

Performance of the Government Venture-to-Capital Activity

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Abstract

Young growth-oriented companies need investments of both capital and knowledge, in order to succeed. Venture Capital (VC) has been viewed as a key source of such investments. However, due to the surge of ICT enabled and not (to-the-least) capital intensive business concepts, a paradoxical mismatch has emerged between the supply and demand of VC. Also, due to the increased complexity of value creation, and the lack of entrepreneurial capacity of those engaging in new venture activity, in the emerging knowledge economy, the need is for more hands-on-intensive and (financially) smaller investments than the institutionalised VC industry is equipped to deliver. Consequently, there is neither shortage of Venture activity nor Capital activity, but of Venture to Capital (V2C) activity; operators dedicated to building business from V to C and creating professionally managed, investment-ready companies for the VC industry. To bridge the gap, various types of V2C players have emerged – many of which government related. The focus of this ongoing exploratory study is in the performance of government V2C activity. The objective is to discover factors related to the costs and benefits of such activity and construct a proposition for a framework of analysis, comparing Finland and USA as case economies, and borrowing tools from economics, namely, public investment and agency theory. Our findings, albeit initial, suggest that while government intervention may be justified, for example, for cultural reasons, perhaps more emphasis should be placed on changing the culture, and thereby decreasing the need for intervention, than on mechanisms that preserve the culture as if to enable such intervention for good.

Keywords

growth venturing, knowledge capital, venture capital, V2C, government policy, agency theory, public sector investments

Introduction

The importance of successful growth venture activity is obvious to an economy. However, young growth-oriented companies can be built into success stories only if they are able to raise enough resources – both capital and knowledge – from outside investors. However, there is lack of private such investors in most economies. Finland, unlike the USA, is no exception. Due to the venture capital spiral, and related shift towards later-stage investments, the venture capital (VC) industry has left a gap in early stage investing. To respond to the market failure, where deemed necessary, governments intervene. In Finland, government is the largest early stage investor and, undoubtedly, a key stakeholder of the growth company process, depicted in figure 1 (Jungman et al. 2004). (FVCA 2005, Rasila 2004, Seppä 2000.)

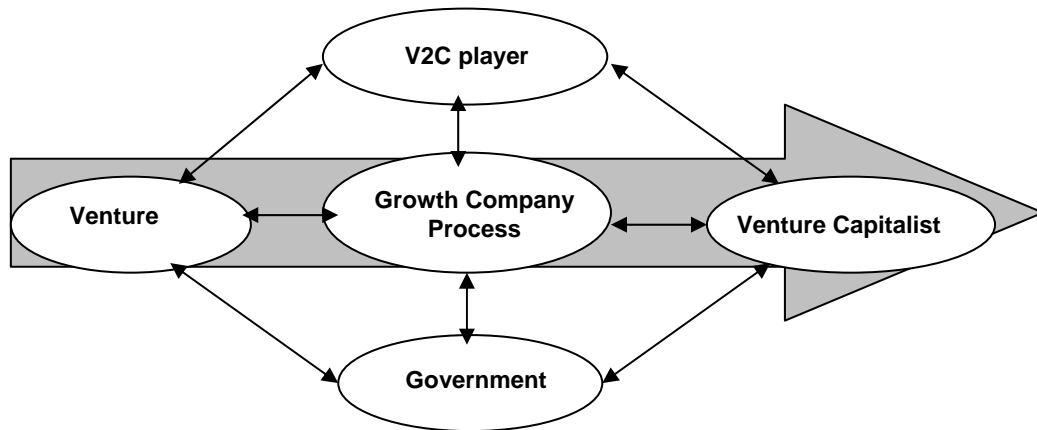


Figure 1. Stakeholders of the growth company process

According to the stream of research underlying this study – due to increased complexity of value creation in the networked knowledge economy, and the lack of entrepreneurial capacity of those engaging in new venture activity, therein – a new breed of venture-to-capital (V2C) players, or knowledge investors, is needed to complement VC actors, or capital investors, in order to facilitate for their growth (Seppä & Näsi 2001; Rasila 2004; Seppä & Jungman 2005). In the value network around the growth company, the primary role of V2C players is to build prospective ventures investment-ready (investable) in the eyes of the VC industry.

