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## **STRUCTURE OF FINANCIAL SYSTEMS AND DEVELOPMENT OF INNOVATIVE ENTERPRISES WITH HIGH GROWTH POTENTIAL**

### **1. Introduction**

The year 2008 was not good for international financial markets. The collapse of American subprime mortgage credit market has led to the global financial crisis that resulted in serious recession in most countries. The international financial markets were the first transfer channels of the disease. Paradoxically, in some cases countries with financial markets that were less developed were also less vulnerable to the crisis. However, international empirical studies give serious proof that in a long term highly developed and sophisticated financial markets have a key role in allocating savings which are created in every economy. Thus they support high level of investment which makes them an important growth stimulus.

Last three decades were a period of very deep transformation and serious changes in case of financial markets in developed countries. These changes were mostly the result of the implementation of many innovative financial tools and products, pressure on the liberalization of financial systems and the process of creation of global financial markets. That has led to the growing importance of market financing enterprises and the decreasing role of traditional banking in that matter. Even though this process tends to be universal, due to local institutional factors and governments' regulation in individual countries, there are many differences in the role and importance of financial markets and banking system in the financing of enterprises.

The aim of this paper is to analyze the influence of the financial system transformation on the development of new highly innovative enterprises with high growth potential. It is also an attempt to assess the government's role in this

context. Besides that the paper touches the role of venture capital as a specific part of financial system that provides financial support for the most innovative enterprises.

## **2. Contemporary financial systems as a support for innovative entrepreneurship**

The growing sophistication of financial markets and the process of mixing roles of traditional banking with financial markets has been lately the reason for questioning whether one should classify national financial systems as market oriented systems or systems dominated by banks [Kozłowski 2007, pp. 5-75]. In spite of this reservation, in some countries the banks have still the dominant role in financing the enterprises. In that case it is common that the banks have strong relations with the enterprises. There is usually high concentration of ownership. This type of governance is called as insider system. Germany and Japan are the best examples of this institutional order. Anglo-Saxon financial systems with the dominant role of market in financing enterprises and high dispersion of ownership are the opposite example. These are usually called outsider systems [OECD 2000, p. 33].

These both generally characterized systems are not equally effective at supporting individual entrepreneurship which has been proved for the last three decades. It especially applies to new innovative enterprises with high growth potential that operate in new industries which are created as a result of diffusion of new fundamental technologies. Financial systems that are very effective at creating financial support for mature enterprises and industries are not usually as effective in case of new enterprises and industries. According to OECD analysis it especially applies to insider systems with high concentration of ownership and dominant role of banking that in some countries operate under governments' regulation which creates serious obstacles for market financing enterprises [OECD 2001, pp. 77-80].

A financial system of a country supports its innovation capacity when it creates sufficient conditions for accumulating capital in new highly innovative industries. In order to keep this condition a financial system must support the process of Schumpeterian creative destruction. Thus it must support fast and effective reallocation of capital to new enterprises and industries with high growth potential from enterprises and industries that have low technological and economical potential. It often involves high dynamism of changes of sizes and operational concentration of enterprises in the process of takeovers, mergers or split-ups. The system that fulfils these conditions differs seriously from the insider model with the dominant role of banking, high concentration of ownership that tends to focus on the accumulation of physical capital in relatively big and stable parts of economy. The systems that can be characterized in that way were very effective at supporting growth in case of industrial economy after the Second World War. However, these

systems are not able to support an efficient range and proper direction of reallocation of capital that is necessary for utilizing the potential of new global knowledge based economy [OECD 2000, p. 33].

It is worth remembering that the insider systems with the dominant role of banking support long term investment help to limit ineffectiveness that is attributed to so called agency problem of relations between an owner and a manager. It is considered as their advantage. On the other hand, the outsider systems with an important role of financial markets due to quite a high information transparency and high dispersion of ownership support higher intensity of reallocation of capital. The pressure of investors on maximizing value of companies, which results in frequent changes of control over enterprises due to mergers and takeovers, is an important stimulus for organizational changes and encourages managerial and organizational innovativeness. As a result the outsider systems tend to support the exchange of knowledge and diffusion of new technologies. Additionally thanks to its much higher elasticity than in case of the insider systems, they are an important factor that support Schumpeterian creative destruction [OECD 2000, p. 33]. However, the current global financial crisis has reminded that these advantages of open systems can be fully utilized only under the conditions of effective institutional order. As it was stated the market must provide sufficient information transparency. Thus it must be equipped with some institutions that help to minimize the problem of asymmetric information [Moszyński 2009, Moszyński, Stocka 2008, pp. 165-179].

