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Ten Meditations on (Public) Venture Capital – Revisited

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Abstract

This paper reflects on the policy formation process in the burgeoning area of government's involvement venture capital finance (VC) over the two decades 2000-2020. It looks at both why and how government VC funds (GVC) have evolved. The increasingly common vehicle of 'hybrid' co-investment funds, which include both public and private VC investors managed by a jointly approved private fund manager, is analysed. The evolution and greater refinement of public intervention in VC markets over time is acknowledged while noting that significant operational challenges remain. There is some evidence that later iterations of GVC programmes have started to add net value which may imply a public-policy learning process. A fluctuating supply over time for venture capital finance, particularly at the earliest stages of firm formation and growth, suggests the benefits of well-designed and complementary government venture capital activity. The rubric of Ten Meditations is employed as a device to communicate both problem and prescription across the academic/policy maker divide. The paper is intended to be relevant to policy makers while grounded in robust academic research.

Introduction

The rationale and impact of government venture capital (GVC) is controversial and its proper design and execution is an 'urgent topic' for scholars and policy makers (Colombo et al, 2016). Guerini and Quas (2016) likewise note that little is known about the effective actions of GVC and that existing research evidence is ambiguous. When the original *12 Meditations* paper was published as a book chapter (Murray and Lingelbach, 2010), it similarly recognized this need for greater scrutiny by focusing on the challenging public policy goals of several governments which sought to assist in the creation of a national venture capital industry *de novo*. The generic efforts of governments in advanced Western economies to encourage professional equity investors to establish and grow the supply of risk capital were documented. The primary focus of public policy interest was in the encouragement of *early-stage*, venture capital whereby new and young enterprises of high potential were supplied additional capital and expert business advice in order to facilitate their genesis and rapid growth (Da Rin et al, 2006; Hellman and Puri, 2002). As such, this focus reflected a growing realization (and commitment) by governments as to the critical contributory role of entrepreneurial finance in engendering growth and innovation within a modern economy (BIS, 2012). Stemming from early work on the importance of institutional environments (LaPorta et al., 1998, 2000), the concept of 'entrepreneurial ecosystems' has significantly increased in popularity (Isenberg, 2010). Accordingly, an environment of efficient and active new enterprise formation was also early recognized as a critical complement to an effective

national innovation policy (Mason and Brown, 2013; Kenney, 2011; OECD, 2008, 2015, 2018a, b; Rigby and Ramlogan, 2013).

Politicians likewise were quick to support the goal of a vigorous domestic venture capital industry based on a universal admiration of the Silicon Valley phenomenon (Kenney and von Berg, 1999). Importantly, the attraction of venture capital as a policy vehicle appeared to span the political spectrum with parties of the left and right being equally enamoured by the potential of risk capital to accelerate technological innovation and economic resurgence (Faria and Barbosa, 2014; Grilli and Murtinu, 2014). This growing policy awareness, evident from the early 1980s, had its intellectual foundations in academic research conducted in 1970s and 1980s on the significant economic contribution of young firms. (See, for example, Birch, 1979; Storey et al, 1987.) Coincidentally, this period coincided with the early growth of VC industries in both the US and the UK (Coopey and Clark, 1995; Gompers and Lerner, 2004) although the first examples of the modern ‘classic’ VC firm were created immediately after World War II¹ (Bygrave and Timmons, 1992).

The scope of the original 2010 paper constrained entrepreneurial activity to the compass of entrepreneurial finance, and particularly equity finance (aka ‘risk capital’), provided by external and professional investors outside the founders of the business. For many high growth/high potential businesses in new technology markets, access to debt is highly rationed if not unavailable given their limited attractiveness to traditional bank lenders (Westhead and Storey, 1997; Colombo and Grilli, 2007). This paper looked at public policy efforts primarily in the period post the ‘technology bubble’ of the year 2000 up until the advent of the Global Financial Crisis (GFC) in 2008. It concluded that governments’ efforts had frequently been disappointing despite the very considerable public resources applied to encouraging local venture capital activity over a protracted timespan. This limited success in policy terms was not seen in the absence of growth in venture capital activity. On the contrary, later-stage venture capital – and particularly private equity (PE) investment – grew continuously and significantly from the 1990s in Europe, North America and increasingly Asia (Coller Capital, 2015). The failure - from a policy perspective - was that venture capital conducted by professional investment teams via traditional, limited liability partnerships (LLP) increasingly metamorphosed into later-stage PE activity. Seed and start-up activities were abandoned by the majority of VC general partnerships (the investment team) in favour of later-stage, secondary financing activity.

In this environment, the limited supply of professional VC activity at the earliest stages of the firm’s life cycle was attenuated by growing equity investment from two sources: 1) a significant growth in the activities of ‘informal investors’ *aka* Business Angels² (Kerr et al, 2014; Lerner et al, 2015; Mason and Botelho, 2014) and; 2) a growing role for the state acting as an exclusive investor or as a major co-investor in VC activity (Grilli and Murtinu, 2014; Kramer-Eis et al, 2015; Rigby and Ramlogan, 2013)³. In both the growth of business angel finance, and subsequently in easing the regulatory environmental constraints for ‘crowdfunding’ activity (Collins and Pierrakis, 2012; Ernst and Young, 2012), the state has

¹ See page 8

² The state played a major role in the encouragement of BA activity via financial support for BA networks as well as offering BA investors a range of tax breaks on early-stage investments (Nightingale et al, 2009).

³ In the last five years, the arrival of ‘equity crowdfunding’ could also be seen as a third response to rationing of the supply of classic venture capital (Hornuf and Schweinbacher, 2014; Collins and Pierrakis, 2012).

played a major indirect role by facilitating both the legal environment and providing a range of incentives to informal investors⁴.

The original paper sought to identify and assess the generic issues that were seen to have affected the efficacy of public policy prescription in the venture capital space. These influences were identified, classified and ordered using the metaphoric device of a set of twelve (latterly revised to ten) meditations. The present paper seeks to develop the original discussion and analysis over a longer period of Government VC activity, and in a policy environment in which entrepreneurship and entrepreneurial finance have an increasing salience. Brief reference will also be made the recent phenomenon of ‘unicorn’ young firms and the manner in which external investors have sought to encourage rapid growth particularly in newly discovered technology-enhanced markets for products and (particularly) services. The last years of the present decade have witnessed dramatic growth in the VC funds directed to unicorn-status young enterprises with firms reaching multi-billion dollar valuations while still not generating positive cash flows. This euphoria, which is also shared by some government policy makers, shows some elements of a return to the unsustainable valuations of nominally technology-based young firms seen in dot.com crash of the year 2000. Venture Capital has always been a ‘fashion industry’.

