Towards a Transaction Cost Analysis of the Hub Firm

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Abstract

New Institutional Economics explain the firm as a hierarchical form of coordination that internalizes market exchanges. But important industries are today often dominated by highly disintegrated firms that keep few activities within the scope of their own hierarchies. These firms, in the business literature called "hub firms" that orchestrates "strategic networks", play a key role in the value chains in which they operate. They control and coordinate downstream and upstream activities performed by other firms and do not fit into an explanation of the firm as an institution that internalizes markets by the use of hierarchical coordination mechanisms.

How can the functions performed by hub firms then be explained? Can these firms teach us something about the economic rationale of firms in the market economy? To answer these questions this paper turns to early contributions in New Institutional Economics and the discussion of the role of the entrepreneur in the market system. The paper argues that hub firms perform entrepreneurial functions in the realization of products. The hub firm reduces transaction costs by 1) developing the design of products, 2) acting as an intermediate and crafting contract between customers and producers, 3) controlling the quality of products and reducing the risk for participating customers and producers. Hub firms, by performing these functions, create and coordinate value chains that would not be possible in a system coordinated only by the invisible hands of pure market exchanges. This is especially the case in the production of complex products with several qualitative dimensions and composite

products that combine inputs from many different producers. The discussion is illustrated with case material from NIKE, a large and highly disintegrated international firm.

THE FIRM AS A HIERARCHY

Neoclassical Economics analyses the use of the price mechanism of markets and shows that, if certain conditions are fulfilled, the relative-price determined by supply and demand will guide exchange parties to an efficient resource allocation. Market prices signals information about scarcity and provide strong productive incentives. Other advantages (early observed in the Austrian school) is that a market system encourage a multitude of competing experiments and an incremental and more dynamic development than more centralized regimes (Hayek 1945, Williamson 1985). This focus on coordination by market mechanisms made the use of other coordination mechanisms difficult to explain. This was especially observed by Coase (1937) who pointed at the problem that economic theory did not provide an explanation of why firms exist. Coase suggested an answer which later was developed in New Institutional Economics; due to transaction costs different coordination mechanisms (market and hierarchical mechanism) are efficient in different situations. Sometimes firms provide a more efficient coordination than markets. Firms are hence institutions in the market system that introduces the use of hierarchical mechanisms.

Using the price-mechanism of markets implies that agents are rewarded directly for the results that they have produced; the market mechanism is focused on outputs. The hierarchy, on the other hand, use rewards linked to other measures than output, for example the obedience of orders and regulations and measures of inputs that have been used in the process (i.e. formal qualifications of an employee, time spent by an employee etc). The direct market mechanisms provide strong incentives, encouraging the producer to create the output

demanded, whereas the indirect incentives provided by the hierarchy are weaker and more oriented to fulfil the requirements of the internal management. In this context, firms are institutions that use hierarchical coordinative mechanisms to internalize market relations in situations when market coordination fails.

The hierarchy has advantages when exchanges involve imperfect competition, public goods and externalities. One example is when one exchange-partner invests in asset-specific investments creating a situation of few partner exchanges. Asset-specific investments coordinated within a hierarchy reduce the risk for opportunistic behaviour and explains vertical integration in production (Williamson 1985, Alchain & Woodward 1987). Another example is when firms hold assets such as unique knowledge which can be characterized as an excludable public good. Here coordination through market leads to transaction costs due to the information paradox (Arrow 1973) and due to difficulties to secure ownership rights, which explain firm expansion by horizontal integration (Teece 1982, Williamson 1985, Liebeskind 1996). Specific knowledge is a heterogeneous asset that explains competitive advantages (Penrose 1959:1980, Barney 1991) and therefore, control of knowledge-diffusion is crucial. A third example of a situation when market mechanisms are abandoned is in the use of brand names. Brand names can be characterized as common corporate assets, of which the activities of one member can cause externalities to others. This can be referred to as a problem of team-work and joint production (Alchain & Demsetz, 1972). When individual contributions in a group are difficult to separate from each other, and everyone needs to co-ordinate with everyone else, an authority can act as a centre for communication. The authority can also make decisions and give sanctions, thereby reducing transaction costs in teamwork (Alchain & Demsetz 1972, Williamson 1975, Alchain & Woodward 1987). An authority might finally have certain information advantages and can make radical change and

innovations possible, which is a final argument for co-ordination by authority (Williamson 1991).