In order to fulfil that condition financial markets should operate under an effective rules and financial supervision authorities that can help to limit the incentives for moral hazard behaviour, support sufficient ability of participants of the market to assess the risk and prevent them from easy and hidden transfer of risk to the next participants of transaction. The lack of this institutions in case of present American financial system was an important contributor to the collapse of subprime mortgage financial debt market that triggered current global recession.<sup>1</sup> The current instability of financial markets proves that the government's ignoring this problems can result in serious economic cost.

In this context the key role of government is to create the conditions for the development of financial system institutions that in case of insider systems will help to utilize its advantages and that will not restrict the development of financial market that can bring some benefits typical for the outsider systems. In case of both the insider and outsider systems governments must implement an effective regulation that limits moral hazard and transparency problems but in the same time

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<sup>1</sup> The moral hazard behaviour in the American financial market was additionally increased by very expansionary and asymmetric monetary policy of Federal Reserve [Balcerzak 2009; Carney 2008, p. 9; Więznowski 2009, pp. 155-159].

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that does not destroy elasticity and innovativeness of the market that is necessary for effective capital allocation.

### **3. Significance of venture capital in financing of innovative enterprises and industries**

The empirical studies of the influence of different elements of financial systems on innovative capacity of economy and the diffusion of the newest technologies show a special role of venture capital in this field [Bottazzi, Da Rin 2002, pp. 231-269; Kortum, Lerner 2000, pp. 674-692]. Venture capital (VC) is usually defined as a fund that invests in new or young enterprises with very high growth potential. VC as an investor becomes a financial agent of a company and has an important influence on strategies of building innovative capacity of the company. VC usually keeps an active role in a management process. It is treated as a key stakeholder that aims at the realization of potential of a company by influencing its innovativeness, its organizational effectiveness and especially strategies of commercialization [Da Rin, Penas 2007].

The example of the United States gives a proof of the influence of VC funds on the innovative capacity of economy. VC funds decide to invest only in a few hundred of a million companies that are set up every year in the country. However, the enterprises that take advantage of this financial support have an excessive influence on technological development of the economy [Lerner 2002, pp. 203-204]. It is the result of high engagement of VC capital in industries that has been created as a result of diffusion of new fundamental innovations and general purpose technologies such as biotechnology, computer network technologies or Internet. In case of American biotechnology industry VC funds invested 7 billion dollars (in 1995 US dollars) in the years 1978-1995. During these years whole biotechnological industry obtained additionally 30 billion dollars from other sources. In the year 1995 only 450 from 1500 enterprises from the industry managed to obtain the support from VCs. However, in the analyzed period the companies that were supported by funds were able to obtain 85% of patents granted on drugs that were introduced to the market [Lerner 2002, p. 204]. Similar conclusions can be drawn from the analysis of patents that have been granted in 20 American industries for the last three decades. There is a significant positive relation between the increase of VC funds investment and an increased number of patent granted in the industry. The relation between VCs' expenditures and total expenditure on research and development of companies was lower than 3% in the years 1982-1993, but companies with VC's engagement were responsible for more than 8% of patent granted. Moreover, till the year 1998 the participation of companies supported by VCs in the amount of patent granted increased to 14% [Kortum, Lerner 2000, pp. 674-692]. It is also worth remembering that the capitalization

of companies supported by VC funds have made more than 35% of the capitalization of American companies which went public for the last two decades of 20<sup>th</sup> century [Lerner 2002, pp. 203-204].