Meditation (definition)

- a. The action or practice of profound spiritual or religious reflection or mental contemplation.
- b. Continuous thought on one subject; (a period of) serious and sustained reflection or mental contemplation.

Shorter Oxford English Dictionary (2007)

During the first years of the present century, most national governments in the West had very little direct experience of venture capital activity. The USA and the United Kingdom were both outliers⁵ in having established important venture capital and private equity industries from the early 1980s. As a consequence of the immaturity of venture capital as either a domestic or international industry, the majority of national policy makers were obliged to ‘learn by doing’ and/or borrow from the limited, relevant experiences of equivalent public agencies in other countries. Apart from the dominant examples of the USA, the UK and possibly Israel - the latter particularly through the early (and much publicized) success of the 1984-88 Yozma programme (Avnimelech, 2009) - governments have had few illustrations of successful, public supported VC programmes which they could study and adapt to their own purposes. And even the extant VC programmes in North America (Brander et al, 2008; Lerner, 2002 and 2009); Australia (Murray, Cowling and Wei, 2010; Cumming and Johan, 2014) and the UK (Cowling et al, 2011; Murray et al, 2010) could still be viewed as ‘work in progress’ with their final outcomes and long-run fund performance as yet unclear.

⁴ The UK’s long-running Enterprise Investment Scheme, which was started in 1994, has provided attractive fiscal incentives to BA investors.

⁵ A possible exception was the state of Israel which had adopted venture capital very early - albeit arguably as a satellite of the USA industry with which it was very closely associated.

In the current paper, we seek to revisit the international venture capital arena in order to assess the continued relevance or credibility of the meditations and their statements on the role and efficacy of the state as a venture capitalist. Excluding the much longer histories of the USA or UK, we now have a period of nearly twenty years to example government actions to promote and support venture capital investment. The number of countries which can claim a nascent or established venture capital industry has grown⁶ to embrace both developed as well as transitional and developing nations. Accordingly, we have arrived at a position where we have more experience and data to assess the robustness of publicly supported VC, and the continued salience of the original meditations themselves. During this period, a number of western democratic governments have also embarked on independent evaluations of their publicly supported VC programmes, some of which are in the public domain.⁷ Accordingly, we are able to start exploring the question of whether or not governments and their policy makers appear to be able to learn effectively from the actions and outcomes of other nations in seeking to develop their own VC industries.

There is now a large and established literature on the potential value of venture capital for enhanced and accelerated economic development. While much of this literature was historically American (USA) in provenance, Europe is also providing more information from national governments, academia and the European Union's own attempts to encourage VC activity.⁸ But the growth of this 'asset class' has not been uniform across all types and sizes of investment. Particularly, the capital market's ability to meet the demand for early-stage venture capital – covering seed capital, start-up capital and early-stage growth capital – has continued to be particularly problematic (Wilson, 2015). Accordingly, the so-called 'equity gap' that this limited supply of risk capital has occasioned remains fruitful area for both governmental concern and academic research (Alperovych et al, 2018; DTI, 1999; Martin et al, 2005, Mason and Harrison, 2011).

Enter The State

The focus of this paper remains exclusively concerned with analysing governments' ongoing attempts to increase the supply of early-stage VC by public policy initiatives and programmes. Since the global financial crisis in 2008, government has become the single most important supplier of early-stage venture capital finance in Europe and beyond.

⁶ Using the European Union's VICO database, Guerini and Quas (2015) identified 81 GVCs financing 183 first round entrepreneurial firms.

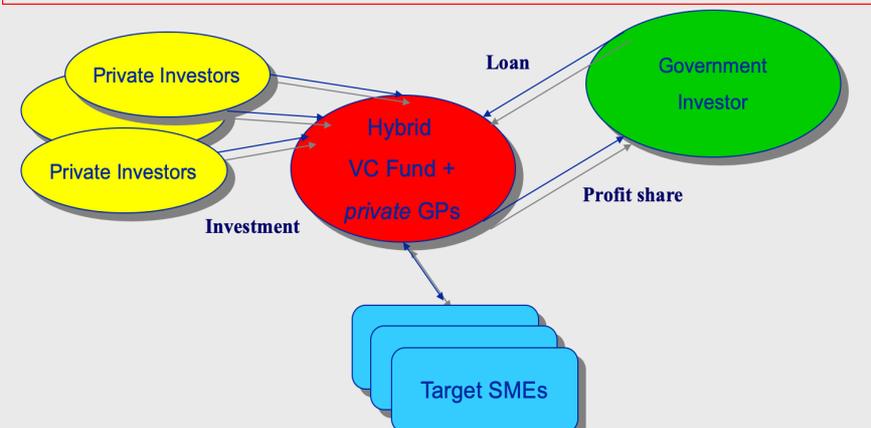
⁷ The Nordic countries have each undertaken a number of evaluations of their VC programmes. In Denmark, Finland, Norway and Sweden, these independent studies have been published. The author has been directly involved in conducting VC programme evaluations in all Nordic countries other than Norway.

⁸ See European Commission programmes, COSME and Horizon 2020, which both place substantial emphasis on plans to increase VC supply in the European Union.