Co-ordination through the hierarchy and the commands of an authority has, of course, also disadvantages compared to the price-mechanism. One disadvantage is weaker and biased incentives due to the fact that rewards do not directly correspond to their contributions to final results (Alchain & Demsetz 1972, Williamson 1985). Another disadvantage is the costs of hiring superiors, and the risk that superiors are guided by their own interests, on behalf of the interest of the firm's stakeholders or shareholders. These principal-agency problems raise the question of how to control managers and to create efficient incentives (Fama 1980, Fama & Jensen 1983, Williamson 1985). One way to reduce these problems is to introduce more market-based mechanisms into the firm. If problems of measuring output can be overcome internal market mechanisms can be established as illustrated by the design of profit centres and the use of piece-rate payments to employers which can mitigate the problems of the hierarchy. But, just as external market relations are hindered by few partner exchanges, public goods and externalities, the same problems within firms imposes measurement problems and obstacles to the use of internal market mechanisms. Again this gives arguments for using weaker input-oriented incentives such as lump-sum payments. Another possibility is to develop ”trust” or ”ideology” in markets or hierarchies. Trust/ideology might even be the most important coordination mechanism in certain institutional forms, described for example as clans, networks or brotherhoods (Ouchi 1980, Braddach & Eccles,1989, Powell 1991, North 1992).

The two different kinds of mechanisms will thus encourage different kinds of behaviour, which create trade-offs that managers needs to handle. Roberts (2004) discusses the problem and describes the behaviour encouraged by internal market-oriented incentives as “initiative” and “explore”. Strong output-oriented incentives make agents focus on improving

their own performance and search for new ways of improving their results, market mechanisms encourage innovative explorations. On the other hand, weak and input-oriented hierarchical mechanisms can encourage a more "cooperative" behaviour and might be a way to secure "exploitation". Roberts also notes that the frontier of trade-off between behaviour characterized by for example initiative and cooperation can be expanded by the existence if trust develops between the involved parties.

A situation that might be especially problematic occurs in situations with multi-task problems, as discussed by Holmström & Milgrom (1991). This problem occurs when the individual or organizational unit responsible for performance face multiple objectives. The problem arises when some tasks results in outputs that are measurable, and hence adequate for using market-based mechanisms, whereas other tasks have outputs that are difficult to measure and therefore should be coordinated by hierarchal mechanisms. The coordination problem facing multi-task problems can be handled in various ways, from changing the tasks of the individual or unit, balancing strong and weak measures, or, if the strong incentives makes the balance roll over, to use only weak incentives. If the weak incentives do not provide enough encouragement for initiative and exploration, they might be combined with high-commitment efforts to develop trust (Roberts 2004).

Based on the analysis of coordination by market mechanisms versus hierarchal mechanisms, firms are explained as an institution that introduces hierarchical mechanisms of coordination and that internalizes external market exchanges into one governance structure. The firm integrates activities and reduces transaction costs of markets. In this view the main task of firm managers is to decide on the scale and boundaries of their internal hierarchies, based on the external price information of goods (input and output) and based on the transaction costs of market coordination versus hierarchical coordination.

The argument of this paper is that this is a far too limited approach to the function of firms in the economy. Firms and their managers play important economic functions far beyond the scope of introducing hierarchical mechanisms into the market system. This is clear when one considers that many value chains today are dominated by highly disintegrated firms, firms that are known for outsourcing almost all activities. If firms are explained as institutions that internalize market activities, why are there highly disintegrated firms in the market economy and why are these firms gaining importance?

DISINTEGRATED HUB FIRMS

A development towards more disintegrated firms was early observed in the organization literature by Miles and Snow (1984). Miles and Snow described (from an American perspective) how new organizational innovations have changed the shape of firms. In the early 1800s the agency structure characterized small single product and owner-managed firms. It was followed by the functional structure which made large firms, producing a standardized product, possible from the 1850s and on. In the early 1900s the divisional structure gave rise to large diversified firms that managed to combine different products as well as different geographical markets in the same structure. The following matrix structure, invented in the 1950s, made it possible for firms to handle both standardized and innovative products, hereby supplying both stable and changing markets. At the late 1900s Miles and Snows identifies a new organization and calls it the “dynamic network”. The new structure is used by firms that supply product designs for global, changing markets. New information technologies facilitate the development of theses firms, characterized as broker-assembled temporary structures. Early users of this structure are, according to Miles and Snow,

international construction firms, global consumer goods companies and selected electronics and computer firms:

