/performance measurement

The degree of incentive compensation was mainly an objective data calculated as the proportion of pay per bonus. (Nagar, 2002; Windsperger et al. 2005). Others used a binary variable if incentive compensation is used or not (DeVaro et al., 2010; Foss et al., 2005). Subjective measurement was used by

Abernethy et al. (2004) and Demers et al. (2002) who asked respondents to rate their annual incentive compensation on a predetermined scale.

Knowledge assets/information

Subjective data was used to formalize the variable of knowledge allocation by asking to rate the advance in information and knowledge contribution with respect to the other party on different activities on a scale. (Abernethy et al. 2004; Windsperger). Other formulated this variable with the help of objective data such as experience (counted in years), geographical distance, number of lines, industries, value of the brand name, annual training days or annual outlet visits.

Uncertainties/risk

Different types of uncertainties were considered in the empirical studies discussed in this paper. Most of these studies take environmental uncertainties into account, such as the state of the market from the primary product of a company (DeVaro et al., 2010) or the firm growth, volatility of earnings and innovation (Nagar, 2002; Moers, 2006). Also, some researchers asked managers to rate the degree of innovation in their industry, their number of competitors or industry variance as well as the variation of market prices, product development and the predictability on demand in the sector they are operating in (Foss et al., 2005; Hippmann et al., 2012). Others use the length of relationship between two firms or job tenure within firms as a variable formulization for uncertainties (Arruñada et al., 2001). Furthermore, also technological uncertainty (Windsperger, 2009a) was taken into account in some of the researches.

After having explained data sets and the formalization of variables, a closer look will be taken on statistical methods and techniques used to test for theoretical hypothesis.

Upon giving an overview of their main variables with descriptive statistics, every researcher conducted some sort of regression analysis. Most of them used the widely common ordinary least squares regression to test their dependent variable, which in most cases was the allocation of authority. (Arruñada et al., 2001; Lopez et al., 2011; Windsperger et al., 2005). Fewer researchers took use of OLS regression analysis with authority as an explanatory variable (Agarwal et al., 2010; Liberti et al., 2009; Wu, 2011). Abernethy et al. (2004) for example, used OLS twice with 2 different dependent variables, namely decentralization and the importance of financial and quantitative measures for agents. Two stage OLS regression was used by Nagar (2002) for the variables delegation of authority and incentive compensation and from Windsperger et al. (2005) for the variables residual decision rights and ownership rights. Other commonly used regression models on this topic include ordered logit models, tobit models and probit models for binary responses.

In the last chapter, the 3 components and their application in the empirical study sample used in this work, will be critically discussed and implications for future research will be given.

8. Discussion and Conclusion

As this work shows, empirical research falls behind theoretical concepts on the topic of the allocation of authority, especially on the distinction in formulating variables and the measurement of real and formal authority.

The majority of empirical papers on the allocation of authority did not even specify if they were investigating real or formal authority. Some measure authority with objective data, like organizational charts or contractual agreements (Arruñada et al. 2001; Agarwal & Hauswald; 2010; Liberti & Milan; 2009), while others measure authority with subjective questionnaires designed for either principal or agents, asking them about the influence on decisions of the other party. (Abernethy et al, 2004; Christie et al., 2003; Colombo & Delmastro, 2004; DeVaro et al, 2002 & 2010; Lopez et al. 2011 & 2012; Windsperger et al. 2009a). Whilst just two researchers try to measure both real and formal authority (Hippmann & Windsperger 2012; Li et al., 2009).

As a result, this paper tries to distinguish real and formal authority explicitly based on the measurement for authority used in each particular case. The author classified papers to investigate on real authority when their measurement for authority was based on questioning agents/employees/franchisees about their own influence on different decisions. This is due to the assumption that agents will rely more on the organizational reality rather than on contracts, organizational charts or job descriptions while filling out the questionnaire. On the other hand, empirical researches got classified as measuring formal authority either with objective data or with a survey designed for principals/managers/CEOs/franchisors, asking them to rate their agents' influence on certain decisions. As a principal will rely more on contractual agreements or job descriptions while answering these questions, it will come closer to a measure of formal authority than a measure of real authority. However, one can also draw conclusions on the allocation of real authority by asking the principal how he rates the influence of the agent on certain value chain activities (more than when relying on contractual

agreements), but it is not safe to reveal empirical evidence on the allocation of real authority. One can't see this classifications as black and white, ergo a measure of either pure real or pure formal authority, but as measures relatively more predicated on either of the two.

The reason for their failure on the distinction can derive from the fact that it is very difficult to get an empirically meaningful data set to test real authority. As mentioned above, the empirical researches classified as measures for real authority did not strictly measure real authority. In order to have a more accurate measure of real authority, it would be necessary to have data on authority perception from both parts (principals and agents) in an intra- or interorganizational network. Also, it would be interesting to see the differences in authority perception of principals and agents within the same organization. Therefore a survey with two distinct questionnaires for principal and agents within the same sample would contribute to the empirical understanding of the concept of authority perception of the two and test my assumption that principals are more likely to stick to official authority allocation while agents are expected to stick more to the concept of real authority.