Generic Venture Capital 'Hybrid' Model Structure

Based on US SBIC 'leveraged' model but adapted for UK

- Government investment as a subordinated loan to fund
- No downside protection – instead addresses risk-return issue with enhanced return for investors.
- State is using *commercial* VC managers to pursue public policy goals



Government has essentially two choices as to how it wishes to intervene directly in the VC market.⁹ It may decide to act unilaterally and add to the existing pool of available risk capital by financing a new VC fund or programme exclusively from the public exchequer. Here, the state takes direct action and itself becomes a 'government venture capitalist'. Acting as both the 'general partner' (GP) and the sole 'limited partner' (LP), it assumes the full responsibility of investment selection, support and realization (exit). Conversely, the state may seek to encourage existing or new agents from existing capital markets to collaborate with it in the setting up of a *co-investment* scheme whereby both private and public parties are involved in raising the supply of venture capital. In this *hybrid* or indirect model, the state is a 'special limited partner' providing investment finance on such terms that will attract both private investors to co-invest and incentivise a general partnership to manage the fund. The state, as with all LPs wishing to maintain the tax benefits of a limited liability partnership, is proscribed from involvement in the operational investment decisions after setting the parameters of the fund's investment activities. This hybrid model, utilizing the skills and experience of the VC sector's investment professionals who are incentivised to meet goals of mutual commercial interest to themselves and the state, has become the predominant conduit for public support. That hybrid funds have to be structured and managed in a commercial manner which will attract private LPs, while putting the operational onus on a GP normally identified in a competitive bidding process, has governance and efficiency benefits obvious to an accountable government. There are several variants in the structure and operational incentives of both the direct and hybrid models of state-supported VC activity. Nor are the two models mutually exclusive. In a number of countries, for example, the publicly funded Vaekstfonden agency in Denmark¹⁰, the organisation makes both direct VC investments to Danish businesses while at the same time supporting indirect VC investment via a hybrid fund structure (Damvad, 2014).

⁹ The government may of course influence the environment for venture capital investing indirectly via the taxation system. For example, the manner in which capital gains are treated in LLPs has major consequences.

¹⁰ See details of the Danish Growth Fund at http://www.vf.dk/?sc_lang=en

A core assumption of this paper is that governments intervene in early-stage entrepreneurial finance as a consequence of a belief in the imperfection of existing market mechanisms which have resulted in an under-supply of risk capital. Public interventions are frequently premised on an understanding that they will be ‘temporary’. Given the state’s wider societal responsibilities, it may also intervene in problematic situations which are not regarded as relevant and/or attractive by other industry participants. For example, the limited access to venture capital by high risk groups including both scientists¹¹ (innovation policy) and the unemployed (social policy) will concern separate departments of state but will not engage most private GPs with a strictly commercial focus. Thus, the state has responsibilities and goals for its VC actions that are far wider and, critically, over a longer time span than professional institutional investors. The latter’s primary fiduciary objective is engineering an attractive return at an acceptable level of risk on their funds under management. These funds are usually managed for a defined period of time.

The hybrid VC model is an attempt to meld the benefits of both public and private actions by the effective alignment of disparate interests (OECD, 2004 and Wilson, 2015). In order to attract private investors, the state has to create incentives that address the key structural factors that make early-stage investing commercially unattractive. In essence, inducements have to be engineered that materially rebalance the risk/reward ratio of speculative risk capital investment in seed, start-up and early-stage companies. In summary, the state puts up a significant financial stake in a new VC fund. The advantageous conditions for the preferential allocation of investment returns to non-governmental investors encourage private institutional investors (LPs) to co-invest with the state in the new fund. The trade-off between public and private goals is that the fund must commit a substantial proportion of its raised capital to investee firms that are likely to be capital rationed in a free capital market. Such recipients of interest to the state are likely to include high potential start-up and early-growth firms most vulnerable to ‘equity gap’ issues.

The genesis of this model is the seminal experiment in the USA of creating Small Business Investment Companies under the auspices of the Small Business Administration in 1958. While not free of problems in its execution (Brewer et al, 1996: Kleiman and Shulman, 1992), generic characteristics of the SBIC ‘equity enhancement’ model have now been adopted in a range of modified forms by several other countries (including, for example, Australia, Finland, New Zealand and the UK being ‘early adopters’¹²). The central logic of the model is *the use of public funds to leverage private investors’ returns*. It is deemed appropriate for the state to do so in order to engineer a range of enhanced incentives that encourage private VC firms and LPs to work in partnership with the state in promoting greater investment activities in sectors of interest to public policy. There are several variants to the hybrid model but essentially the public exchequer becomes directly or indirectly¹³ a limited partner in the VC fund and provides a substantial proportion of the finance available

¹¹ Venture capitalists are only interested in ‘near to market’ scientific or technology advances. There is also a remarkable level of ‘fashion’ in which technologies move in or out of interest to VC investors over time.

¹² The author was directly involved in public VC preparation and evaluation with national governments in each of these countries.

¹³ In the specific case of the SBIC, the government becomes a guarantor or underwriter to the private investors thereby increasing the amount of funding that can be raised from commercial sources at an attractive rate of interest.)

to the fund including investments made to the target group of companies. On occasions, the state may provide initial funding on a greater than 1:1 (public/private) ratio as a ‘special’ investor in the fund. This occurred, for example, in early iterations of the UK’s Enterprise Capital Fund scheme (ECF) or Australia’s Industry Investment Fund (IIF). In both cases, the state wished to incentivise private investors by the ‘signal’ that it was prepared to leverage preferentially their returns. In addition, the state will often only require a nominal return¹⁴ in the event of a successful investment. If the investment fails, the state may also agree to be a subordinated investor preferentially writing off its own proportion of the monies committed to the portfolio firm or to the aggregate fund.¹⁵

Recognizing the sensitivity of VC fund returns to ‘the time cost of capital’, some co-investment schemes allow the public LP to invest before private investors’ money is committed. Further, the state will only seek a repatriation of its own finance when all other private LPs in the fund have first received an agreed share of capital gain contingent on a successful investment. Thus, the private fund gains the benefit of substantial public investment at a lower cost of capital and with the public LP bearing a greater risk of loss in the event of a partial or complete investment failure. This public leverage effect can have a material effect on the performance of the fund. Jääskeläinen et al. (2007) estimate that these asymmetric public/private risks and rewards can increase the net ‘cash to cash’ returns (i.e. Internal Rate of Return) to private LPs by up to 8%. However, these authors caution that such engineering of incentives can only work to increase the returns of a hybrid fund that has already generated some positive capital gain via its successful investment decisions.

One of the most attractive incentive to a private investor occurs if the state is prepared to guarantee the level of risk of the investor (LP) by underwriting part or all of the contingent loss of individual portfolio investments made or the aggregate losses of the fund. Guaranteed underwriting of the investments of private agents in order to encourage them to undertake actions desired by the state has a considerable history that long predates its involvement with venture capital (Irwin, 2007). Public guarantees have been particularly widely applied to bank loans to SMEs (Cowling, 2010). Such security to capital providers becomes especially useful in circumstances where there is a high level of unquantifiable uncertainty. For example, the large and subordinated position of the state as a special limited partner in the UK’s Regional Venture Capital Funds, a programme launched in 2000, was necessary before private investors (including the publicly-owned international financing agency, the European Investment Fund) were prepared to co-invest in the new program. The terms accepted by the UK state as a ‘special’ limited partner included being ‘the first investor in and the last out’; accepting a cap on its returns; and, perhaps most importantly, becoming the recipient of first losses. These conditions meant that, in effect, the state protected private investors (LPs) from any net losses of the fund up to the level of its total public investment. However, such support also creates a level of moral hazard the costs of which are born by the state investor (Bergemann and Hege, 1998).

