The Emergence, Limit, and Distortion of the Firm: The Entrepreneurship Approach

Abstract

In this paper, I find the emergence and the limits of firm from the entrepreneurship, and the disagreement between the entrepreneurial ability and the firm size from the agency problems and the inefficient managerial labor market. The economic organization scholars maintain that the cost efficiency is the determinant of the existence and limit of economic organization. However, the fact that cost efficiency is subject to the entrepreneurial traits of the manager was not considered carefully. The origin of emergence of firms is the intention of entrepreneur to protect his/her entrepreneurial vision from competitors. With the entrepreneurial judgment, the entrepreneur conceives of and implements the advantageous strategies, which are the entrepreneurial opportunities, by finding new attributes in heterogeneous resources. To secure the advantageous strategies and advantageous position, the entrepreneur chooses the optimal economic organization. The boundary of the firm expands with the intention of entrepreneur to develop more entrepreneurial opportunity and limited by with the limit of entrepreneurial ability to discover/create new entrepreneurial opportunity. To expand the chances of discovery or creation of entrepreneurial opportunities - the profitability, the entrepreneur tends to own more resources and, therefore, the firm size grows bigger. Even though resource ownership enlarges firm's profitability, it also decreases the cost efficiency. The cost efficiency varies with entrepreneurial abilities, since the higher degrees of entrepreneurial abilities let the entrepreneur-manager discover or create the more cost efficient resources combinations. That is to say, the firm size varies with the entrepreneur. However, the real boundary of the firm does not correspond with the actual entrepreneurial ability, since the agency problem and structural inefficiency discourage the entrepreneur from doing their best efforts. The firm hardly grows to its maximum size which should be accordance with the entrepreneurial ability.

JEL Code: L22, L25, L26

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Introduction

In spite of the importance of the top manager's entrepreneurial ability in a firm, the relationship between the ability and organizational structure and size does not draw academic attention for a long time. The reason is that, in the world of homogeneity and certainty which is assumed in neo-classical economics, the entrepreneurial ability is identical or similar for each top manager. Therefore, the firm structure and size are the objects to be determined not by managers, but by market. However, in the heterogeneous and uncertain world, the individual differences of entrepreneurial abilities have different influences over the strategies and performance of firm. From this perspective, the governance structure and the size of firms must be treated as endogenously determined, that is, entrepreneurial abilities determine objects.

Heterogeneity is one of the attention drawing topics which is argued in various branches of economics. But there is no bridge among these branches. It is studied separately in different branches of economics that the relationship between the heterogeneous resources and the requirements of heterogeneous resources for sustainable profitability (Alvarez & Barney, 2007; Alvarez & Barney, 2005; Barney, 1991; Barney, Wright, & Ketchen, 2001; Barney, 2001; Barney & Arikan, 2001; Peteraf, 1993; Wernerfelt, 1984), and the optimal ownership structure regarding heterogeneous resources and the optimal size of firm (Alchian & Demsetz, 1972; Coase, 1937; Grossman & Hart, 1986; Williamson, 1985, 1991). Even though these theories focus on the heterogeneity of resources, they give less weight to the influence of heterogeneity of human resource, especially the heterogeneity of entrepreneurs. On the other hand, the entrepreneurship theory focuses on the human resource - the effects on economy (Schumpeter, 1934a), entrepreneurial process (Shane & Venkataraman, 2000), and characteristics of entrepreneurship (Cunningham & Lischeron, 1991).

Recently, the research about the relationship between the entrepreneurship and the economic organization (Foss, Foss, & Klein, 2007a; Foss, Foss, Klein, & Klein, 2007b; Klein, 2008) emphasizes the importance of resource heterogeneity in the study of entrepreneurship and the theory of firm. They give weight to the judgmental ability of entrepreneurs. Since the judgmental decision of entrepreneurs cannot be evaluated in the market, the entrepreneurs need to start new firms to execute their judgment. They insists that the firm emerges "as a means for the exercise of entrepreneurial judgment, and as a low- cost mechanism for entrepreneurs to experiment with various combinations of heterogeneous capital goods" and the boundary is "the result of processes of entrepreneurial experimentation" (Klein, 2008).

The lack of marketability of entrepreneurial judgment is necessary to explain the emergence of firm. However, it is not sufficient, since every entrepreneurial judgment is not always marketable. Their judgment can be realized through market transaction depending on the degree of heterogeneity of entrepreneurial judgment. Moreover, the experimental reason is also not sufficient to explain the expansion and the limit of firm boundary. Therefore another reason is required to explain the emergence of firm, and the expansion and the limit of its boundary.

In this paper I examine, first, the relationship between the entrepreneurship and the economic organization in different setup, second, the emergence, expansion and limit of firm, and, third, the distortion of boundary of economic organization that should correspond with entrepreneurial ability. While various theories of economic organization focus on the cost efficiency of each governance structure in the existence and the limit of firm, it is dismissed that the cost efficiency varies with the entrepreneurial abilities. From this point, the entrepreneurship can explain the emergence of firm, and it also bounds the limit of firm. However, the firm size does not always correspond with the entrepreneurial ability. The agency problems and the structural inefficiency cause inappropriate compensation for a manager. Therefore, the entrepreneur does not demonstrate his/her ability and the size of firm is distorted.

The paper proceeds as follows. I begin with comparing the entrepreneurial process and the process of building up strategic advantage and explaining why entrepreneurship is required for competitive advantage. Next, the emergence of firm is explicated by the relationship between the attributes of resources and judgmental entrepreneurship. In the following chapter, I show the relationship between cost efficiency and entrepreneurial ability, and how the different degrees of entrepreneurial ability determine the size of firm. In the next chapter, I show what effects the agency problem among entrepreneur-manager and shareholder-owner and inefficiency of firm structure have on the firm size.