Research mission and strategy

The focus of this ongoing exploratory study is in on government V2C activity. The mission is to construct an initial proposition for a framework for analyzing the performance of such activity – an approach to identify costs and benefits related to public sector activities in allocating resources to growth-oriented companies – using Finland, in comparison with the USA, as the case economy. The main focus is on opportunity costs and social benefits. Opportunity costs are taken into consideration in relation to private sector investments. Social benefits are factors affecting economic growth, such as external effects from public investments.

The conceptual constructing of this multidisciplinary study is grounded on relevant earlier research in the fields of business and economics, and a comparison between market environments in Finland and the USA, with the aim to build a synthesis based framework. The construction is supported by fourteen semi-structured in-depth interviews of key private and public sector V2C and VC actors in Finland. The interviews yield empirical insights for the development and probing, if not validation, of the framework. In addition, the interviews significantly contribute to the pre-understanding of the research phenomenon.

The study is part of the seminal research stream on the V2C phenomenon, initiated in 2001 as part of the eTampere program, which, during 2004-2005, developed an interest to explore the role of government intervention. The present study is driven by an interest to contribute to any nation's interest to efficiently allocate tax payer funds, if deemed necessary, in the V2C space, in order to achieve social benefits, and to reliably measure the performance of government V2C activity.

Framing the research phenomenon

Differences between Finland and the USA

According to Lee et al. (2000), it takes twelve times longer in Europe from idea to venture, i.e., from the sketching of an idea to formal founding of a venture, and it requires four times more financial capital, than in the USA. The fiscal, legal, and financial environment, quantity of new innovations, general opinion, and the role of scientific centers are specified as the key success factors of the American business environment. In the USA, growth companies have for several decades already been acknowledged as the main growth engines of the economy. In Finland, their importance has become widely acknowledged far more recently. Even today, there are apparent conflicts between the letter and the spirit of many policy programs.

In the USA, besides the carrot (the cultural and fiscal environment that embrace entrepreneurship) also a stick – certain lack of social security – drive people to try harder and take risks. In Finland, people can live on social benefits being not encouraged to take risks. Also, the Finnish bankruptcy legislation does not acknowledge the concept of a private individual's bankruptcy and, hence, the possibility of a fresh start. This is most discouraging for risk taking in a private business undertaking. Consequently, whereas the Finnish business environment drives minimization of risk at the expense of profit, the American seems to drive maximizing of profit at the expense of risk. (Valtonen & Bouix, 1997, 40-42.)

In the USA, government plays an indirect, rather than direct role. It provides for an encouraging fiscal and legal framework, buys the products of growth companies, rather than invests in them directly, and finances research and development activity instead (Lee et al. 2000). Figure 2 provides a synthesis view on the dominant stakeholders of growth venture activity, in the USA. Therein, founding entrepreneurs, business angels, and venture capitalists – the principals (those who participate in ownership) – seem to comprise the winning relay team. The role of agents (those who work for fee) or government agencies is secondary.

	PROVIDING KNOWLEDGE CAPITAL		PROVIDING FINANCIAL CAPITAL	
PRINCIPALS (those who invest capital)	<u>(Founding) Entrepreneurs</u>		<u>Business Angels/ Venture Capitalists</u>	IPO investors/ Corporations via Trade Sale
AGENTS (those who sell or give away capital)	Managers	Mentors, Advisers & Consultants	Government Agencies	Banks

Figure 2. Dominant stakeholders of growth venture activity in the USA

In Finland, government has a significantly larger role in the V2C space, than in the USA. The role is both indirect and direct. There are several different government agencies and semi-public organizations subsidizing young growth companies on the national as well as local level. The system presents itself as fragmented, complicated, time-consuming and ineffective (Koivula, 2005, 59). In Finland, unlike in the USA, the government itself is strongly in the

V2C business. It builds and protects specific institutions as a centrally controlled delivery channel of subsidies to growth companies. In the USA, the government seems to rather seek for private sector avenues to channel public resources to growth companies.