¹⁴ Government’s target return is somewhat analogous to the ‘hurdle rate’ negotiated by LPs to determine a minimum investment performance before GPs are rewarded for their efforts. Essentially, government would like to see its return meeting its own cost of capital.

¹⁵ Later public VC schemes in the UK have seen the state negotiate a position as preferred creditor (e.g. Enterprise Capital Fund Scheme) rather than as subordinate investor (e.g. Regional VC Fund Scheme)

Government Venture Capital – Asset or Liability

VC fund programmes are long term and complex policy interventions. It is unlikely that their final outcomes will quickly be ascertained. Indeed, given the ‘J curve’ effect in an investment cycle, early indications will almost invariably produce negative results (Burgel, 2000). Further, policy makers have had to learn the professional skills of VC fund structuring and operation¹⁶. Accordingly, performance assessments of early government VC initiatives have often been negative in both the investment and policy outcomes of the programmes studied (Armour and Cumming, 2006; Bertoni et al, 2013; Brander, Egan and Hellmann, 2008; Cumming and MacIntosh, 2006). There are more positively qualified studies of GVC benefit (see Jeng and Wells, 2000; and Leleux and Surlemont, 2003) including, more recently (Alperovych et al., 2018; Cowling et al, 2011; Grilli and Murtinu 2014; Guerini and Quas 2016) but they appear presently to be in a minority. Yet these disappointing early outcomes have also produced, albeit little documented, the important *externality* of government learning. In the UK, the poor outcomes of the Regional VC programme of 2000, was a material influence on the redesign of the later (2006 onwards) and more successful Enterprise Capital Funds programme. Likewise, while the Australian IIF programme started in 1997 has been praised, few academic observers noted the influence of the earlier unsuccessful Australian federal VC programme of the mid 1980s on the redesign of the IIF.¹⁷ This learning is also international. For example, Australian policy makers visited the USA, the UK and a number of European VC programmes before designing the IIF. Similarly, the European Commission has been particularly involved in cross-member learning on VC programmes.

What has become clear is that GVC needs to be design and executed with considerable foresight if it is not to ‘crowd-out’ or other otherwise conflict with private investor provision. GCV has increasingly been designed to work as a *complement* to independent VC provision. That GVC can provide a ‘certification’ or ‘endorsement effect’ for growth-oriented businesses to private VCs (Guerini and Quas, 2015; Colombo et al., 2016) suggests that both private and independent VCs may over time be finding mutually supportive roles (Grilli and Murtinu, 2014).

The Meditations Revisited

The original meditations chapter noted the apparent limited ability of policy makers to learn from earlier (largely negative) programme experience. While defining and promoting *the learning organisation* has been a popular part of business school and consultancy endeavour (Argyris and Schon 1978; Fiol and Lyles, 1985), there appeared to be less focus on *the learning government*. Here, Murray and Lingelbach (2010) argued that there was a particularly salient role for academic researchers in contributing to improved policy formation given their evidence-driven, long term and international perspectives.¹⁸ In this

¹⁶ The British Business Bank created by the UK government is an excellent example of a policy vehicle that has evolved into highly professional vehicle for designing and administering VC policy instruments. In Europe, the same evolution of professionalism and influence can be seen in the European Investment Fund.

¹⁷ Professor Murray proposed the IIF concept to the Australian Commonwealth government in his 1996 report to the Industrial Research and Development Board entitled “Australia’s Hour Glass Problem”.

¹⁸ The ‘impact’ of researchers’ findings on external communities has become a major means by which the utility of university research and outputs is measured by government funders. In the UK’s university assessment programme, the Research Excellence Framework, impact is one of the three key elements to be appraised.

paper, the original meditations are revisited and refined in the light of continued venture capital industry evolution over the two decades 2010-2020.

The meditations are each presented as an individual statement followed by a short rubric. Individual meditations seek to illuminate a particular area of GVC activity and its related policy actions and consequences. They are purposely couched in a challenging manner – both as a pedagogic device and as a means of encouraging practitioner engagement.

M1: Governments’ Innovation and Finance policymakers fit into two camps. They either believe in Charles Darwin or the Book of Genesis. In reality, most prefer the Creation Story.

The state as ‘Creationist’

Governments and their politicians do not like delayed gratification. The 3-5 year election cycle in most Western democracies favours a polity of bold public gestures and, ideally, quick wins (or at least tangible evidence of related improvements). For example, in 1996, a report commissioned by the Industry RandD Board of the Australian Commonwealth government suggested that Australia should consider an ‘equity enhancement’ program (similar to that employed in the Small Business Investment Companies Act in the USA) in order to stimulate an increased investment of early-stage, risk capital into technology based young firms. The report’s author suggested that Australia had an ‘hour glass problem’ (Murray, 1996), i.e. a systemic constraint in the sources of start-up and early-stage growth finance available to high potential young firms. Within 18 months, the Australian Commonwealth government had created the *Innovation Investment Fund* (IIF) with an initial A\$100 million budget. The IIF was designed specifically to address capital (equity) rationing in young firms by crafting a supply-side policy instrument which provided private VC funds with public leverage of up to 2:1 (Cumming, 2007). Australian policy makers and legislators acted with exceptional speed to address a major concern of national enterprise and innovation policy. The logic underpinning the creation of the IIF program was to remove a constriction in the capital market and thus assist the rapid development of an emerging Australian venture capital industry in order to promote both enterprise and innovation (Wan, 1989).