Entrepreneur and Resources

The entrepreneurial process and the resource based view

The entrepreneur is defined in various ways, such as an acting man with regard to the changes of market (Von Mises, 1949), an arbitrager who alert to profit opportunities of price discrepancy between buyers and sellers (Kirzner, 1973), a judgmental decision maker about the location, the form, and the use of goods, resources, or institutions (Hébert & Link, 1989), about the coordination of scarce resources (Casson, 1982), about business opportunity in the face of uncertainty (Cantillon, 2001). However, the fundamental task of entrepreneur is the creation of profit opportunity and the making of exclusive profit, and resources are the key factor to take this task. The creation and exploitation of profit opportunity is studied in the resource based view. The linkage between the resource based view and entrepreneurship can be found at the similarity between the strategically advantageous position-construction process and the entrepreneurial process.

In the market, some firms have sustainable abnormal performances. The scholars in the resource based view (Barney, 1991; Peteraf, 1993; Wernerfelt, 1984) maintain that the profitability of firm varies with the resources that firm owns. As a collection of productive resources, such as the tangible and intangible assets, capabilities, organizational processes, firm attributes, information, knowledge, etc (Barney, 1991; Barney & Arikan, 2001; Wernerfelt, 1984), a firm constructs the competitively advantageous position in the market with the development and implementation of proper strategies that employ and allocate various resources. Especially, the heterogeneous resources are the key determinant of competitive advantage position (Barney, 1991; Peteraf, 1993).

The heterogeneity of resources allows a firm to develop and to exploit exclusive strategies. In the homogeneous market, as the neo-classical economics assume, a firm cannot achieve competitive advantage and yield sustainable above-normal rents. Even though a firm forms and implements competitive strategies, incumbent and potential competitors easily acquire the same resources, duplicate the competitive strategies and then the market rents and the advantageous position disappear immediately. Put differently, competitors cannot afford to make exclusive strategies with homogeneous resources. However, the heterogeneity of resources provides the chance to make exclusive strategies. As the resource-based view assumes, resources are heterogeneous. If the required resources for the competitive strategy are heterogeneous, incumbent and potential competitors cannot easily duplicate this strategy. The advantageous position is constructed with the resource barriers (Wernerfelt, 1984).

The resource barrier is constructed on the heterogeneity of resource. Therefore, heterogeneity is required for the competitive advantages and abnormal market rents (Barney, 1991; Barney, 2001; Peteraf, 1993).

The construction of competitive advantage position cannot be accomplished without entrepreneurship. The strategic advantage constructing process corresponds to the entrepreneurial process. The entrepreneurial process consists of the discovery and/or creation of, and the exploitation of, the entrepreneurial opportunities (Shane & Venkataraman, 2001). A firm has to make strategies to build up competitive advantageous position, which is the first step of entrepreneurial process – the discovery and/or creation of the entrepreneurial opportunity. This opportunity is the situation where new products, services, raw materials, and new combination of resources are offered at the price which is higher than the production costs (Casson, 1982). Entrepreneurial opportunity is different from other opportunity. While other opportunity uses existing resources combination, entrepreneurial opportunity requires the discovery (or creation) of new resource combination (Kirzner, 1997) and it is innovative (Schumpeter, 1934b). Some members of society, who have different beliefs and/or asymmetric information among social members or who have better ability to imagine and foresee the future, discover and/or form entrepreneurial opportunity (Kirzner, 1997; Sarasvathy, Dew, Velamuri, & Venkataraman, 2003; Schumpeter, 1934b). The different beliefs and/or asymmetric information allow them to recognize the true values of heterogeneous resources and the products, which is new combination of those resources. Entrepreneurs only find or create this opportunity (Sharon & Jay, 2007), since entrepreneurs have prior information to recognize an opportunity and cognitive properties to evaluate an opportunity, therefore, they can evaluate the true value of resources and products (Shane & Venkataraman, 2000). Specialized prior information which is corresponding to new information activate an entrepreneurial speculation (Acs, Braunerhjelm, Audretsch, & Carlsson, 2009; Kaish & Gilad, 1991) and help to recognize entrepreneurial opportunity (Shane & Venkataraman, 2000). Therefore, the development of competitive strategy is the discovery and/or creation of entrepreneurial opportunity.

The second step of the entrepreneurial process is the exploitation of entrepreneurial opportunity, which is the implementation of competitive strategy. Two conditions have to be met to exploit entrepreneurial opportunities (Shane & Venkataraman, 2000); the subjective and objective conditions. The first objective condition is the nature of opportunity. The expected value of exploitation must be greater than the possible opportunity costs of exploitation (Kirzner, 1973; Schumpeter, 1934a). However, this condition is the necessary condition to implement competitive strategy.

The second subjective condition is that the entrepreneur's individual differences must be favorable to exploitation of entrepreneurial opportunity (Shane & Venkataraman, 2000). The opportunity costs, resources obtaining costs, the information transferability from the prior experience to the opportunity, the degree of risk aversion, and optimism are different in each entrepreneur. These individual differences must be favorable to exploitation of opportunity. For example, the entrepreneur must have a low degree of risk aversion. Even though the strategy is satisfied the objective condition, it does not mean this strategy can be implemented. Since the returns and costs of strategy are realized in future, the execution of strategy requires risk bearing (Knight, 1921; McMullen & Shepherd, 2006; Schumpeter, 1934a). Moreover, entrepreneurial opportunity is enough to burst up the market equilibrate state (Schumpeter, 1934b). Innovative disruptions are not amicable to market participants. Therefore, execution of entrepreneurial opportunity requires the intention to bear the psychic and physical oppression, which entrepreneur is only able to. Therefore, entrepreneurship is required to execute competitive strategy.