In the view of Hautamäki and Lemola (2004), the current situation in Finland is paradoxical. The general attitude on entrepreneurship is increasingly positive, the market continuously boasts grand opportunities, education of the workforce is at a demonstrably high level in global comparison, but still only few Finns start their own company. Hautamäki (2003, 33–34) uses Silicon Valley as an example of combining high knowledge and high technology to respective attitude towards entrepreneurship. In Silicon Valley, people respect entrepreneurs and seek prosperity, but still money is not the only motivation. Therein, a genuine interest to put new technology to work in the market is a remarkable driver for new venture activity. In Finland, people seem to appreciate security more than adventure, social equality more than prosperity. This helps explain the acceptance, in Finland, of high income tax levels. Also, it helps explain why high income tax levels do not promote entrepreneurship, although capital gains tax levels are much more competitive in Finland, in international comparison.

Consequently, founding entrepreneurs are not driven by extreme growth aspirations. In result, also due to historic differences in fiscal and social security policy, there is a shortage of high net worth individuals dedicated to business angel activity. Also, due to the larger role of government in the V2C space, among other reasons, the VC community is not as vibrant as in the USA. Because of the government's policy to control for the delivery of public resources to the growth ventures, a relatively massive network of various advisory, business development, and incubator organisations – those who live off the growth company process, rather than the success of individual growth companies – has emerged, in Finland. In fact, such agents and agencies can be said to play the dominant role in the V2C space, as depicted in figure 3.

	KNOWLEDGE CAPITAL		FINANCIAL CAPITAL	
PRINCIPALS (those who invest capital)	(Founding) Entrepreneurs		Business Angels/ Venture Capitalists	IPO Investors/ Corporations via Trade Sale
AGENTS (those who sell or give away capital)	Managers	<u>Mentors, Advisers & Consultants</u>	<u>Government Agencies</u>	Banks

Figure 3. Dominant stakeholders of growth venture activity in Finland

Perspectives for government intervention

In a study of small firms which received funding through Small Business Innovation Research (SBIR) program in the USA, in 1983-1997, Lerner (1999) demonstrates that grants do not improve companies' performance. Instead, they increase the VC industry's interests to invest alongside the grant program. According to Lerner (1999), there are two rationales for government subsidizing, also known as theoretical motives for government V2C-activity, in general (Griliches 1991). First, investments that cause positive external effects or (innovation)

spillovers to the economy should be subsidized. Private companies are not willing to invest in full capacity in projects that benefit outsiders, so therefore government intervention is justified. Second, governments acting as financial intermediaries, in best cases, serve to certify firms to their potential investors (VCs) and thus decrease informational asymmetries.

Government subsidies can also cause market distortions if there is a chance for opportunistic behaviour on either side. Lerner (2002) submits four demands for government venture capital:

- i. Cooperation with private venture capitalists is essential and bureaucrats' decisions should adapt in industry context.
- ii. Government venture capital should focus on funding companies that don't meet private capital because of high-risk technology.
- iii. Bureaucrats need to understand high uncertainty in venture capital and required post-investment activities.
- iv. Public sector actors must have same criteria in investment decisions as private investors to distinguish best ventures from underperformers.

Lerner (2002) argues that underperforming companies use high technology risk as an excuse to poor results and factually rely on public funding while lack the merits to raise private capital. Partially the reason to easy access for public funding is government's bias in favour of companies that have already received R&D funding. On the other hand, companies also learn to prepare applications that receive funding.