Furthermore, as most researches rely on highly subjective data (personal perceptions) for measuring real authority, it would be valuable to measure real authority based on more objective data. Data for measuring who is holding the effective control over decisions could be obtained using call transcripts, memos, emails or meeting transcripts. Unfortunately, this is also the hardest, most expensive and most time-consuming data to acquire on a large scale. In the event of obtaining this data, formal authority would be easy to formalize with the help of organizational charts and job descriptions. Having the two measures for the same subjects of investigation, the gap between real and formal authority could be revealed and make a contribution to the understanding of organizational design. Furthermore the whole concept of two different authorities in an organization would gain validity. This would be an interesting implication for future researches.

Moreover, case studies could be an easy way to contribute to the empirical research of the allocation of real and formal authority. As already argued, the difficulty in acquiring data to test theoretical concepts has hampered the empirical investigation of the allocation of decision rights. Accordingly, case studies could help empirical researchers in terms of formulating hypothesis, testing established hypothesis or deriving variables and determinants. Sadly, case studies on the concept of real and formal authority are almost non-existent.

This work recorded the gap between theoretical models and empirical studies on the allocation of authority and gave an overview of the formalization of depending variables, existing statistical methods and techniques and explanatory variables determining authority in both, intra- and interorganizational networks. In addition, measurement methods and variable formulations were discussed and criticized regarding their liability and predisposition to produce erroneous results. Thus clearing the way for future researches.

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Appendix A: Abstract in German

Die Verteilung von Entscheidungsrechten sowie die Verteilung von Autoritäten in Unternehmen ist eine Schlüsselkomponente in der Architektur von Organisationen. Die Autoren Coase (1937) und Simon (1951) beschäftigten sich schon sehr früh mit der Verteilung von Entscheidungsrechten und erklären die Existenz von Autoritäten in Organisationen mit unvollständigen Verträgen. Zu unvollständigen Verträgen kommt es laut ihnen aufgrund von Unsicherheiten und der Nichtgreifbarkeit von Vorzügen verschiedener Akteure (wie zu Beispiel der Wissensverteilung innerhalb eines Unternehmens). Im Jahr 1997, zwei Forscher (Aghion und Tirole) entwickelten die differenzierte Sichtweise von realer und formaler Autorität. Laut ihrer Theorie muss man zwischen realen und formalen Autoritätsbeziehungen unterscheiden, wobei reale Autorität die effektive Kontrolle über Entscheidungen und formale Autorität, das tatsächliche Recht Entscheidungen zu treffen, ist. Trotz einer großen Sammlung theoretischer Beiträge auf dem Gebiet der Verteilung von Entscheidungsrechten in intraorganisationalen Hierarchien (Aghion & Tirole, 1997; Baker et al., 1999; Brickley et al., 2003; Dessein, 2002; Fehr, 2010; Malone, 1997; March 1991; Nagar, 2002; Stein, 2002) und interorganisationalen Netzwerken (Azevedo, 2009; Elfenbein & Lerner, 2003; Hendrikse & Windsperger, 2011; Higgins, 2006), findet man dementsprechend wenige empirische Studien die all diese Theorien überprüfen. Gründe dafür könnten die Problematik in der Beschaffung plausibler Datensätze sein. Deswegen hat es sich die Autorin zur Aufgabe gemacht, eine lückenlose Übersicht der existierenden empirischen Studien zur Verteilung von Entscheidungsrechten innerhalb und zwischen Unternehmen, mit spezieller Aufmerksamkeit auf dem Konzept formaler und realer Autoritätsbeziehungen, zu geben. Außerdem möchte diese Arbeit den Forschern neue Ideen und Ansätze geben, sowie auch Lücken in der Forschung aufzeigen und damit den Weg für neue Forschungsansätze ebnen.

Appendix B: Curriculum Vitae

C U R R I C U L U M   V I T A E

PERSONAL DATA

Name	**Daniela Satrapa-Binder**
Address	Siemensstrasse 14/6/19
	A-1210 Wien

Date and place of birth	3rd of June 1984 in Vienna
Marital status	single
Nationality	Austrian

Phone	+43 / 699 / 19037724
E-Mail	daniela.satrapa-binder@gmx.at

EDUCATION

Since 2003   **University of Vienna, Austria**
Master of International Business Administration
 (MBA)
  Faculty of Business, Economics and Statistics
  wirtschaftswissenschaften.univie.ac.at

  Emphasis
   o   International Management
   o   Organization Theory and Personnel Economics
   o   Languages: Spanish, English

  Master's Thesis
   o   „Allocation of real and formal authority in intra-
       and interorganizational networks"

2007 – 2008   **Universidad de Valencia, Spain**
Erasmus program
  Estudios Empresariales
    Faculdad d. Taronjers de Ciencias Empresariales
  www.uv.es