Even though the entrepreneur conceives the competitive strategy that utilizes heterogeneous resources, heterogeneity is not sufficient for sustainability of competitive advantage. Various conditions must be satisfied for durable competitive position. Among various conditions, imperfect imitablility, imperfect substitutability, and imperfect mobility are commonly mentioned conditions as well as heterogeneity (Barney, 1991; Peteraf, 1993). With these conditions, firms can keep their duravle abnormal rents from competitors. To be imperfectly imitable, substitutable, and mobile strategy, entrepreneur has to exclusively use the key resources for competitive strategy, or prohibit incumbent and potential competitors from duplicate the strategy. From this respect, the economic organization is required to make these condition satisfied.

Entrepreneurship and the Emergence of Economic Organization

The economic organization is studied in different branches of economics. The latest approach taking a growing interest is the works in Austrian economics. Putting the entrepreneurship in the center of the study, the relationships between economic organization and dispersed knowledge (Foss & Klein, 2002; Tsoukas, 1996), entrepreneurial judgment (Alvarez & Barney, 2005; Casson, 1982; Foss & Klein, 2005), and resource heterogeneity (Foss et al., 2007b; Foss & Klein, 2005; Klein, 2008) are studied (Sarasvathy & Dew, 2009). Among these approaches, the resource heterogeneity approach of a firm is effective, but not sufficient, approach among them to explain the emergence and limit of firm.

The resource heterogeneity approach of a firm focuses on the judgmental ability of entrepreneur on the heterogeneity of resources. Entrepreneurial judgment refers to the ability for making correct decision which turns out successful ex-post facing Knightian uncertainty (Foss et al., 2007a; Langlois, 2005). The object of judgmental decision is finding new the combination of resources.

The various combinations of resources is possible because of differences in attributes (Foss et al., 2007a; Foss et al., 2007b; Foss & Klein, 2005; Klein, 2008). The attributes are defined as "characteristics, functions, possible uses of assets, etc., as perceived by entrepreneur" (Foss & Klein, 2005). Regardless of its physical characteristics, assets are heterogeneous because of their various, possible (subjective) attributes. These (subjective) attributes are only discovered or created by entrepreneur (Kirzner, 1966), because he/she has different believes and perceptions of the environment (Casson, 1982). The entrepreneur makes judgmental decision on the combinations of various attributes of resources, and discovers and/or creates and exploits entrepreneurial opportunity.

The emergence of the firm is explained by three different reasons in this approach. First, as the basis of all other reasons, a firm is an efficient alternative of r incomplete contract (Foss & Klein, 2005; Sarasvathy & Dew, 2009). Since there are various not-discovered or not-created attributes, these attributes cannot be specified in the contracts. These not-discovered or not-created attributes can cause conflicts between asset owners and asset users - entrepreneurs. However entrepreneur avoids these expected conflicts with ownership. Therefore, the firm emerges as a means to minimize expected conflicts regarding usage of these attributes.

The second reason is due to the subjective traits of new combinations or profit opportunities (Foss & Klein, 2005; Witt, 1999, 2007). Innovative thoughts or alertness of profit opportunities, which is called 'judgmental decisions' (Foss et al., 2007a; Foss et al., 2007b; Klein, 2008), is the consequence of subjective speculation on environmental changes. Since such subjective entrepreneurial judgmental decisions are hard to convey to other market agents without cognitive commonality, realization of entrepreneurial judgment is hard to be accomplished in the market. However, the organizational form of a firm facilitates the realization. As Witt (1999) insists, non-formal and personal communication is important to build cognitive commonality.

> "Communication, particularly of the non-formal and often one-sided kind made available through socializing with others, enables people to observe, and compare, the behavior of other agents, The more frequent and intense the latter observations are, the better implicit representations of subjective knowledge – often labeled 'tacit' knowledge – can be grasped and acquired through imitation, Indeed, socializing with others and unconscious imitation of certain features of their behavior tend to induce cognitive commonalities: socially shared interpretation patterns and frames as well as common tacit knowledge of facts, hypotheses, practices, and skills."

From this viewpoint, the firm is the best organizational form to share entrepreneurial visions with employees and realize judgmental decisions. However, cognitive commonality suffices to explain the emergence of firm, but it is not enough to explain the expansion and size limit of firm.

Third, a firm is the means of entrepreneurial experiments (Foss & Klein, 2005). The best uses of heterogeneous resources are ex ante unknown. Therefore, the experiments must be conducted to find the optimal combination of heterogeneous resources. Such experiments can be organized efficiently in the firm rather than in the market. Every possible attribute cannot be specified in market contracts. Moreover the experiment conducted under the arrangement of outside consultant is costly. Therefore, the experiment conducted under the authority of entrepreneur is efficient, and firm exists as a means of an entrepreneurial experiment unit.

However, these reasons are not sufficient to explain the emergence of the firm as a collection of heterogeneous resources. First, the firm does not need to own resources for experimental reasons. The usage right of resources is required to entrepreneurs to experiment new combinations of newly discovered attributes. Entrepreneurs acquire the usage right in return for appropriate rents. Convincing of entrepreneurial judgment is not always required. Moreover, their judgmental decision is not always successful. In this case, the ownership of unnecessary resource is not cost efficient compared to rent.

The other problems of such explanations are the extreme assumption about heterogeneity and the exaggeration of relationship between the resource owners and the resource users (entrepreneurs). Entrepreneurial judgments are hard to be convinced to market participants, because of subjectivism. However, this does not mean that convincing is always impossible. The degree of resource heterogeneity is continuous, not discontinuous. Under dichotomous categorization, heterogeneous judgmental decision is not convincible. But, if we assume it is continuous, the convincibility of judgmental decision depends on the degree of heterogeneity. That is to say, some judgmental decisions which are not extremely heterogeneously are marketable.