Figures 1 and 2 present hurdles and at the same time stages of development of innovative enterprise with high growth potential. These figures also present the role of VC funds in offering financial support for these companies. Enterprises that do not have sufficient credit history, even though they can be very innovative and can have very high growth potential, usually cannot obtain support from the insider financial system dominated by traditional banking. There are at least four reasons that limit the effectiveness of traditional banking systems in financing new innovative companies: a) high level of uncertainty, b) high exposure to the problem of asymmetric information, c) intangible nature of main resources of innovative company, d) the problem of evaluation of market position of a company operating in a new industry that is still in the process of shaping [Lerner 2002, pp. 205-206]. These problems can be also attributed to potential debtors with stable position and long credit history, but in case of new innovative companies they usually have special scale and dimension. As a result it is assumed that after the decision to start a new venture the first source of entrepreneurial capital is made of private savings or so called family funding. Over the years in case of very innovative ventures with high growth potential investments of private individuals that tend to be called “business angels” – private investors that have significant financial resources and seek allocation possibilities with higher profitability – have become quite important at that stage [Carlsson, Mudambi 2003, p. 108].

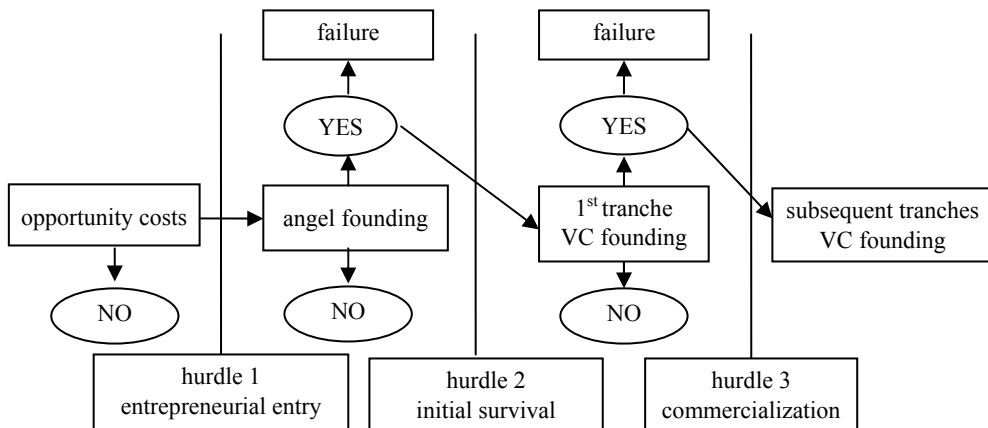


Figure 1. The entrepreneurial finance cycle – Phase I

Source: [Carlsson, Mudambi 2003, p. 109].

Figure 1 shows that VC funds usually invest in companies that have managed to overcome the first hurdle of initial entry to the market and survival. When VC fund invests in an enterprise it usually takes equity stakes that ensure the rate of return distribution that is asymmetric. It means that the upside potential gains tend to be unbounded but downside possible losses are bounded by the amount of capital invested. One of the most important factors that usually influences the effectiveness of transaction is an active monitoring and quite a high influence of VC on managerial decisions. It is crucial as entrepreneurs-innovators often lack sufficient abilities in that field. These actions have always much higher scope than it would be possible in case of financing by traditional banking system. As a result VC funds are able to limit sufficiently the four reasons for ineffectiveness of traditional banking in financing new innovative technologies, which was mentioned above. However, it should be remembered that still the decision making power concerning key innovative spheres of a venture is usually kept by an entrepreneur-innovator [Carlsson, Mudambi 2003, p. 108].

Another important sphere of cooperation between VC fund and innovative enterprise is the process of exit of VC when the enterprise is strong enough to be commercialized. The core of VC business model is to invest in a young highly innovative enterprise with high growth potential until the enterprise obtains size and credibility to be commercialized through public offer in an IPO or sold out to a multinational corporation [Carlsson, Mudambi 2003, p. 109]. That was presented in Figure 2. When the national innovation system and the institutional system of financial markets are sufficiently developed to support an effective functioning of VC market and when they support the described process as a recurrent cycle, the economy has a high potential to process technological innovations into commercial business solutions. These are crucial conditions that support high dynamism of economic growth, especially in case of highly developed countries as they are not able to take advantage of technological convergence process.