According to Keuschnigg and Nielsen (2001, 560–561), the effect of public sector intervention either substitutes or complements private investors. Professional services by public sector are deemed to be rational, if they are efficient enough to increase a venture's prospects to succeed. Subsidies for private investments are seen to decrease the management effort of venture capitalists. Production subsidies appear to have neutral effect on advising and contracting. Public sector should not intervene on venture capital markets, unless there is an evident distortion in the competitive situation. Government contribution to entrepreneurial training, information and technology services and specialized infrastructure is reasonable, if it is produced cost-effectively. (Keuschnigg & Nielsen 2001; 565–571)

Government intervention can also cause market distortions, because politicians' opportunistic behaviour creates a possibility to small ventures to organize and affect policy decisions according to their interests (Stigler 1971, Becker 1983, Laffont & Tirole 1993). Policy incentives can also make bureaucrats and politicians to give grants to ventures that would succeed anyway, so that they can benefit from the success of the venture (Wallsten 2000).

Social benefits of government V2C activity

By definition, V2C activity spurs, if successful, general growth in economy. After the neo-classical growth theory (Solow 1956), the endogenous growth theory has gained strong support in economics. Compared to exogenous modelling of technology and assumptions of steady-state growth of the classic view, the endogenous growth theory seeks to explain continuous growth by endogenous technological development, as an add-on to the neo-classical growth model (Romer 1986, 1990; Lucas 1988). Endogenous growth theory defines technology as a determinant of economic growth, aside of capital and labour.

Technological externality causes growth in social benefit over the growth in capital accumulation, because technological innovations are available for everyone, and not just for a specific production process (Romer 1987). Recently the emphasis in endogenous growth theory has shifted towards a concept of human capital or knowledge capital (Mankiw et al. 1992, Jones 1995). Technological innovations require knowledge capital, and knowledge spillovers are the key determinant of the economic growth (Mankiw et al. 1992, Lucas 1993). Lucas (1993, 253) defines a production function $y(t)$ as follows

$$y(t) = Ak(t)^\alpha [uh(t)]^{1-\alpha}, \quad (1.)$$

where $k(t)$ is capital function, t is time, A is a productivity constant, $h(t)$ is human capital function, u is time used in work, and α is learning rate. According to Lucas (1993), human capital is the most important factor in economic growth and the explanation for differences in wealth between countries.

Evolutionary growth theory is also based on the view of endogenous change created by innovation competition. Originated from Schumpeter's (1934) thesis, evolutionary economics discusses 'creative destruction': That via innovation competition new entrants always emerge, which force the weakest to exit the market. Schumpeterian tradition emerged from the critic to basic assumptions of neo-classical economics. Especially assumptions of equilibrium, perfect competition, rationality and homogeneity of actors, and exogenous nature of technology, in economic growth, faced strong critic by evolutionary economics. Evolutionary growth theory applies key concept from evolution theory, such as adaptation, variation and selection, to analyze emergence and diffusion of technology innovations. (Lemola 2000, 149–150)

Positive external effects and innovation spillovers facilitate for economic growth. Technological development and increase in human capital increase society's welfare by boosting investments, employment and export. For the government this means increase in tax income, so governments usually have a strong incentive to support companies to grow.

Costs of government V2C-activity

Agency costs

Agency theory is widely used in economics and finance to analyze problems in a relationship between a principal and an agent. Problems in agency theory are based on phenomenon of asymmetric information, which causes unwanted behaviour and conflicts in principal-agent relationship, known as moral hazard and adverse selection (Arrow 1970, Akerlof 1970). The seminal work of Jensen and Meckling (1976) defines the concept of agency costs derived from agency theory and asymmetric information between agent and principal. According to Jensen and Meckling (1976) agency costs consist of bonding expenditures, monitoring expenditures and the residual loss.

Agency costs occur when a company receives outside capital, so there are no agency costs in a base case when the entrepreneur owns 100 % of company's shares (Jensen & Meckling 1976, Ang et al. 2000). In the base case the entrepreneur has all the power to manage the company according to his or her interests, but as soon as the entrepreneur sells a share of the company to an outside party, there is a possibility of moral hazard or adverse selection, and so

agency costs emerge. Parties are assumed to be rational and maximizing their own benefits, and decisions are managed by rights and duties defined in a contract (Fama & Jensen 1983). According to Fama (1980) the company is defined as a set of different contracts, where management and risk-taking are separated along with the ownership structure.