This enthusiasm to ‘kick start’ an Australian venture capital industry, while understandable, took little cognizance of the protracted period and the necessary environmental and institutional preconditions required to form a sustainable and profitable venture capital industry. American family trusts were doing *proto*-venture capital, equity financings in the 1930s (Gompers, 1994). The first ‘classic’ VC firm, American Research and Development, incorporating a limited liability partnership legal structure was formed in the USA in 1946 by Professor Doriot (Hsu and Kenney, 2005) aided by significant support from Harvard University. Yet, the US VC industry could only credibly be seen as an autonomous, and distinct, asset class by the early 1990s – some *fifty years* later (Avnimelech and Teubel, 2004). Similarly, the UK government employing the offices of the Bank of England created the Industrial and Commercial Finance Corporation (ICFC) and the Finance Corporation Industry (FCI) in 1945 as part of Britain’s post World War II reconstruction (Coopey and

Clarke, 1995). These two organizations became the forerunner of 3i plc.¹⁹ The ICFC and the FCI were a (delayed) policy response to the ‘equity gap’ first identified in Britain by the Macmillan Committee (1931) during the Great Depression. This persistent gap was then reaffirmed by periodic official government reviews of the financial circumstances of small and medium-sized enterprise finance. Yet, the UK, with the second largest VC industry in the world by the year 2000, was only a significant recipient and user of risk capital for early-stage VC investments from the mid-1990s onwards. This was a period (1996-2000) characterized by an international boom for high-technology start-ups, several of which were funded by VC. This boom ended dramatically in the year 2000 when the ‘technology bubble’ burst. Given the investment losses incurred, it took the VC industry, large corporations via corporate venture capital initiatives (Birkinshaw et al, 2002) and institutional investors nearly a decade to return to early-stage, technology-based investments. During this first millennial decade, government stepped into the vacuum to become the single biggest supplier of early-stage VC finance in Europe.

While there is some evidence that the more recently established national VC industries in developed countries have taken less time to become operational and professionalized – see, for example, the Finnish VC industry (Maula and Murray, 2003) or the early growth of venture capital in Asia and Africa (Lockett and Wright, 2002; Olawale and Garwe, 2010) - the reality appears that the creation of a long run *viable* VC industry in even the most conducive legal, economic and technological environments is the product of *decades* of incremental and evolutionary change compatible with the wider commercial and political environments (Bygrave and Timmons, op. cit.).

Since the early 2000s, several countries have created fledgling VC industries (EY, 2014).²⁰ Given growing experience, and the popular legal format of the limited liability partnership (LLP), governments can construct a hybrid model quickly. Limited partner interest can be ‘managed’ by the generosity of the incentives given to private investors by the state co-investor in an asymmetric returns model (Jääskeläinen et al, op cit). But the point is that what has reduced is the time to create an incipient, national venture capital industry. The experience and learning necessary to nurture a *sustainable* VC model, which can reward its (primarily institutional) investors with return levels commensurate with the significant illiquidity and risk of the asset class, is likely to still be measured over far longer periods. This latter task requires the complementary creation of an ‘entrepreneurial ecosystem’ (Isenberg, 2010; Mason and Brown, 2013; OECD, 2013; OECD 2018a, b) on which a flourishing VC sector is in part dependent. Groh et al (2014) in their analysis of the environmental conditions which favour the growth of national VC and PE industries argue that the depth of capital markets and investor protection/corporate governance are the two single biggest drivers of national VC activity. These results reinforce the conclusions made by La Porta et al. (1997 and 2000) as to the centrality of ‘the rule of law’ in new enterprise formation and growth. Several nations²¹ currently promoting domestic VC industries are

¹⁹ The name 3i – an acronym for Investors in Industry - was given to the merged organization formed from ICFC and FCI in 1983.

²⁰ The rapid international growth of VC activity is supported by the NVCA (June 2011) in a nine-country survey including 347 VC firms.

²¹ The People’s Republic of China has invested very considerable public funds via city and regional administrations into state supported VC funds. At present, and with few exceptions, detailed and robust evidence of their investment performance is rarely available in the public domain.

likely to face considerable challenges in creating - and maintaining - these necessary environmental conditions.

Thus, while the spread of VC activity as a policy prescription continues to grow rapidly, in part supported by public resources, the recognition of the protracted time and the associated preconditions for a *successful and sustainable* early-stage VC industry still remains poorly understood. The danger is that politicians do not appreciate the time span required to create effective, i.e. sustainable, investment programmes.²² One consequence of this inexperience is the creation in many countries of publicly supported VC funds with negligible chance of survival via the generation of *commercial* returns attractive to private investors.

M2: ‘Market failure’ is what happens when you don’t give me money. And a rational, objective and rigorous economic analysis is what has happened when I don’t give you money.

The state as ‘apologist’

In order to justify an intervention by the state which consumes scarce public resources, the political case usually needs to be publicly supported by a more independent, intellectual argument. Such arguments adopt the language of economics arguing in welfare and utility terms the ‘costs’ of not correcting an identified impediment to efficient market transactions. Technically, a ‘market failure’ exists when the price established in the market is less than the marginal social benefit of a good and thereby results in an under-supply from producers.

The flow of early-stage equity finance to unproven young firms seeking to commercialize novel technologies in nascent or immature markets may give rise to several types of market failure. For example, when the market does not provide sufficient finance to meet the demands of young firms regardless of their willingness to pay the price (e.g. interest payment, collateral guarantee etc.) required. Asymmetric information increases the uncertainty and risks for institutional providers of capital, many of which would rather leave the market than provide finance under these partially informed and risky conditions. The absence of finance means that existing companies fail through lack of access to necessary resources, growth is restricted and/or new companies are not formed.²³ Each of these outcomes may represent a significant social and economic cost to society.

However, the technical term ‘market failure’ is often misused. The fact that many financial institutions are loath to finance young firms is not *per se* evidence of a market failure. Indeed, if the young firms are highly risky and/or poorly managed and the expected cashflows of any external investment does not provide an acceptable risk-adjusted return to investors, then the private decision to deny finance is unquestionably rational regardless of any social benefits forgone. Those arguing the case for intervention have to demonstrate that there are specific *and resolvable* circumstances that prevent capital markets from acting efficiently and finding an equilibrium price at which the market clears. In short, given the robustness with which

²² Australia terminated its IIF programme in 2014 with the advent of the new government.

²³ This situation occurred post the 2008 global financial crisis with many bank lenders reducing existing and new loans to SMEs in order to protect their severely depleted balance sheets. Innovative young companies were particularly vulnerable (Lee et al., 2016).

many markets work despite public attempts at intervention, the onus of proof should be on those critics that argue that the market is not working. This scepticism should be particularly marked in professional equity markets where high levels of information and relevant analytical capabilities are often widely available.