While the ownership of resources can prevent the expected conflicts caused by incomplete contracts, it is doubtful that whether the resource ownership is always the most efficient means to fulfill the entrepreneurial task. As I mentioned above, the basic goal of entrepreneurs is making profit. That is to say, entrepreneurs have to find and realize profit opportunities. In addition, the protection of these opportunities is required as well. Even though the ownership of resources is the most efficient way to prevent the conflicts among resource users (entrepreneurs) and resources owners, it is not always the best way to protect entrepreneurial profit from competitors.

As Barney(1991) and Peteraf (1993) mention, the sustainability of competitive advantage needs imperfect imitability, substitutability, and mobility of strategy. While the satisfaction of these conditions is related to the physical characteristics of resources, the resource heterogeneity approach of firm in Austrian economics mostly illuminate the importance of subjective heterogeneity of resources. Even though any resources have unique subjective attributes, so entrepreneurs are able to conceive competitive strategies, these strategies are not always durable unless they satisfy sustainability conditions, since any strategies can be duplicated without physical heterogeneity. The physical (objective) heterogeneity is as much important as subjective heterogeneity (resource attribute). Both physical and subjective heterogeneity of resources are required to define the optimal economic organization and to explain the existence of firm.

The heterogeneity of resources is categorized into attribute (henceforth, subjective) differences and physical (henceforth, objective) differences.

Table 1. Characterization of resources in production process

	Objective (Physical) Difference Homogeneous ←→ Heterogeneous	
Subjective Difference Homo ↕ Hetero	Homogeneity	Invaluable Semi-Heterogeneity (ISH)
	Valuable Semi-Heterogeneity (VSH)	Perfect Heterogeneity (PH)

The degree of subjective heterogeneity is decided by the value of resources in production process (Barzel, 1997; Kirzner, 1966) and the degree of objective (physical) heterogeneity is decided by the easiness of finding substitute resources**.**

Both the objective and the subjective heterogeneity are required for durable competitive advantage. The objectively heterogeneous resource is invaluable for durable competitive advantage without the subjective heterogeneity. The invaluable semi-heterogeneous resource (high objective but low subjective heterogeneous resource) has low value in production process. Such resources do not contribute to building up competitive advantage. However, the perfectly heterogeneous resource, which is highly heterogeneous in both subjective and objective differences, has high value in production process and has imperfect imitability, substitutability, and mobility as well. Therefore, the entrepreneur is able to build durable advantageous market position. Similarly, the subjective heterogeneity of resources alone does not always contribute to durability of competitive advantage without objective heterogeneity. If resource heterogeneities are high in subjective difference and low in objective difference, which imply 'the valuable semi-heterogeneity', the competitive strategy that utilizes such resources cannot be durable, since this strategy does not guarantee imperfect imitability, substitutability, and mobility of strategy.

Simply put, the subjective heterogeneity determines the competitiveness of strategy, and the objective heterogeneity determines the durability of strategy. Different resources have different characteristics. The subjective differences are subject to the ability of entrepreneurs. Entrepreneurial perception find new valuable attributes from subjectively homogeneous resources in the response to environmental changes. However, the entrepreneurial ability does hardly change the objective differences of resources. Even though entrepreneurs discover/create new valuable attributes, the objective differences do not guarantee the durable competitiveness of advantageous strategy. Therefore, entrepreneurs need the method that reinforces the weakness of objective heterogeneity, which is the economic organization.

Based on the attributes of resources, the optimal ownership structure of resources is defined. Regardless of the degree of the physical heterogeneity, the ownership of the subjectively homogeneous resource is not necessary, since these resources are not important in production process. However, when resources are subjectively heterogeneous, the different governance structure is suggested depends on the degrees of objective heterogeneity. Basically the ownership of resources is required when the resources are subjectively heterogeneous. As Grossman and Hart (1986) maintain, the improper ownership allocation causes distorted investments and result in less efficient production. Suppose firm A conceives a new strategy that requires the valuable semi-heterogeneous resource and obtain the usage right of the resource from market transaction with firm B who owns the resource. The expected misallocation of surplus caused by improper ownership structure prevents each firm from appropriate investments. The inappropriate investments lead to low productivity and less efficient outcome. If firm A owns the resources, these problems can be prohibited. However, the ownership of resources is not enough for the durability of the efficient outcome, because the ownership cannot guarantee the exclusive use of the competitive strategy. When the objective heterogeneity of resources are very low, incumbent and potential competitors easily find the substitute resources and duplicate the competitive strategy of firm A. Therefore, other protection of the strategy, such as the property right, is required.

Different from the valuable semi-heterogeneous resource, the ownership of perfectly heterogeneous resources, which is highly objective and subjective heterogeneous resources, is enough for the durability of competitive advantage, since there are no substitute resources and, hence, incumbent and potential competitors cannot duplicate the strategy. The objective heterogeneity is ascribed to the rarity of resources or to the attribute of resources in transaction context. When the rarity of resources is the cause of objective heterogeneity, the other usage of the resources is probably valuable. So, the ownership can guarantee the exclusive use of resources. When the physical heterogeneity is originated from transaction, that is, asset specificity is the origin of heterogeneity, the ownership of resources can prevent the opportunistic behavior (Williamson, 1985). In either case, the ownership of the resources is favored to sustain the competitive advantage.