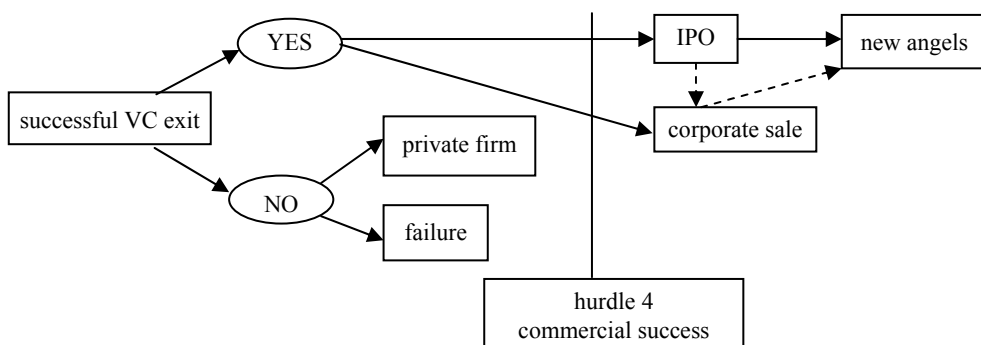


Figure 2. The entrepreneurial finance cycle – Phase II

Source: [Carlsson, Mudambi 2003, p. 109].

When one tries to draw conclusions from international comparisons of VC market share in GDP or tries to assess an influence of VC funds on GDP growth, it should be remembered that a simple quantitative comparison can lead to serious simplifications. It means that in that case a researcher cannot exclusively concentrate on the sizes of VC funds that are available in a given economy. The analysis of hurdles and problems of development in case of innovative company with high growth potential, which was done above (Figures 1 and 2), shows that the quality of support provided by VC funds to their enterprises is as important as the sizes of financial investment. The most significant factors that influence the effectiveness of VC sector are the abilities and experience of VC managers to build proper investment portfolios, the amount of transactions, high variety of specialization of VC funds, the availability of complementary factors that can be the source of network effects and spillover effects, the existence of factors that can help to build effective clusters [OECD 2000, pp. 35-36]. This is often forgotten by the creators of public policies that are aimed at supporting the development of VC market and the system of financing young innovative enterprises in a given country.

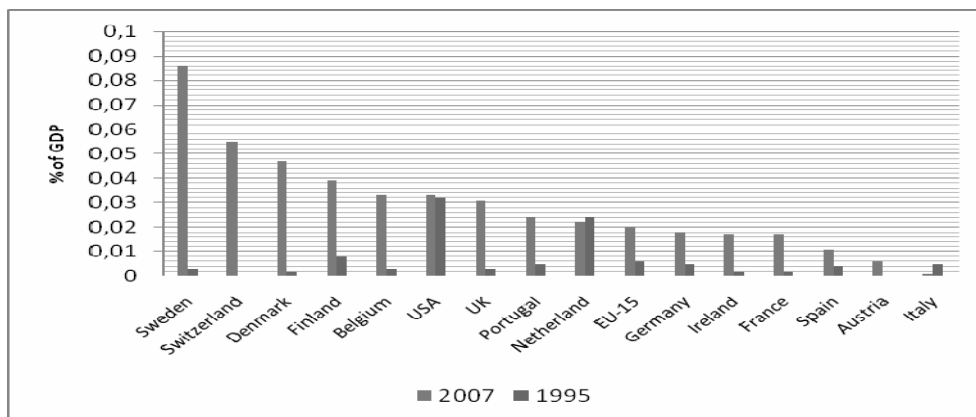
In spite of these reservations it is still worth remembering that the universal characteristics of VC industry in every country is a high share of transactions that result in failure, which quite often is as high as 90% of ventures. It means that the first condition of positive influence of VC sector on the innovative capacity of economy is a critical mass of VC companies and capital which must be obtained in an economy [Carlsson, Mudambi 2003, pp. 109-110].

Figure 3 presents the shares of VC investment in enterprises at early development stage in GDP in chosen European Union countries and the USA in the years 1995-2007,<sup>2</sup> which can be related to the model presented in Figure 1 and the first stage of development of an enterprise with high growth potential. Similarly Figure 4 presents investments in expansion and replacement phase that relates to Figure 2 and the second phase of development of innovative enterprise. The data confirms the growing importance of VC industry in the analyzed period. Scandinavian countries, which are usually considered as leaders in case of innovation potential [Denis et al. 2005, pp. 47-50; OECD 2000; OECD 2001], are the leaders in case of the share of VC sector in GDP.