In practice, several governments assume the existence of a failure in the market for equity finance faced by young and small businesses as a default stance. Frequently, government policy documents repeat the term market failure with little acknowledgement to the ambiguity of research evidence supporting such a strong assertion (DTI, 1999). The generic existence or material effect of a SME ‘financing gap’ should not be assumed as an incontrovertible ‘given’, although disentangling supply and demand factors in determining whether such a gap exists can be technically challenging (Berger and Udell, 2006). This is not to suggest that market failure does not occur. SMEs are not homogeneous and young firms in technically complex markets or those enterprises growing rapidly may face different circumstances than the majority of SMEs. Further, there are structural conditions that suggest it is uneconomic for VC firms to provide small tranches of money to young firms (Murray and Marriott, 1998; European Commission, 2005). Many VC firms in the membership of the British Venture Capital Association (BVCA), no longer wish to offer applicant investee firms sums of money under a minimum of £5 million.²⁴ The industry continues to ‘drift’ towards bigger deals post the challenging start-up phase (Cumming et al, 2009). Recent interest in ‘unicorn’ businesses has only exacerbated the desire to allocate huge investment bids totalling hundreds of millions of dollars over multiple funding rounds to single companies deemed to have a ‘disruptive’ global model. However, this may not prevent some VC firms initially investing small sums in a large number of potential businesses²⁵ in order to increase both market intelligence and opportunity (Ewens et al, 2018).

However, this debate on the efficacy of VC markets obfuscates the fact that many firms seeking finance *are not attractive enough* to professional investors in an asset class where the risk/reward ratio has persistently acted against the interests of investors. VC managers are seeking a terminal fund performance measured in an internal rate of return (IRR) circa 20%.²⁶ Given that the majority of most portfolio companies will be full or partial failures, the VC model requires exception returns from a minority of successful investments, e.g. a >5-10x capital return over a three-year period. A tiny proportion of start-ups has this growth potential. The concept of ‘market or investment readiness’ which acknowledges that even high potential firms frequently have to be tutored in order to communicate their potential attractiveness to investors, implicitly signals that this failure is not exclusively a supply-side problem. This approach reappraises the market for SME finance from a demand-side perspective. It seeks to answer the conundrum that many SMEs argue that access to finance is extraordinarily difficult while at the same time venture capitalists frequently state with equal conviction that they have more money than opportunities in which to invest (Queen, 2002). However, the contemporary moves in the EU and several national governments towards

²⁴ For example, 3i plc, an extremely successful venture capital firm which was originally formed by the UK government in 1945 specifically to address the problems facing small businesses identified in the Macmillan Report (1931) no longer invests in the start-up and early-stage markets. Similarly, Apax Partners, an important early VC funder of start-up firms, in 2003 formally announced that requests for risk capital finance of under £10 million would no longer be considered

²⁵ This practice is called “spray and pray” in the VC industry.

²⁶ Informal discussions with GPs.

increasing the regional distribution of VC finance²⁷ indicates that public policy frequently allocates finance in a manner which reaffirms a dominant belief in supply-side failure. This lack of political will to provide a critical appraisal of the *quality* of firms seeking venture capital is one of the biggest constraints on public VC programme performance. In short, too many companies which should *not* receive venture capital continue to gain access to public VC programmes for reasons not connected to their commercial potential. For many private investors, public VC has always carried the stigma of allegedly ‘political influence’ in the investment allocation process.

M3: The rest of the world is not America. We can borrow but, ultimately, we have to find our own solutions.

The state as ‘groupie’

The USA continues to be the national VC industry against which all other nations of the world benchmark their performance. No other country or region has yet been able to emulate the global impact of Silicon Valley or Greater Boston²⁸ as hubs of world class innovation, technological change and commercial success (Audretsch, 1995; Engel, 2015; European Commission and US Department of Commerce, 2005). Similarly, the US top quartile VC firms have consistently demonstrated the most attractive returns to venture capital investors (Rosa, Machado, and Raade, 2006; Cambridge Associates, 2018). Until the present decade, American companies have continued to dominate as the so-called ‘unicorn’ companies²⁹ in the present networking (e.g. Google, Facebook, LinkedIn) and sharing (e.g. Uber, AirBnB) models of enterprise. This financial success has been based on the USA’s finely-honed ability to identify, nurture and finance the genesis and rapid growth of a disproportionate large share of the world’s most outstanding new companies (Gompers and Lerner, 1999) particularly in new and disruptive markets and technologies.

However, the primacy of the USA as the global centre for high growth ventures has recently been challenged by China which has regarded venture finance as an important element of its national economic and technology strategies. China has been developing an entrepreneurial ecosystem since the 1980s with government financed VC being an important complement. The speed and success of this development has been impressive. By 2018, Chinese start-ups received 30% of the global VC funds raised that year (Pitchbook, 2019). China’s record of identifying and nurturing extremely high growth/high value young firms is now comparable to that of the USA. Hurun, a Chinese research body, estimates that in 2020 the US had 233 and China 227 firms which collectively represented 79% of the world’s total of unicorn companies (Hurun, 2020). However, the international competitiveness of China’s firms and technologies remain embedded in an economy where Party interests may trump economic or

²⁷ See the role of the European Regional Development Fund programme of the European Union.

²⁸ In addition to Silicon Valley and Greater Boston, a number of smaller American locations or clusters arguably have sufficient size and centrality to enjoy world scale impact in ‘new knowledge-based’ investments. These include New York, the ‘North Carolina triangle’, Austin and Seattle. Outside these centers, the USA has little obvious advantage over Europe or other regions.

²⁹ Defined as a privately held start-up company with a valuation of over \$1 billion. A term coined in 2013 by Aileen Lee, the founder of the un-ironically named, Cowboy Ventures, Palo Alto, Ca. CBInsights, a venture research consultancy, estimates there were 500 unicorns valued at \$1,585 million in November 2020 <https://www.cbinsights.com/research/most-valuable-unicorns/>

market imperatives. National VC industries in many countries have waxed and waned as policy priorities have changed over time. The long run success of China's impressive entrepreneurial revolution still remains to be proven.