> Organizations of the future are likely to be vertically disaggregated: functions typically encompassed within a single organization will instead be performed in independent organizations. That is, the functions of product design and development, manufacturing, and distribution, ordinarily integrated by a plan and controlled directly by managers, will instead be brought together by *brokers* and held in temporary alignment by a variety of *market mechanisms*.
>
> (Miles & Snow, 1984, reprinted in Pugh 1997 p 181)

Another early observation of disintegrated firms that coordinate their activities by the use of external market relations rather than internal hierarchal solutions was presented by Jarillo (1988). Jarillo identified "strategic networks" as a specific type of networks of inter-organizational relationships in which a central "hub-firm" coordinate relations to other firms. The hub firm acts as "network orchestrators", an active coordinator of a web of economic relations. Jarillo suggested the use of transaction cost analysis to explain these networks and believed that the hub firm reduced transaction costs by trustful market relations with external partners. These firms could, by developing trust, affect transaction costs and reach advantages due to more specialization, flexibility and cost discipline compared to firms that internalized the same kind of activities.

The perspective of strategic networks and hub firms has gained interest from various fields of research and provides promising research opportunities for analysing areas such as industry structure, market power and firm-positioning within an industry (Gulati et al, 2000). By analysing strategic networks, new insights also can be added to issues such as governance,

contracting and coordination (Jarillo, 1988; Gulati et al, 2000), as well as firm value and knowledge creation (Gulati et al, 2000; Kogut, 2000; Möller & Svahn, 2006).

From the view of the economic theory of the firm, the identification of hub firms and strategic (dynamic) networks are interesting for a specific reason; The existence of hub firms illustrate that firms can perform their economic function by either internal hierarchical mechanisms or by external market mechanisms, and that these mechanisms can be developed with many varieties, for example with different levels of trust. Firms can perform their functions either by managing large hierarchies of by being "brokers" in dynamic networks of market relations.

A conclusion is then that the internalization of market exchanges and use of hierarchical coordination mechanisms *not* seem to provide a general explanation of the firm in the market system. Firms exist even if they do not use hierarchical coordination. Important firms, like NIKE and others, have a coordinative function that goes far beyond internalizing certain activities. And firms in the same industry rely on different coordination mechanisms. Zara, a large firm in the fashion industry, is highly integrated and uses hierarchical mechanisms but its competitor H&M, is highly disintegrated, relying on market mechanisms. In the industry of electronics Samsung illustrates a firm that is highly integrated whereas Hewlett Packard is disintegrated (Berger 2005). These companies successfully supply the same kind of goods in the same kind of business environments which implies that it is not the choice of one type of coordination mechanism that explains the function of firms in the market system, but something else. Besides, the function of introducing hierarchical mechanisms in the market system is not unique for firms. The state and other institutions also introduce hierarchical mechanisms, which is also explained by public goods, externalities etc.

The theoretical blind spot that emerges might lead to a discussion of why some firms develop competitive advantages and others do not, with discussions about unique features in

firms, such as routines and capabilities (Nelson & Winter 1982), heterogeneous resources (Barney 1991) or core competences (Prahalad & Hamel, 1990). The answer why companies can use different coordination mechanisms and still be successful in the same industry would then be that they have developed unique skills in operating their different business models, skills that reduce transaction costs in their specific way of hierarchical coordination (Zara/Samsung) and market coordination (H&M/Hewlett Packard) and therefore make each of them competitive. This is a possible answer to why different kinds of business models are used in the similar business environment. It provides an answer to why *certain* firms develop and others do not but it does not provide an answer to the question why firms exist in the first place. A theory of the firm needs to explain why firms use a wide range of coordination mechanism to coordinate the allocation of resources. Why are there so many visible hands in the market system willing to aid customers to use resources in a way that they demand? What economic functions then do firms perform, beyond introducing hierarchical mechanisms into the market system?