In sum, the judgmental decision of entrepreneurs needs the usage right of subjectively heterogeneous resources to realize entrepreneurial opportunities. Even though entrepreneurs acquire the usage right of these resources, their abnormal entrepreneurial returns cannot be guaranteed. The ownership of subjectively heterogeneous resources is used to secure entrepreneurial rents. However, the ownership does not sufficiently protect entrepreneurial returns, since physical heterogeneity decides opponents' accessibility of resources. Therefore, the optimal economic organization is required to protect entrepreneurial returns, and the economic organization exists as a protective means of the judgmental entrepreneurial decision. The types of economic organization are determined by both objective and subjective heterogeneity.

Entrepreneurship and the Limit of Economic Organization

The resource heterogeneity approach of firm explains changes in firm boundary with entrepreneurial experiments (Foss et al., 2007b; Foss & Klein, 2005; Klein, 2008). Entrepreneurs experiment new combinations of resources among newly discovered/created attributes. These new combinations consists of the resources that acquired by acquisition of or merger with anther firms, or of the resources that is already under the control of entrepreneurs. The firm boundary is changed with successes, failures and new trials of entrepreneurial experiments.

In addition to entrepreneurial experiments, the demand for permanent competitive advantage explains the changes and limits of firm boundary. The demand expands the size of firm. Even though the competitive strategy is protected, and sustained by the appropriate economic organization, the sustainability is not permanent. As environments change (such as, changes of consumer taste, the invention of new technologies), the advantageous position is weakened and disappears eventually. Therefore, the successive developments of competitive strategies are demanded. The new competitive strategies are developed from the new attributes of resources. Entrepreneurs develop/create new attributes form already owned subjectively heterogeneous or non-owned subjectively homogeneous resources in response to the changes of environment. They conceive new competitive strategies from the combinations of those resources. Entrepreneurs tend to own newly developed valuable resources for the sustainability of advantageous position and, therefore, the size of the firm tend to expand.

While the ownership of more resources gives more chances of strategic advantages, it also places more burdens of managerial costs on the firm and these burdens limit the size of firm. In the various studies of economic organization, the emergence of a firm is attributed to cost efficiency of firm; such as the efficiency in searching relative price, negotiating and concluding contracts (Coase, 1937), in metering and monitoring individual activities of team members in team production (Alchian & Demsetz, 1972), in preventing opportunistic behavior and mediating conflicts among transactional parties (Williamson, 1985, 1991), and in investment and allocation of surplus (Grossman & Hart, 1986). These efficiencies diminish and finally disappear as more transactions are internalized into a firm. The size of firm is limited, as Coase (1937) maintains, at the point where “the costs of organizing an extra transaction become equal to the cost of carrying out the same transaction by means of an exchange on the open market or the cost of organizing in another firm”. That is to say, additional resources increase the managerial costs and the cost inefficiency from additional resources limits the size of firm.

The cost inefficiency of additional resources determines the size of firm. Then, the question should be answered is what determines the productivity and the cost inefficiency. The answer is entrepreneurial ability of top manager. As Coase (1937) mentions, costs of internalizing additional resources into a firm may be the decreasing function of entrepreneurial ability, and the costs increase with the failure of entrepreneurs in finding the best use of resources in production. Put differently, the marginal cost of internalizing resources varies with the entrepreneurial ability of individual top managers. The entrepreneurial ability is heterogeneous (Brouwer, 2002; Schumpeter, 1934b). Individual differences in entrepreneurial ability result in different rates of discovery/creation of new attributes and new combinations of resources, of development of new effective strategies, of failure of entrepreneurial findings. That is to say, different degrees of entrepreneurial ability of individual entrepreneurs imply different cost efficiency. Therefore, the more competent entrepreneurial top managers tend to own more resources to develop new competitive strategies and to protect advantageous position as for as their entrepreneurial ability affords.

In sum, the firm size expends with the demands of entrepreneurial managers for sustainable advantageous position in changes of market environments and the expansion is bounded with the limits of entrepreneurial ability of top managers. Since the each manager' entrepreneurial ability is heterogeneous, more competent entrepreneurial managers develop more advantageous strategies form various resources than less competent managers do. Therefore, more competent managers tend to own more resources for sustainability of abnormal market returns and firm size expand as well. The entrepreneurial manager' productivity of advantageous strategies and the cost efficiency of these strategies decrease with internalization of more resources. The tendency of decrease is correspond with each manager's entrepreneurial ability. Therefore the firm size is limited by entrepreneurial ability of top managers. However, this expectation is premised on the assumption that the top managers always make their best entrepreneurial efforts. The exhibition of entrepreneurial ability varies with the size and ownership structure of firm. Therefore, the ownership structure has effects on the size of firm.

Distortion of the Size of Firm

Agency Problem and Structural Inefficiency

The firm level entrepreneurship does not correspond to the actual entrepreneurial ability of top managers. The level of top managers' best efforts deteriorates with two changes in the firm; the changes of top managers' roles and the changes of ownership structure. First, top managers' role in the firm changes from entrepreneurs to managers as firm grows bigger (Jones & Butler, 1992) and this change prevent the top managers from taking entrepreneurial responsibilities**.** At the beginning stage of firm development, top managers are founders of ventures and they take entrepreneurial tasks, that is, creators, discoverers and executors of entrepreneurial opportunities. However, as the firms become large and complex, top managers take more managerial tasks rather than entrepreneurial tasks. Since they have to focus more on mundane managerial jobs, entrepreneurial tasks are neglected. Therefore, the entrepreneurship of firm lowers.