This US success is in marked contrast to the disappointing returns that early-stage, classic VC has consistently recorded in the UK, continental Europe and beyond. There are exceptions to this generalization given the highly skewed nature of VC fund performance in Europe as well as America (Mulcahy et al, 2012; European Investment Fund, 2017). A number of European cities, including Cambridge, London, Munich, Stockholm are acknowledged centres of successful innovation and commercialization of new ideas and business models. Similarly, a number of Europe's best VC general partnerships have on occasions also recorded high levels of fund investment performance. Yet these European successes remains minor in comparison to the scale and consistency of American venture finance performance since the early 1980s. It appears that the US industry remains exceptional in its greater ability to recognize, nurture and benefit from risk capital investment in early-stage companies across a series of new and disruptive technologies and markets (Murray and Lott, 1995; Dimov and Murray, 2007). However, as Preqin's 2012 special report on venture capital reconfirms, successful VC investment is a *minority* outcome. There is a marked and sustained difference between the upper quartile VC general partnerships and the rest of the industry. This difference between GPs tends to last over successive funding rounds. More experienced GPs are more likely to see their investee firms achieve an IPO (Sorensen, 2007). That is, the identification and funding by VC of exceptional businesses may not translate into attractive average and median investment returns for a national VC industry or its investors.

The enduring success of a cohort of US originated, VC financed, portfolio firms, currently supported by the new paradigm of 'unicorn' companies (Kenney and Zysman, 2019), continues to excite policy makers and politicians. Accordingly, domestic government are an active participant in the establishing of VC industries in a growing number of countries in both the developed and developing worlds.³⁰ Within countries, efforts are also made to support the greater regional distribution of venture finance, with the support of business angel activity particularly prevalent. Such policy ambitions are understandable despite their often weak economic and technological underpinnings.

As the original meditations chapter noted, the concept of 'path dependency' would challenge the belief that countries could engineer for themselves a repetition of the USA's history in innovation and finance (Teece, Pisano and Shuen, 1997; Kenney and von Burg, 1999) leading to a Silicon Valley type outcome. At best, national policy makers may be able to infer a number of generalizable lessons from the US experience. For example, much of the present success of Silicon Valley is based on the foundation of several large companies intimately connected to the defense industry from the 1930s onwards (Saxenian, 1994; Leslie and Kargon, 1996; Page, West and Bamford, 2005). The idea that creating a 'military industrial complex' comparable to the US (and possibly Israel) might be a precondition of a successful VC industry only emphasizes the need to think in terms of peculiar national histories rather than electing to follow blind emulation.³¹

³⁰ The 2015 Country Attractiveness Index (for VC and PE investors) assesses the status of 120 countries.

³¹ To date, only Israel has also been able to harvest a comparable (albeit much smaller) civilian innovation premium from its high defense spending unlike Russia or South Africa.

What nations may be able to do is to understand better the reasons and precursors for the formation of US entrepreneurial ecosystem for the financing of young and novel industries in order to make their own adaptations. Israel has colonized an early-stage VC space very successfully as an *off-shoring* of US technology particularly (but not exclusively) in its civil application of originally military products and services, e.g. encryption and other security software. Similarly, Ireland has historically and currently³² been successful as a low tax European *entrepôt* and destination for foreign corporations wishing to have a trading base within the European Union. For Finland, its decision to become an innovation-based, knowledge economy was hugely influenced by the collapse of its Soviet export market in the early 1990s (Sabel and Saxenian, 2008) and latterly the demise of Nokia. The need to finance speculative innovative ideas outside traditional financing and commercial channels has led to Finnish government support for the emergence of a VC industry since the mid 1990s (Maula and Murray, 2003; Murray et al., 2009). In the developing world, India created a vibrant VC industry in response to the emergence of the outsourced software services industry (Dossani and Kenney, 2002) while South Africa has struggled to develop a VC industry despite a promising enabling environment (Lingelbach et al., 2008).

Policy makers and politicians may prefer to focus on putative outcome rather than the enabling conditions. This myopia remains despite a growing interest in the importance of entrepreneurial ecosystems as a necessary condition for successful VC activity. Groh et al's (2015) conclusion that the depth of economic activity and robust governance/protection procedures are two key determinants places the US at the top of the index and in turn questions the plausibility of successful VC industries in a host of developing or transitional nations.³³

The unique model of Silicon Valley continues to impress policymakers and politicians worldwide. Those non-USA centres that have founded successful exemplars in Europe and increasingly Asia are frequently characterized by their very strong links with American VC finance and their familiarity with the meritocratic and technology-accepting service and product markets of the North America. However, such relationships require reciprocal benefits, the production of which are likely to be beyond the majority of regions or countries. The innovative density of a Cambridge/London/Oxford triangle is as likely to be as difficult to emulate as Silicon Valley itself. For those considering the creation of viable and sustainable VC industries, it is likely that their regions will have to be characterized by accessible communities of demanding and independent consumers serviced by innovations systems that are globally competent. These are very strong conditions for VC industry entry and survival.

M4: If you believe that all men are born equal – don't become a venture capitalist. Socialists make lousy venture capitalists.

The state as 'wimp'

³² See contemporary evidence of a Celtic recovery in *The Economist* 21st November, 2015, p82.

³³ These two criteria will make venture capital investment in mainland China a particularly challenging activity for investors. See Clissold (2004) salutary experience as an early-entrant VC investor in China.

One of the biggest challenges for policy makers in seeking to implement a US model of VC activity is to attempt to introduce a new *modus operandi* without also understanding and replicating the social and cultural underpinnings of the imported (USA) model. Classic VC activity relies on market forces as the pre-eminent allocation and signaling mechanisms. As with Darwin's evolutionary theory of natural selection, entrepreneurial markets allow relatively few winners but produce many losers. To operate in this market takes a form of physical and mental toughness that appears unusually pre-eminent in the Anglo-Saxon competitive and individualistic culture.³⁴ Max Weber in 1904 termed this set of enabling characteristics, the 'Protestant Ethic'. It contrasts strongly with a more paternal European social models in which the state is both protector and allocator of publicly owned resources.³⁵ The US model is meritocratic and elitist. Its citizens have a passion for winning and broadcasting the benefits of success. This muscular American economic individualism can be compared with, in Hofstede's (2001) terms, the lower 'masculinity' of, for example, Nordic economies with their preferred emphasis on a societal and collectivist ethic.