1998 – 2003   **College for Hospitality and Tourism of Vienna,**
Austria
  Tourism Management

www.firnberg-projects.at

Emphasis
- o Management for international Tourism
- o Languages: French, English

Graduation
- o June 2003: school leaving examination: completed very successfully, general qualification for university entrance

ADVANCED TRAINING

05/2008   Spanish Diploma DELE "Instiuto Cervantes", Valencia, Spain
              "Diploma de Espanol como lengua extranjera – nivel intermedio"

09/2007   Spanish Class "Instiuto Taronja", Level A2, Valencia, Spain

09/2004   Spanish Class "Instituto Andalusí", Level Intermediate, Malaga, Spain

09/2002-11/2003 Information Technology Diploma ECDL "Österreichische Computer Gesellschaft", Vienna, Austria
              "European Computer Driving Licence"

03/2002   French Class "Bruxelles Destination Langue Francaise", Brussels, Belgium

09/2000   English Class "Princess College", London, England

PROFESSIONAL EXPERIENCE

07/2011-present **Red Bull S.L., Madrid, Spain**
              Brand Department: Consumer Collecting
- o Leading, coordinating and training 90 part-time employees
- o Recruitment (selection, job interviews and on-boarding)
- o Budget responsibility
- o Business planning
- o Implementation of international strategies

04/2010-07/2010 **Red Bull S.L., Madrid, Spain**

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Project leader: Eventmanagement
www.redbull.es

- o Project Manager Event "Copa del Toro"
  - Prestigious incentive event for employees: 800 participants of 16 different coutries
  - Pre-event coordination: visas, journeys, hotels, transfers, location search, communication (logo development, visibility materials on site), negotiations, production of giveaways
- o Brand Department support on summer print-campaign in Red Bull's most important market of the world - Ibiza
- o Organization of National Meeting for Red Bull Spain

10/2010-04/2011   **Red Bull GmbH, Fuschl am See, Austria**
Internship: Off Premise Austria (Sales)
Trade Marketing
www.redbull.at

- o Project Manager "Winter Sales Drive"
  - Planning, coordinating and analysing the Sales Drive
  - Led a Sales Team of five, surpassing sales goals by 20%
- o Re-work Perfect Store Concept for existing Distribution Channels based on newest market research outcomes from GfK
- o Development of Perfect Store Concepts for five new Distribution Channels
- o Assistance in a Category Management Project together with AC Nielsen
- o Data Analysis with Nitro (AC Nielsen)
- o Analysis of the Program "I-Sights" from AC Nielsen and development of ideas in order to improve functionality and usability of I-Sights for Sales Department
- o Development of a monthly Sales Newsletter for our Field Sales Team
- o Competitor Monitoring

09/2003-10/2010   **Red Bull GmbH, Fuschl / See, Austria**
Consumer Collecting: Wings Team

www.redbull.at

- o Team Leader for Region East-Austria
  - Coordination of six Wings Team Members
  - Scheduling Sampling Missions
  - Car pool management
- o Sampling: University / At Work / Sports / Events / Carpe Diem / Red Bull Mobile
- o Trade- and gastronomy fairs
- o Sales Drive: retail and impulse (06/07/09/2010)
- o Launch Support Red Bull Simply Cola, Red Bull Mobile and Red Bull Shot
- o Red Bull goes France – L'invasion á Paris (2008)

07/2004 **Siemens AG, Vienna, Austria**
Internship: Logistics
www.siemens.at

- o Granting of licences
- o Administrative and organizational activities
- o Customer contact
- o Time scheduling

11/2001 **Principles Fashion, Shrewsbury, England**
Work experience: Sales Assistant
www.principlesclothing.com

- o Consulting and Sales
- o Warehouse Management

05/2001-08/2001 **Alcatel Austria "AOSA" GmbH, Vienna, Austria**
Internship: Marketing and Sales
www.alcatel.at

- o Analysing and Monitoring Competitors
- o Administrative and organizational activities
- o Planning of Promotions – volume and pricing
- o Preparation of Marketing and PR Material

05/2000 – 08/2000 **Hotel Kobenzl*****, Salzburg. Austria**
Internship: Front Office, Kitchen, Service

09/1999 Österreichisches Verkehrsbüro AG,
Vienna, Austria

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Internship: Travel Agency Sales
www.verkehrsbuero.at

- o Preparing travel documents for clients
- o Hand out travel catalogues/travel documents to clients
- o Sales advice and assistance

PERSONAL SKILLS AND COMPETENCES

Language Skills	German: mother tongue English: fluent in speaking and writing Spanish: fluent in speaking and writing French: basics Italian: basics
Computer skills	Microsoft Office: experienced
Driving licence	B and E to B
Others	Organizational skills Team player Flexibility Social skills Willingness to travel

INTERESTS AND HOBBIES

Travelling, culture, languages, photography, reading, dancing, swimming, volleyball, sailing, skiing, friends, family