Even though top managers' role changes from entrepreneur to manager and this change lowers the firm level entrepreneurship, other changes regarding entrepreneurial tasks prevent decline of firm level entrepreneurship. Schumpeter (1934b) insists that the bureaucracy in large firms dominates the entrepreneurship and the entrepreneurship disappears. In contrast to his assertion, the entrepreneurship in the firms does not disappear, rather it still goes in large firms (Manne, 2009), since, even though top managers take more managerial tasks, the changes in top managers' entrepreneurial tasks that occur in the large firm can prevent the deterioration of the firm entrepreneurship to a certain extent. The entrepreneurial tasks as a creator/developer and executor entrepreneurial opportunities change to as a evaluator of entrepreneurial opportunities which is created/developed by lower level managers. As firms grow bigger, top managers have to delegate their authorities to make decisions to lower level managers. The lower level managers take entrepreneurial tasks, and they become entrepreneurial agents of top entrepreneurial managers (Foss et al., 2007a; Jones & Butler, 1992). Lower level managers - entrepreneurial agents - develop/create entrepreneurial opportunities in the large and complex firm, and top managers - the entrepreneurial principal - evaluate these opportunities, which are called derived judgmental decisions. Even though entrepreneurial agents have derived judgmental decisions, entrepreneurial principal cannot adopt these decisions unless he/she does not understand agents' decisions. Therefore, top managers with entrepreneurial ability can appraise these derived entrepreneurial decisions since, even though top manager play more mundane managerial role, these decisions are within top managers' entrepreneurial perception boundary. The firms' entrepreneurial abilities can be sustained, somewhat, by the entrepreneurial agency relationship.

In addition to the change of top managers' role, the changes of ownership structure also cause agency problem and the attenuation of entrepreneurial motivation**.** When entrepreneurial opportunity does not convey to the board of directors (Jones & Butler, 1992) or to the market (Foss et al., 2007a; Foss et al., 2007b; Klein, 2008), entrepreneurs start their firms and they becomes the owner-manager. At this stage of firm development, the ownership and management are not separated, and the principals and agents are identical, entrepreneurs are, in general, residual claimants of firm. Since they are residual claimants, the owner-entrepreneur-managers are compensated commensurate with their efforts to bear and to overcome the entrepreneurial risks. Therefore, the agency problems do not occur when the ownership and management are identical. However, as firms are larger, the ownership structure changes. The ownership and management are separated, and top entrepreneurial managers become non-residual claimants. At this stage, top entrepreneurial managers face agency problems; agency problem between management and entrepreneurship.

Agency relationship is defined as “a contract under which one or more persons (the principal(s)) engage another person (the agent) to perform some service on their behalf which involves delegating some decision making authority to the agent” (Jensen & Meckling, 1976). The agency problem appears in the form of moral hazard, or opportunistic behavior. In the developed firm, top entrepreneurial managers are not residual claimants. Therefore, they are not rewarded appropriate to their efforts, they do not work on behalf of principal, and act opportunistically to increase their welfare. That is, the firms’ performance and the principals’ welfare decrease with managers’ opportunistic behavior.

The agency problem with regard to entrepreneurship has more harmful. Inappropriate compensation which prevails in principal agent relationship leads top managers and lower level managers to lose their intention to do their best entrepreneurial efforts. When the entrepreneurial managers are the agents of the share holders of firm, the returns from bearing entrepreneurial risks does not belongs to them. They do not exert all possible efforts to create/develop entrepreneurial opportunity. They also do not want to execute any entrepreneurial opportunity, since they tend not to bear entrepreneurial risk. Therefore, firm level entrepreneurship is diminished (Jones & Butler, 1992). Agency problem between top manager and lower level managers also discourage entrepreneurial agents from working hard. Even though they do not directly take entrepreneurial risks from derived judgmental decisions, their compensations are not likely to correspond to the returns of derived judgmental decisions since they receive fixed salary and bonus. Non-corresponding compensation to the returns form derived decisions lowers their intention to create/discover entrepreneurial opportunities. Even though entrepreneurial agents make their best effort and they conceive entrepreneurial opportunities, I explain this later, top entrepreneurial managers do not have intention to evaluate and to execute derived judgmental decision. Therefore, these lowered entrepreneurial motivations diminish the general entrepreneurial level of firm. As Schumpeter (1934b) insists, entrepreneurship is the very factor of innovation which means it is related to the advantageous position. Since the entrepreneurship is the basis of the permanent strategic advantages, the opportunistic behavior of the top managers and lower level managers is a critical problem.

Even though the firms' entrepreneurship can be sustained with the entrepreneurial agency relationship, this is still not sufficient to prevent the attenuation of firms' entrepreneurship. Some conditions must be satisfied to continue this relationship. First, proper reward and monitoring systems are required. Top managers will bear entrepreneurial risks of not only the original judgmental decision, but also the derived judgmental decisions. After the derived judgmental decisions are adopted, top managers have to take the direct or indirect responsibility of the derived entrepreneurial opportunities. When top managers adopt the derived judgmental decisions, they have the responsibility for the results of derived judgmental decisions. Even though they do not execute derived decisions and entrepreneurial agents execute their derived judgmental decisions with the delegated authority, the results of derived decision affect profitability of firm. Therefore, top managers have indirect responsibility of derived judgmental decision. In the first case, as above mentioned, the top managers have no incentive to adopt the derived judgmental decisions, since they are not rewarded as much as they bear the entrepreneurial risk. In second case, top managers hesitate to delegate their authority, since the failure of derived judgmental decision endangers top managers' job security. Therefore, in either case, the general firm level entrepreneurship diminishes. Even if top managers are accurately compensated for their entrepreneurial efforts, as above mentioned, lower level managers do not have incentive to create/develop and execute entrepreneurial opportunities without proper compensation for them. Moreover, hierarchical structure of developed firm disturbs the monitoring lower level managers' efforts. In addition, the entrepreneurial efforts are hard to be monitored, since entrepreneurial decisions and activities are based on subjective knowledge or interpretation about environment. Therefore, the proper reward and monitoring methods for not only top managers but also low level managers are required. Second, the proper information system is required. Even though firms have proper reward and monitoring systems, the top entrepreneurial managers cannot evaluate the derived judgmental decisions without the facilitated information system. As firms grow bigger, the structures are more and more hierarchical. The information transferred in hierarchical structure is easily manipulated at every stage of hierarchy, since every manager in each stage interprets information in his/her way. Moreover, the entrepreneurial decisions are so subjective that they are easily misinterpreted or ignored by others. Therefore, the top entrepreneurial managers cannot evaluate the original derived judgmental decisions.