One approach to answer the question is to study disintegrated hub firms that mainly use market mechanism for coordination, and ask what function they perform? A hub firm that has been in the forefront of developing "dynamic networks" is Nike, known for athletic footwear and being a global market leader. Nike relies heavily on external market relations to source, supply and distribute their products. The history of Nike (Wang & de Verdier, 1998) shows examples of problems with to use of firm-specific know-how, reputation and asset specific investments. But the firm has coped with these problems without internalizing their activities. The main function of Nike is obviously not to internalize transactions that are problematic to coordinate by market exchanges. Nike designs new footwear indoors and then its managers mainly act beyond the boundaries of the company and coordinate a customer oriented and highly flexible global supply chain through external market relations. Judging

from firms like NIKE the basic function of this firm is to coordinate a complex web of internationally dispersed suppliers and distributors that produce goods to internationally dispersed customers.

> Every link in the supply chain was being constantly challenged to deliver higher product volumes and more frequent product introductions. The life circle of a typical Nike shoe was only six months, and Nike's designers were turning out new models at a rapid rate. The designers in Beaverton, Oregon, worked closely with Nike's manufacturing partners around the world to ensure a smooth transition from the design to the production environment. Nike's manufacturing partners had grown into some of the largest footwear manufacturers in the world, and churned out millions of pairs of athletic shoes every month. Nike's distribution system brought the shoes to the retailers, and was currently being centralized around a small number of regional distribution centres. (Wang & de Verdier, 1998 p 1.)

Rather than internalizing transaction by the use of hierarchical coordination mechanisms, Nike uses market mechanisms to coordinate relations with globally dispersed suppliers and distributors and create global chains of activities that go far beyond the boundaries of the firm. In this part of the market system there is obviously more than the invisible hand of prices that coordinates what goes on.

FUNCTIONS OF FIRMS

One area of research in early new institutional economics discusses the functions performed by entrepreneurs in the economy, and here the question of matching customer demands and production activities is addressed (McNulty 1984, Cheung 1983, Fama 1980, Fama & Jensen 1983, 1986). This part of new institutional economics has been given less

attention than others, but can be of the highest relevance for understanding the function of the firm. Some insights based on this branch of research follow below.

Neo-classical theory analyses the advantages of the price mechanism in markets. With perfect information, no transaction costs and competition, the relative-price determined by supply and demand coordinates exchanges and achieves an efficient resource allocation. This is illustrated bellow where many customers (A,B,C) demand a good that many producers sell (DEF). The product demanded is identical for the different customers and each supplier offers the product in question (illustrated by squares). The exchanges are coordinated by the invisible hand of the price mechanism.

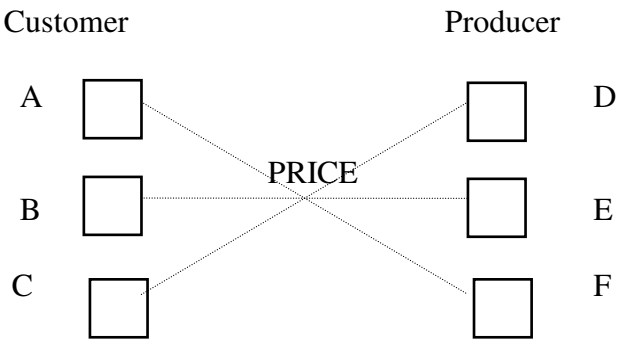

Figure 1. Market with homogenous good coordinated by the price mechanism

In the neoclassical theory the role of the entrepreneur in a firm is to adjust to price signals and determine the quantities and trade-offs that maximizes profit. The function of the entrepreneur is to determine the physical quantities of the product that is produced and the quantities of input used to produce the product. Price signals will guide theses decisions. If competition prevails the firm is a price-taker, in the monopolistic alternative a price maker.

Schumpeter early observed that the entrepreneur also performs the function of finding new goods, methods, markets and sources of supply (Schumpeter 1911/2000). The entrepreneur is hereby the specialized agent who finds new ways to combine productive

factors, who finds new employments of existing productive means (Ibid p 58) and who puts them into practise. However, Schumpeter did not explain why the entrepreneur is needed to perform these activities. Why could they not be carried out by the initiatives of customers and producers through the price mechanism of the market? An answer is that the entrepreneur is an agent that performs a specific coordination function.

DESIGN

With limited information and positive transaction costs, why is then sometimes the market abandoned and replaced by the coordination of entrepreneurs? One explanation is that the entrepreneur can specialise in business design, deciding the various quality dimensions of the products that are demanded by customers and the composite inputs produced by producers.