Bonding expenditures are agency costs for an agent when he draws up a contract that ensures his activities according to his principal's interests. Monitoring expenditures are costs caused by controlling of an agent. With monitoring costs a principal assures that an agent has an incentive to operate according to his interests. In addition to bonding and monitoring costs, residual loss takes place in principal-agent relationship, i.e., the cost for a principal when an agent's decisions do not maximize his welfare regardless of contracting and monitoring.

Social costs

According to Burgess (1988), the discount rate of public investment is defined based on investment's effects on private investments. Public investment can have complement, substitute or independent impact on private investments (Burgess 1988). Schwartz (1977, 136–137) states that public sector can borrow on an interest rate lower than private investors, because government has a legal superiority as a borrower and a better ability to diversify risk. Nevertheless, public investments should have a lower discount rate than the government borrowing rate, because investments have a social time preference rate, which is lower than market interest rate. Social time preference means, that the investment is expected to yield benefits also for the next generations (Marglin 1963, 106), which is especially an essential investment criteria on public sector. (Schwartz 1977.)

Public investment complement to private investment should have a lower discount rate than substitute or independent public investments (Ogura & Yohe 1977, Burgess 1988). The discount rate for substitute investments should be the market interest rate, and independent investments be discounted on a rate equal to social time preference, and complement discount rate is lower than the rate of social time preference (Harberger 1972, Ogura & Yohe 1977.)

Constructing the framework

In an effort of putting this all together, in a framework, a synthesis view is required of the cost-benefit and performance analysis for government. An analysis of the public sector is different from the private sector, due to the non-profit nature of the former. Government interventions affect the market and the whole economy, and therefore the effects need to be studied further and the possibility of external effects and crowding out effect has to be taken into consideration. In this chapter, after compiling the framework, selected quotes from the fourteen interviews, conducted for the study, will be presented, with the aim of producing a vision of future for government V2C activity – to be illustrated and discussed in conclusions.

Public sector organizations (the V2C intermediaries) receive funding, under parliamentary (democratic) control, from and through decisions of politically controlled ministries which also monitor and control the said intermediary organizations. The public V2C intermediary organizations allocate funds to growth companies. However, they can only allocate a fraction of the total costs of the activity to the underlying growth companies, due to various overhead and monitoring costs on each level. Figure 4 illustrates the chain of principal (P) – agent (A)

relationships in government V2C activity, yet leaving out the fundamental such relationship: That between the people and the parliament. Several link points, in the chain, serve in the roles of both principal and agent. At the end of the day, each growth company serves, through this long chain of actors, as an agent of the people (citizens at large).

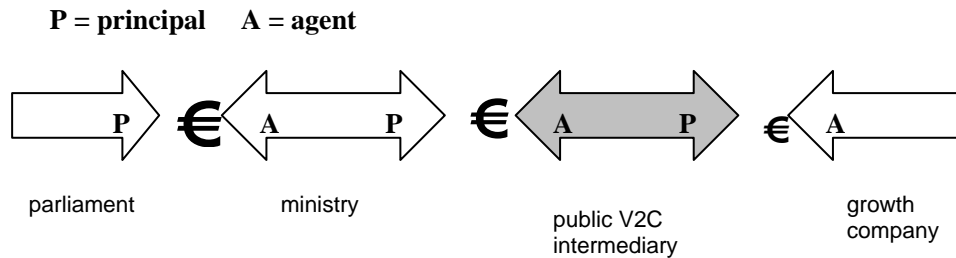


Figure 4. Principal-agent relationships in government V2C activity in Finland (Karhia 2005)

Agency costs accrue in each principal-agent relationship, in figure 4. Herein, the focus is on the role of public V2C intermediary, the most important and critical actor of the chain. Such actors follow the policies set by ministries and act therefore as their agents, which cause bonding expenditures for the organizations, because they are obligated to engage with the goals and budgets of the ministries. A ministry also monitors and controls the organizations, which causes monitoring expenditures. Residual loss is emerged in different forms, but one obvious example is a high risk aversion of an agent because of the legislation regarding the liability of bureaucrat's decision-making, which causes inflexibility in investment decisions.