In sum, the entrepreneurship of firm diminishes as firm grows bigger. It is because of the agency problems and/or the structural inefficiency. That is to say, the top entrepreneurial managers and the low level managers have no incentive to take their best entrepreneurial efforts since they are not residual claimants, and the derived judgmental decision are discouraged since the hierarchical firm structure hinder the efficient information flows and monitoring. To prevent the lowering of firm entrepreneurship, especially, the entrepreneurship of top entrepreneur manager, structural changes and various reward systems are required.

Control of Entrepreneurial Managers

Whether it is structural changes or reward/monitoring systems, these methods to sustain firm entrepreneurship must "a) provide agents with the opportunity to take responsibility for entrepreneurship, b) recognize individual performance contributions, and c) reward entrepreneurial performance appropriately (Jones & Butler, 1992)".

Organization structural methods

Commonly used structural methods is the changes of firm structure from 'functional' to 'product' structure (Jones & Butler, 1992). The unitary form structural firm (U-form structure) is divided into the divisions with different task responsibility (Chandler, 1966). In this structure, the top manager is mostly in charge of administrative tasks (Chandler, 1966). Therefore, they cannot take entrepreneurial responsibilities efficiently. The information flows are inefficient, and, information is manipulated in each step of flow (Arrow, 1975). The top manager hardly evaluates the derived entrepreneurial judgments ever. The monitoring of individual efforts is difficult. This difficulty obstructs appropriate rewards for entrepreneurial efforts of entrepreneurial agents. Therefore, the derived entrepreneurship is also discouraged.

However, the multidivisional structure (M-form structure) can minimize these inefficiencies in U-form structure. The multidivisional structure is operated based on "quasi-autonomous operating divisions" (Williamson, 1975). That is to say, firm comprises based on product divisions. Since the ordinary managerial tasks are delegated to the division managers, top manager focuses more on the entrepreneurial tasks, such as strategic planning, than routine operational tasks in this structure. Hence, top managers' entrepreneurship is encouraged.

The derived entrepreneurship is encouraged in the M-form structure as well. Information flows efficiently with less distortion, because of less hierarchical structure. The individual contribution also reveals efficiently, because the firm is divided based on each product lines. The efficient information flows allow that the derived judgmental decisions are delivered to top entrepreneurial and evaluated. Moreover, the efficient monitoring makes it possible to reward corresponding to individual efforts.

Other structural method that increases the entrepreneurship is the establishment of venture division (Jones & Butler, 1992). Since this division is specialized for execution of entrepreneurial opportunity, the division managers have chances to demonstrate their entrepreneurial abilities. Moreover, the identification of entrepreneurial efforts is not difficult. Hence, the division managers can be rewarded for their contribution.

Structural methods are necessary, but not sufficient to prevent the attenuation of entrepreneurship. These structural methods provide the environment to encourage the entrepreneurial activities by the efficient information flows and monitoring. But they do not promote entrepreneurial activity directly, because these methods do not give any incentives to top manager or low level managers. Especially, low level managers' entrepreneurship and firm level entrepreneurship cannot be encouraged without proper compensation for top entrepreneurial managers.

Control and reward systems

As mentioned above, while the structural methods are the basis for stimulation of entrepreneurship, the motivation of - both original and derived - entrepreneurial activities is the proper compensation for entrepreneurial efforts.

Either behavior-based or outcome-based contracts are used to monitor agents' opportunistic behavior and to bond agents' interests to principals' interests (Jensen & Meckling, 1976). As Eisnhardt (1989) insists, various factors; such as outcome uncertainty, task programmability, risk preferences of agents and principal, information systems, etc, are considered to choose the optimal contracts to diminish agency problem. The behavior-based contracts are favored, when many uncontrollable factors (such as government policies, competitors' action, economic conditions, etc) affect outcome. The difficulty of monitoring behavior is also one of the criteria to choose optimal compensation method, if behavior is difficult to monitor, behavior-based compensation is less favored. Outcome-based contracts are optimal to control and reward entrepreneurs, because the entrepreneurial task is hard to programmable regarding the task programmability, the entrepreneurial behaviors are hard and expensive to be measured and observed by principal who has bounded rationality regarding the entrepreneurship even with the efficient information system, and, with regard to risk preference, it is more attractive for entrepreneurs to take entrepreneurial risks.

Various outcome-based contracts are used to promote entrepreneurship. Promotion is one way to encourage entrepreneurial agents (Rumelt, 2005). With the assurance of promotion, entrepreneurial agents have incentive to do their entrepreneurial efforts. More efficient way is monetary rewards. Even if monetary compensation is not the best methods to motivate entrepreneurs, it is still 'a very accurate expression of success' (Brouwer, 2002). The commensurate compensation for the entrepreneurial efforts can efficiently encourage not only the top managers' entrepreneurship (Bitler, Moskowitz, & Vissing-Jørgensen, 2005), but also the entrepreneurial agents.