The entrepreneurial function of deciding quality dimensions of products was early observed by McNulty (1984) who divided economic activities in two kinds; the transformation of resources into goods and the exchange of goods for other goods or money. The neoclassical analysis is analysing the exchanges but it neglects the transformation. The transformation needs another kind of coordination than the exchanges. The transformation involves decisions of products' qualitative dimensions that cannot be made by market exchanges. McNulty writes:

> The determination of quality is a unique province. The qualitative dimensions of goods /… / can be traded and priced, but not determined or changed, within the network of market relationships. The market provides an arena in which consumers can accept a certain product /…/. But it requires the organization we call a firm to determine which of these, or of something else, will in fact be available in the market.
>
> (McNulty, 1984 p. 248)

In a simple exchange situation two parties are involved; a buyer demanding a product from a seller. But a product does not exist *a priori*, it is the result of a resource transformation. How this transformation is to be conducted, what kind of good that is to be produced requires active decisions. These decisions are, according to McNulty, the fundaments of the entrepreneurial function. These decisions are here labelled the function of design. (In this

context design means overall decision-making about what to produce and how to produce, not design as a specialization in physical modelling of a product.)

How then could the design decisions be made? Three alternatives are possible. One is that the customer plays the entrepreneurial role, decides the different quality dimensions of the products and communicates them to the producer. The customer might have some advantages in performing this task since he has the best knowledge about his own preferences and his budget restraints. An alternative solution is that the producer plays the entrepreneurial role and makes the design decisions on behalf of the customer. The producer has the advantage of having the best information about his supply, his available resources and compensation requirements. A third alternative is to develop an intermediary function, an entrepreneur who plays the role of a middle man. The entrepreneur then decides about qualitative dimensions of the product by balancing both preferences and budget constraints of customers and production possibilities and compensation requirements of producers.

Depending on the transaction costs any of these three alternatives is possible. Let us have a closer look at the third alternative, in which the basis for the entrepreneurial design function becomes clear. Assume that customers demand a product which is the composite result of many kinds of input supplied by several different producers. The customer can choose between buying the different components from the various specialized producers or to buy the composite product from an entrepreneur. The entrepreneur will then, in his turn, acquire the different components and combine them for the sake of his customer. The two alternative situations are illustrated in figure 2 and 3.

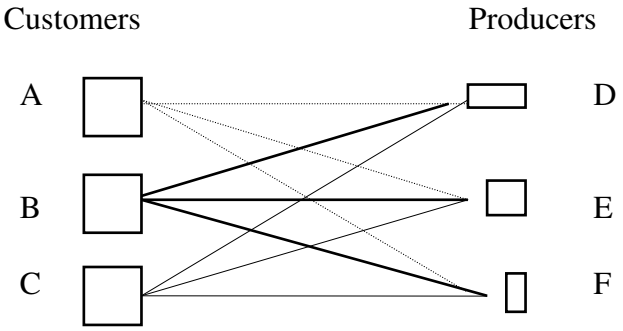

Figure 2. Market coordination of a composite product

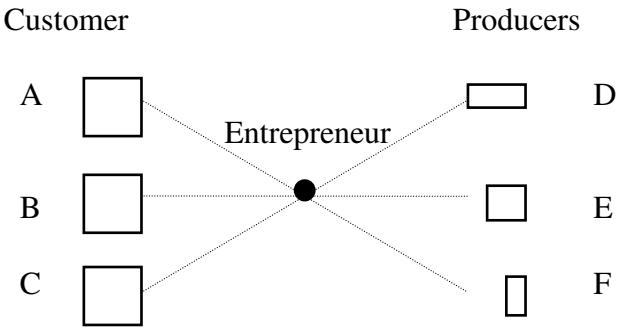

Figure 3. Entrepreneurial coordination of a composite product

Compared with individual customers the entrepreneur, by acting on behalf of many customers, can reap beneficial advantages in deciding business design. These advantages have been described by Cheung (1983) who explains the entrepreneurial function of the firm as a specialized coordination that typically involve multiple producers and costs of discovering prices. Cheung summarizes his arguments as follows:

> In principle, all contributions of producers as well as the services of the coordinator can be separately prices and sold to customers by measuring directly various attributes related to each contribution. In this case product and factor markets coincide. But the determination of prices is costly because of the numbers of transactions, because consumers lack detailed information on the use of each

> component or contribution to a commodity, because of the difficulty of measuring varied and changing activities, and because of the need to separate contributions.
>
> (Cheung, 1983 p. 9)

If a customer for example demands a transport vehicle in a pure market system, he first has to decide on the many qualitative dimensions and composite inputs of the product. He must decide various dimensions of the motor, the coach etcetera which require specialized skills and knowledge about existing and future production possibilities; who can do what and to what price? For a complex composite product, high transaction costs in deciding these questions would prevent customers from designing and demanding the product. Here the entrepreneur, by acting as the middle man, can gain advantages of specialization by designing the various qualitative dimensions of a complex and composite product and then offer it to many customers. The entrepreneur hereby divides the costs between many customers who benefit from being offered products they never would have had the possibility to ask for themselves. (Opponents of the capitalistic system sometimes complain that firms offer products that the customers do not know they need and do not ask for. According to this analysis, that is a good thing.) Hereby the entrepreneur reaps specialization advantages of scale (and skills) and makes it possible for customers to demand products without having to carry more than a small share of the transaction cost of the design process. By the intervention of an entrepreneur, the skill in performing the design function increases and transaction costs per unit decreases as the same design is used for many customers.

Using a specialized entrepreneur to solve the design-problem will, of course, not come without a cost. The entrepreneur/designer will require rewards for his work and have to learn about production possibilities of producers and preferences of customers. The individual customers have the best knowledge of their own preferences and budgets. But by offering the

same design to many customers the entrepreneur has incentives to develop knowledge of similarities among customer preferences and production possibilities, knowledge that individual customers lack, and to develop a product design that matches both preferences and production possibilities.

The analogical rationale can be found when the specialized entrepreneur is compared to individual producers. One producer can join with others to supply a composite final product that is attractive to a group of customers. But it requires investments in knowledge about the different producers' production possibilities. If one individual producer aims to decide all the qualitative dimensions of the final composite product he has to know not only his own production possibilities, but the possibilities of all the others as well as preferences among customers. High transaction costs would prevent the realization of such combinatorial possibilities. The entrepreneur here, again, can gain advantages of specialization. The entrepreneur has disadvantages compared with the individual producer in knowing the details of the specific production. But the entrepreneur can develop knowledge of the combinatorial possibilities among a group of producers and about preferences among customers, and of the matching possibilities between he two sides, knowledge that the individual producer lack. From this point of view, the entrepreneur is a proxy for a group of customers and producers, creating benefits of coordination that would be costly for an individual customer or producer to obtain.

A function of the entrepreneur is thus to decide on how a match between preferences and productions possibilities can be realized. By sharing the costs for this specialization all participants can gain. Transaction costs are reduced and multi-dimensional, multi-input products are realized. The more complex and composite the product, the more aspects there will be to decide upon and the larger the need for such intermediate functions at various steps of the value chain.

Rather than internalizing market transactions and using hierarchical coordination mechanisms, the function of firms is in this context explained by the need to decide on qualitative design and the reductions of transaction costs in performing this function by a specialized intermediate entrepreneur. Nike illustrates this function in an international setting. Nike is creating the design of their products, determining the qualitative dimension of products is one of their core functions:

> Since the launch of their own branded shoes in 1971, Nike has designed all of their products in-house. Nike's headquarters in Beaverton, Oregon, is the centre for design and development, and in 1997 400 people worked with design and development of new products in footwear, apparel and sports equipment. /…/
> Before proceeding, the design goes through a 'concept review', where managers from the marketing, design and development and brand management groups comment on all the aspects of the shoe: Does it meet the marketing brief? Does is hit the price point? Has technical innovation been properly applied to make it a performance product? In response, the design team may alter the design, or challenge the management group and back their point of view with more research.
>
> (Wang & de Verdier, 1998, p 7 and 9.)

CONTRACTS AND QUALITY CONTROL

Why then do firms do more than decide about design? Why not let the customer and input producers do the rest? Why do hub firms like NIKE engage in coordinating resource owners and controlling the quality of their inputs?