The principal-agent relationship between the public V2C intermediary and a growth company also causes agency costs in the form of bonding and monitoring expenditures, and residual loss. Characteristic for these agency costs is a dominating role of monitoring expenditures resulting from screening and evaluation process of growth companies. Government agencies do not typically take active ownership positions in the growth companies, but choose to minimize risk by careful screening and evaluation. Loose control can also cause residual loss for the principal, if the agent is not acting according to the contract. Another problem related to gratuitous funding, is risk to moral hazard and adverse selection.

The performance of government V2C-activity can be best evaluated by analysing the costs and benefits that the public V2C intermediaries have in the underlying economy. The ultimate benefit from public sector V2C activity must be economic growth. According to the model of Lucas (1993), human capital is needed in addition to physical capital to enable economic growth. The production function states that the most efficient output is a result of both financial capital and human capital used in production. Accumulation of financial capital and human capital creates innovations, which, in turn, create growth in the economy. On the cost side, agency costs are an obvious factor in V2C activity. Besides agency costs, we also need to take opportunity costs into consideration.

In figure 5, r_c denotes the complementary discount rate, r_s the substitute, and r_i the independent discount rate for public investments. Agency costs are essential especially in V2C-activity, where asymmetric information creates a high risk, so agency costs are necessary to prevent problems in principal-agent relationship. According to Burgess (1988), costs of public investments need also to be evaluated according to their effect to the market,

and those opportunity costs can affect private investments in three different ways: complementary (r_c), substitute (r_s) and no affect at all (r_i). The net present value of complement investment is higher than the substitute investment, because $r_c < r_s$.

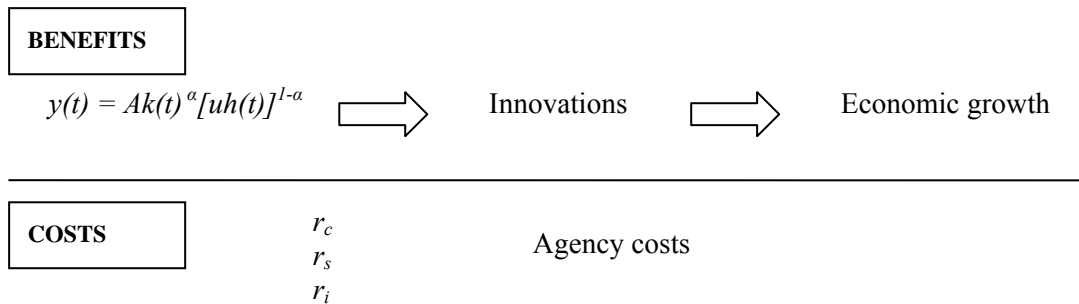


Figure 5. Benefits and costs in government V2C-activity (Karhia 2005, 76)

Opportunity costs of public investments and agency costs in V2C process are the key cost issues in government V2C activity. Accumulation of capital, both physical and human, creates economic growth, which must be the main goal in government V2C activity. However, public V2C intermediaries also end up funding companies that are not growth-oriented. This adds challenge to identifying and allocating the costs and benefits of government V2C activity.

The interviewees all confirmed that government plays an important role in the V2C process, in Finland. Also, they seemed to agree that a passion to build new technology, instead of new business, strongly marks the government V2C activity. In this view, marked by the words of interviewee X (below), those who can build new technology can, somehow automatically, turn it into a thriving business as well – that technology capability, as a sort of a sub-set, contains business capability. As a result, promising technology project quite easily gain government funding but, after the R&D phase, there is little to secure a market breakthrough.