However, these reward systems does not perfectly eliminate agency problems. The first reason is that, the reward systems require proper performance proxy, but no measure reflects entrepreneurial efforts precisely. Various measures are used as a performance prox. These are categorized into two groups – accounting performance and market measure. Accounting performance has the manipulation problem. Managers can manipulate accounting data, and it causes inappropriate compensation for manager (Healy, 1985; Walsh & Seward, 1990). Market measures have exogenous effects. Even though market measures of performance are used as a proxy of firm performance instead of accounting performance, various uncontrollable exogenous factors that affect firm performance obscure the real entrepreneurial performance (Jones & Butler, 1992; Walsh & Seward, 1990). The second and the major reason is that the agents cannot be residual claimants, so they do not make their best efforts. The top entrepreneurial managers bear the entrepreneurial risks. But the result of facing the risks does not belong to them. Even though top entrepreneurial managers are rewarded in proportion to their efforts (ex, stock option), these rewards are part of the results. Particularly, the entrepreneurial agents also do not receive rewards corresponding to their efforts.

In sum, as firms grow bigger, the top entrepreneurial managers face two changes; the changes of their entrepreneurial roles and the changes of their status in firm. The growing size of firm leads the entrepreneurs to take more managerial and less entrepreneurial tasks. Hence, the level of entrepreneurship of the top managers and of the firm is diminished. The loss of entrepreneurship from this change is supplemented by the delegation of some of their entrepreneurial authorities to lower level managers and the new entrepreneurial task of top entrepreneurial managers. The lower managers become creators and discoverers of the entrepreneur opportunities and the top managers become evaluators of these derived entrepreneurial judgments. Even though these changes complement the attenuation of entrepreneurship, the attenuation of entrepreneurship cannot be avoided without adaptation of appropriate firm structure and compensation systems. The top entrepreneurial managers and lower lever managers do not make their entrepreneurial efforts without proper compensation that commensurate their efforts. Therefore, the changes of firm structure, which facilitate the identification of individual efforts and encourage derived entrepreneurship, and reward system, which make the appropriate compensation for the entrepreneurial efforts possible, are required. Although firm encourage the derived entrepreneurship and adopt new reward systems, the loss of entrepreneurship cannot be evaded since they are not perfect.

Conclusion

The firm is a collection of various, heterogeneous resources (Grossman & Hart, 1986), as well as, the firm is a nexus of contracts among heterogeneous resource owners (Alchian & Demsetz, 1972; Jensen & Meckling, 1976). As a collection of resources, firm faces two problems; resource quality, which include the choice of proper human resources, especially entrepreneur, and quantity problems. As a nexus of contracts, firms also faces another problem; agency problem. Optimization of these problems defines firm size and boundary. The heterogeneity of resources, especially the heterogeneity of entrepreneur ability, is the key factor in this optimization process.

The first problem is resource quality problem. As a collection of resources, firm owns various resources. Firm's profitability varies with the characteristics of firm's resources. Among the various resources, the heterogeneous resources which a firm possesses exclusively from other competitors are more likely the source of sustainable profit, since competitors cannot duplicate the firm's strategies without the heterogeneous resources. Therefore, the determinant of resource composition is the important decision for firm's profitability. Second problem is resource quantity problem. The more firm owns resources, the more chance to have sustainable profits firm probably has. Firm can find new combinations of resources, and, so far as firm use the heterogeneous resource in these combinations, firm's profit is durable. Moreover, firm own more heterogeneous resources, firm can have more chance of sustainable profit. Thus, firm tends to own more resources. However, the more it owns resources, the more managerial costs it has to spend. Therefore, firm has to own the cost efficient amount of resources. Third problem is who decide the optimal composition of resources. Even if heterogeneous resources can be the source of sustainable profit, the discoveries of such resources are not available to everybody. Moreover, even if firm possesses heterogeneous resource, it does not guarantee the sustainable profit without the proper sustainable-profit-generating strategies. The unique managerial capability is required to find the heterogeneous resources, the new combinations of resources and the sustainable profit generating strategies. The last problem is agency problem. When firm's ownership and management are separated, managers have no incentive to make every effort to develop and implement the sustainable profit generating strategy.

I explain the emergence of firm, and the limit and distortion of firm size with the entrepreneurship. The emergence of firm can be explained by the relationship between the entrepreneurship and resource based point of view. The entrepreneurial ability is discovery or creation, and utilization of the subjective heterogeneous characteristics. Although this resource heterogeneity is the source of strategic advantage of firm, the structural protection for exclusive use of heterogeneous resources are required to guarantee the permanent abnormal market rents. The demand of the structural protection is the origin of the firm.

In addition to the emergence of firm, the entrepreneurship explicates the limit of firm size. The ownership of more resources can provide the entrepreneurs with the more chances of entrepreneurial opportunities and strategically advantageous market position. Thus, the entrepreneurs tend to possesses more resources. However, it also provides the burden of managerial costs of resources. The firm size is bounded at the point where the managerial costs of resources exceed the profitability from entrepreneurial opportunities, since the managerial costs increase as firm owns more resources, the marginal profit decrease as firm owns more resource. These profit and cost functions vary with the different degrees of entrepreneurial ability. Alike other resources, the entrepreneurial abilities are also heterogeneous. Each entrepreneur has different degrees of entrepreneurial abilities. Highly heterogeneous entrepreneurs have more ability to discover and/or create the entrepreneurial opportunities. The profitability of these entrepreneurs is greater than others. Then, the firm size is bigger as the managers have more entrepreneurial ability.

However, the firm size does not correspond with the best entrepreneurial ability. As firms grow bigger, the top entrepreneurial managers face two problems; the agency problem and the changes of top managers' roles, and these problems cause the loss of firm entrepreneurship. The growing loads of managerial tasks and the change of firm ownership structure lower the top managers' and firms' entrepreneurship. Various methods, such as structural changes and reward systems, are used to prevent the attenuation of the entrepreneurship. However, they cannot perfectly prevent the attenuation. Therefore, the intention to make the best entrepreneurial efforts is diminished. The firm size is decided at the diminished level of entrepreneurship.

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