Taking into consideration issues which were discussed above, one should consider the government role in creating the system of financing highly innovative enterprises. International experience gained for the last decades tends to prove that there are not any universal effective solutions easy to copy and implement in every country. However, a lot of profound studies show that the key role of government, which can be considered as universal, is building a wide institutional framework for creating diversified and developed financial markets which will ensure financial support not only for mature and stable industries but also for young highly innovative ones.

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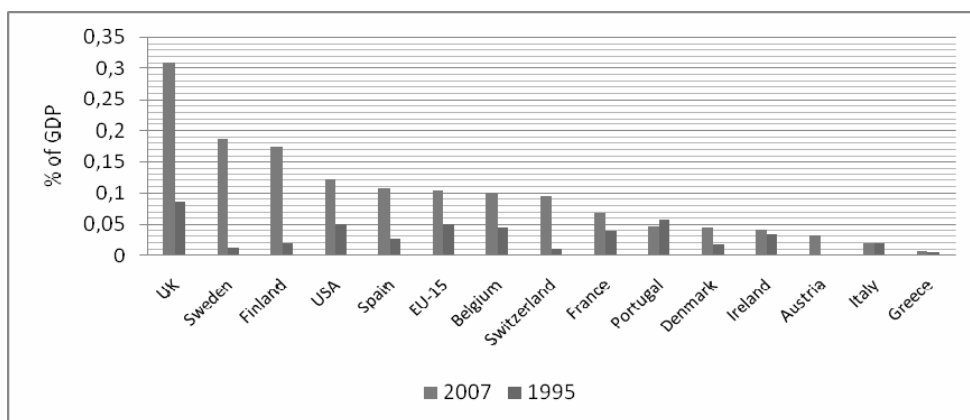
<sup>2</sup> Where the availability of data was the only criterion of selection of countries.



EU-15 – 1996 instead of 1995

Figure 3. The share of VC (an early stage) in GDP in chosen EU countries and the USA in 1995 and 2007

Source: [Eurostat 2008].



EU-15 – 1996 instead of 1995

Figure 4. The share of VC (expansion and replacement stage) in GDP in chosen EU countries and the USA in 1995 and 2007

Source: [Eurostat 2008].

It seems that among the most important parts of the innovations financing system with an important role of VC funds one can point such elements as: a) some rules that help VC funds to improve their liquidity and enable them an easy exit from investment by mergers or quick commercialization through IPOs; b) some rules that facilitate the process of gathering financial resources by VC funds for example thanks to giving big



institutional investors – such as pension funds – more diversified possibilities to invest their capital into VC funds.<sup>3</sup> It must be also remembered that the system of financing highly innovative enterprises is a part of national innovation system. Effectiveness of the last one is the result of government actions in the field of supporting entrepreneurship, creating competitive order, influencing the elasticity of labour markets, building the system of intellectual property rights protection and others.<sup>4</sup>

#### 4. Conclusions

The paper presents synthetically the process of evolution of modern financial systems and its influence on abilities to finance young innovative enterprises. The growing role of open systems that enable to finance business ventures on financial markets is a significant phenomenon. As a result enterprises can be less dependent on traditional banking financing. This direction of evolution of financial systems seems to support an innovation capacity of developed economies as it improves the elasticity and the speed of reallocation of capital from traditional mature industries to new industries with high growth potential.

International studies prove that VC funds have a special role in financing young innovative enterprises with high growth potential. Thus the effective institutional system that facilitates the process of VC investment is a significant help in the process of transformation of technological innovation into business and market solution.

In this context a significant role of government in creating institutional conditions for desirable transformation of national financial system should be stressed. The government should be active at creating system solutions that improve the elasticity of financial systems. This can improve the process of giving financial support for innovations, thus improve the process of their commercialization. At the same time, the government should ensure transparency of the process of capital reallocation and limit sufficiently incentives for moral hazard that make always significant contribution to the creation of conditions for financial crises.

#### Literature

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<sup>3</sup> However, it must be stressed that this last point is not the object of common agreement among economists, which is the result of special role of pension funds.

<sup>4</sup> All these problems are profoundly discussed by E. Okoń-Horodyńska [1998; 2002].

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