Interviewee A: *“We are lured by the view that when an engineer is smart enough to discover something cool, he is automatically equally brilliant as a business executive, leader, marketer, salesman, and recruiter.”*

Based on the interviews, the government V2C operators’ own lack of business dynamism, vested with their primary role as administrators, prevents business capability from emerging in the Finnish V2C arena. It can be concluded that, even if the government V2C operators increasingly took ownership positions in the underlying companies, there is little promise of change – to better. Creating an incentive to an institution does not automatically create an incentive to its servant. In the worst case scenario, government V2C operators would, by taking ownership positions, only limit the possibilities to create and foster entrepreneurship and bring in committed knowledge investments – as underscored by interviewee Y.

Interviewee B: *“In this line of work ownership is the key incentive. In fact, the only incentive which can make a person really sweat it out.”*

If there are emerging problems related to potential equity positions of government V2C actors, grants are not trouble-free either as pointed by Lerner (1999). Grants are a typical example of the type of funding which is not managed or monitored afterwards. An entrepreneur has to waste a lot of time in bureaucracy to get such funding, but neither

liabilities nor incentives, to make higher effort for the business, emerge. Interviewee C promotes co-entrepreneurship as a problem-solving vision.

Interviewee C: "But people who are ready to invest their own capital, their knowledge and capacity alongside the (founding) entrepreneur – personally sharing his risk – these are the types of (V2C) actors that are needed. The public sector could utilize such a delivery channel."

Finland reportedly has a world-class innovation system, but significant steps are still to be taken to develop a matching entrepreneurial culture; to be able to take full advantage of the country’s innovation potential. In the words of yet another interviewee:

Interviewee D: "Having created a platform enabling so great technology innovations, it would be crazy not to make the little extra effort (to enabling business innovations) which would significantly benefit the whole."

To boost and build entrepreneurial environment, it is apparent that a drastic change is needed, in Finland. While it is unreasonable to expect any quick changes in the entrepreneurial or business capacity of the base of (founding) entrepreneurs, business angels, or venture capitalists, perhaps and introduction of co-entrepreneurs could serve as a solution.

Discussion and conclusions

A proposition for a framework to measure performance of government V2C activity has been presented, in this study. At minimum, it should spark discussion on how to define the costs and benefits of such activity. Clearly, in markets less developed in entrepreneurial culture than the USA, and yet boasting vast technology opportunities, such as Finland, governments have reason to be active in the V2C space. However, albeit justified, perhaps more emphasis should be placed on changing the culture, and thereby decreasing the need for intervention, than on mechanisms that preserve the culture as if to enable such intervention for good.

	KNOWLEDGE CAPITAL		FINANCIAL CAPITAL	
PRINCIPALS (those who invest capital)	(Founding) Entrepreneurs	<u>Co-Entrepreneurs</u>	Business Angels/ Venture Capitalists	IPO Investors/ Corporations via Trade Sale
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Figure 6. A vision for dominant stakeholders of growth venture activity (in Finland)

In the light that (comparative) lack of agency problems is one of the success factors of entrepreneurial firm vs. corporate institutions, one is tempted to suggest that agents on top of agents is not an ideal delivery channel for growth resources. In such a governmental V2C

delivery chain, the need emerges, by definition, to (politically) control for the use of every euro spent by each underlying entrepreneurial firm. In the extreme it may cost the system (the tax payer) nine euros (in agency costs) to put one euro to work in a growth company.

An alternative avenue for delivery of public sector funds has been vaguely proposed, in this study. Therein, a new breed of V2C professionals emerges between (founding) entrepreneurs and the VC industry, operators who complete the chain of principals. Such co-owners would better equip the underlying growth companies to utilize mentors and advisers. As a synthesis and summary view of the findings and observations of this study, figure 6 (above) provides a vision of future, an alternative strategic objective, for government V2C activity.

In conclusion, the authors wish to remind the reader that, deep down, government does not mean administration only. Politics (political activity) is an integral part of government. Many nations seek for new agendas for their future, in these times. When it comes to V2C activity, one should ensure that politics is the head, administration the tail – not the other way around.

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