A customer who, for example, desires a car can go to a car designer and buy the specification to a car, including all different components needed. Then the customer can go to different producers and demand these components and to assemblers who put them together. As is easily understood, also here the entrepreneur can gain advantages of specialization and

reduce transaction costs compared to a situation when individual customers develops contracts with all individual producers. The entrepreneur becomes the centre of many contract relations, can develop skills and divide fixed costs of contract-making on many participants. The rationale is parallel to our discussion about design. If many customers have similar demands, the transaction costs of contract and control can be reduced by the intermediate function of an entrepreneur. Contract and control costs are costs for searching potential producers, costs for communicating with them, costs for negotiating contracts and costs for the enforcement of contracts. These costs can be substantial for individual customers, impeding market transaction. But costs for contract and quality control have fixed components that can be shared on many transactions. The entrepreneur can reap these benefits better by acting as a proxy for many customers and specializing in the contract and control function.

Similar advantages can be described from the point of view of the producers. The individual producer could contract with a creator of design, with other producers and, finally, with the customers. That might lead to high transaction costs for identifying potential participants and customers, for negotiating contracts, for controlling the quality of other participants and the payments from customers. Here, again, a specialized entrepreneur can play an important role and reduce transaction costs by developing skills required and by sharing fixed costs on many producers. These advantages of specialization in contract and quality control do not come without costs. Consider the contract situation between the entrepreneur and the group of customers and assume that a middle man is performing the specialized entrepreneurial function of deciding product qualities, contracting producers and controlling quality. The entrepreneur/middle man will now have information advantages about the product, compared to the customers (as well as compared to the producers, a problem that we will be discussed later). This creates two problems. First, customers do not have information about the existence of the product and do not know about its specific qualities.

Hence, the entrepreneur has to solve these problems by communicating with the customers, and customers have to inform themselves about the opportunities. The transaction cost for market communication, shared by the entrepreneur and the customers, is therefore a cost that must be weighted against the entrepreneurial advantages of the middle man. Second, the information advantages of the entrepreneur gives the entrepreneur opportunistic opportunities and incentives to overemphasize positive aspects and neglect negative aspects of the product. The customer will understand this risk of possible dishonesty and, if it is perceived as being high, will be reluctant to buy products with qualities that are difficult to evaluate. This problem, discussed as moral hazard or opportunistic behaviour, was early studied by Akerlof (1970) who noticed that it might lead to a situation where expensive, high quality products are crowded out by cheap low-quality substitutes. The problem can be solved in two principle ways, signalling and screening. Signalling covers activities undertaken by the entrepreneur to communicate and guarantee the specific quality of a product, for example by facilitating for customers to identify the product coming from a certain entrepreneur, by the use of brand names and trade marks, by information and advertisements, guarantees etc. Signalling ambitions also affect product features, distribution channels and price decisions. Here the "inside-qualities" of a product are communicated to customers by "outside" features like form, place and price. Screening, on the other hand, covers the methods that customers use to sort out variations in quality. Screening costs are the efforts taken by customers when they learn about products. Screening takes place when customer search reliable sources for product information, test products, pay for external evaluations, etc. Both parties interest in signalling and screening activities create a demand for external evaluations and governmental interventions and regulations that affect the costs for signalling and screening, i.e. laws that secure the right to brand names and trade marks.

Similar problems occur in the contract situation between the entrepreneur/middle man and the group of producers. Here the entrepreneur becomes the customer in the factor market, with possible information disadvantages when it comes to knowing the qualities of the specific input that is supplied by a certain producer. On the other hand, the entrepreneur will have the best information about the composite product and its use, and will therefore have information advantages compared to individual producers. Signalling and screening are, again, a possible solution to the problem. Producers can, by branding input, build up a reputation for quality that otherwise would be difficult to price. The entrepreneur can develop specific skills in quality control and both sides have incentives to demand quality screening services from external parties, which create a market for such services.

This analysis provides a second explanation of the firm in the market economy. The function of the firm is to act as a proxy for a group of customers and a group of producers, identifying possible participants, negotiating contracts and controlling that agreements are fulfilled. By acting as a middle man between dispersed customers and producers the firm gains advantages in performing the entrepreneurial function of contract making and quality control due to the skill- and scale advantages that follow on specialization. Hereby transaction costs are reduced. The firm chooses between various contract forms in their relations to customers and producers, using both market and hierarchical mechanisms in the search for low transaction costs. Signalling the brand name of the firm and developing screening capabilities can reduce the problems due to information disadvantages between customers and the firm and between the firm and its supplying producers. The case of Nike illustrates also this function of contract and control.

> In order to find the best manufacturing partners, Nike analyzed its past relationships and tried to conclude why some had been successful and some had not. The company

narrowed their selection down to a small group of partners who had the infrastructure Nike needed for its production-the rubber capability, the ability to make molds and tooling, the labor force, and the management experience. The partners that Nike chose were all dedicated to athletic footwear manufacturing; Geng Tay and Pao Chen in Taiwan, Tae Kwang, and Samyang in Korea, PT CCM in Indonesia and the Thai Saha Pathana Group. /…/

Nike has a large staff working to support their manufacturing partners. To oversee production in the 45 footwear factories, Nike has an expatriate staff of 180 people (US, Korean, Taiwanese and Japanese nationals) who are stationed at the contract factories. In the liaison offices in the countries where Nike's manufacturing partners are active another 1,100 national staff work to support the manufacturing process.

Quality assurance is also done I cooperation with factory staff. A product integrity group is responsible for enforcing Nike quality standards throughout the production process. The product integrity group at the liaison office communicates daily with Beaverton headquarters, and there are quality assurance personnel present in the factory every day.

(Wang & de Verdier, 1998, p 6 and 10.)

RISK TAKING

In a world with imperfect information, deciding the on features of a complex, composite product and coordinating the allocation from dispersed producers to dispersed customers will be a risky venture. How can the risk be allocated between customers, the entrepreneur and producers? Let us shortly consider different alternatives. One solution is to concentrate the risk to the customers. This could be arranged by an open contract that allocates the product to customers provided that they will pay the price needed to cover the costs for inputs. The contract could include information on an estimated price, but also state that, if deviations occur, the customer has to pay more or less depending on the final costs. Another solution is to let producers carry the risk. Producers would have an open contract specifying their contributions but allowing rewards to be adjustable, depending on the

revenues created. A final solution, analysed by Fama (1980) and Fama & Jensen (1983, 1986), is to let the middle man/entrepreneur take the risk. The entrepreneur as the central contract maker would then create contracts that in advance specify payments by customers and payments to producer. The residual between revenues from customers and rewards to producers is then the reward for taking this risk. If the revenues and costs deviate in a negative way, the entrepreneur as the residual claimant will act as a buffer that absorbs deviations before they hit producers and customers.

Compared to other solutions, allocating the risk to one entrepreneur has several advantages. The entrepreneur is the one participant in the exchange process with the best information of the whole exchange process and the largest possibilities to influence the final outcome. If the outcome for the entrepreneur is not specified in advance, he will have strong incentives to make the process efficient, with revenues larger than costs, and according to agreements made up in advance. Letting the entrepreneur be the residual claimant reduces the risk for the customers and producers, a risk-reduction that creates gains for both sides of the exchange process.

CONCLUSIONS

Firms today perform important functions in the market economy. Existing economic theories explain these functions from various approaches. In new institutional economics the dominant theoretical explanation is that firms internalize market exchanges in cases of asset specific investments, transfer of proprietary assets like know-how and in the use of brand names. In order to handle these problems of externalities and few partner exchanges the firm introduces hierarchal coordination mechanisms into the market system. In this theory of the firm many of today's important international firms become anomalies since they are highly disintegrated hub firms who rely mainly on market relations as centers in hubs that have been

labeled strategic networks or dynamic networks. The existence and importance of these disintegrated hub firms indicate that firms have other and more fundamental roles in the market system. These roles can be analyzed by turning back to earlier discussions about the role of the entrepreneur. By acting as a middle man between dispersed customers and producers an entrepreneur can reduce transaction costs in performing the function of deciding design, crafting contracts (using market- or hierarchical mechanisms), controlling quality and allocating risk. The advantages obtained are due to the increase on skills and scale that follows when fixed costs for design, contract and control are divided by the intermediate entrepreneur on many customers and producers. Another advantage is the reduction of risk that follows when the middle man / entrepreneur acts as the residual claimant. A conclusion is that the primary function of the firm is coordination of another kind than the internalization theory suggest. The function of firms is to act as a proxy for customers and producers and coordinate the creation of complex and composite products.

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