Given the aggressively competitive and meritocratic nature of VC activity it is perhaps not surprising that the USA and the UK, as America's closest European exemplar, remain the two pre-eminent examples of a national VC industry in its purest form.³⁶ This is reflected in the national allocation of institutional investors' alternative asset financings. Yet, governments have continuously viewed VC as a means by which non-commercial social and developmental goals could also be achieved. Repeatedly, Western governments have attempted to introduce fairness, equity and balance into the entrepreneurship policy equation including the choice of financial instruments. Government incentives that do not discriminate in favor of its more entrepreneurial citizens - who often are better educated, richer and/or more foreign - may unwittingly trade economic advantage for apparent social equity. By its very nature, VC funds will accept a small minority of all enterprise opportunities appraised (Gompers and Lerner, 2004). Frequently, this initial acceptance rate is reported as below one percent for popular venture capitalist firms.

The continuing predilection of governments to seek to use venture capital as a complement to *social* entrepreneurship is most evidently seen in its publicly supported VC programmes to enhance economic activity in peripheral regions, and in initiatives targeted at disadvantaged groups, e.g. inner-city deprivation or gender discrimination. We do not challenge the right of government to construct such programmes nor do we question their laudable motives. Rather, we wish to posit whether or not the use of venture capital for social prescription fails to understand the drivers for success in early-stage equity investment or the personal motivations driving the actions of the most successful GP teams.

Venture capital illustrates the structural conflict between government's desired goals and those of its agents which are contracted to manage publicly supported VC funds. The managing of hybrid VC activity is essentially the orchestrating of compromise to achieve

³⁴ This is *not* to suggest that entrepreneurial success is exclusive to the Anglo-Saxon culture.

³⁵ This question of different styles of capitalism with different roles for the state has assumed enormous importance in the chaotic capital markets of the GFC in 2008. (See *The Economist* 4th October (2008 pp45-46.

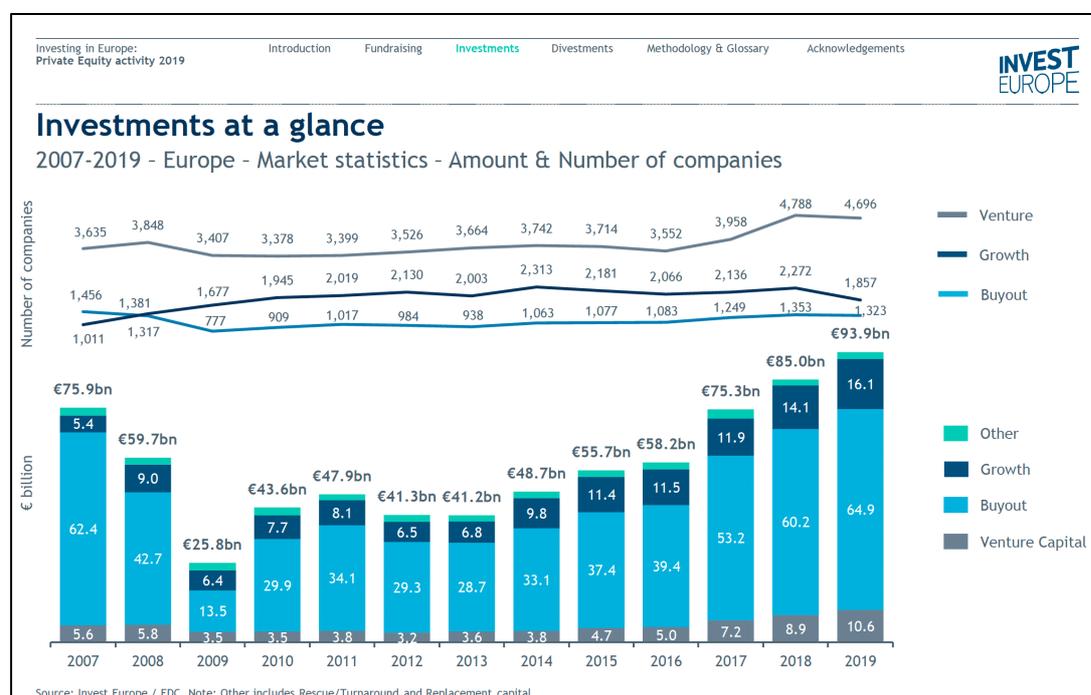
³⁶ Many readers of this paper will immediately cite the rise of VC in the Peoples' Republic of China. However, it is argued that this latter VC industry is hugely influenced by the government and communist party interests. Bruton and Ahlstrom (2003) argue that the that China's institutional environment creates a number of significant differences from the Western practice.

optimal effect. These conflicting goals may help explain the performance differences frequently found between government and private VC funds (Alperovych et al, 2018; Brander et al, 2010).

M5: Ventures capitalists believe that seed capital is very important – so long as they don’t have to provide it.

The state as ‘pocket money’

In an early British Venture Capital Association sponsored survey in 1990, the top twenty venture capitalists in the UK were asked their opinion as to the greatest shortcoming of the industry in its first decade of significant operation (Murray, 1992).³⁷ The respondents, who included representatives from both ‘classic’ VC and Private Equity (Management Buy Out) fund managers, were unanimous in their opinions. They cited the inability of the UK to find a means of financing start-up and early-stage, high potential enterprises as successfully as their VC peers in the USA. The dearth of seed funding was particularly noted. This situation remains similar more than a quarter of a century later. Outside government supported programmes, there are very few specialist, early-stage risk, capital providers. Using Europe-wide industry statistics, venture capital investment has seen uninterrupted growth for eight years. Yet, seed capital represented 0.9% of All Private Equity investment activity (i.e. VC+PE) of EURO 94 billion; and 8% of total European VC investment of 10.6 billion in 2019. Total VC (seed, start-up and later stage) in turn represented 11.3% of total investment activity (Invest Europe, 2020).



³⁷ The author arranged for the 1990 survey to be announced in *the Financial Times*. The article stated that the researcher would meet the UK industry’s top VC investors as identified by the British Venture Capital Association. Accordingly, some forty plus chairman and CEOs of venture capital companies contacted the author uninvited in order to request that he meet them urgently!

Seed and other very early-stage risk capital has remained a chronically unsuccessful investment focus for a majority of investors. Possible exceptions include established private equity investors in the innovation hubs of East and West Coast America and, more recently, those fortunate enough to invest early in widely publicised Unicorn IPOs. Regardless of investment outcomes, seed investment targeted primarily at high potential but very risky opportunities has been seen by governments as an extremely important complement to contemporary innovation policies. For technology-based new enterprises with products/services yet to be commercialized, seed and other early-stage venture capital investment combine multiple uncertainties from technology, market and managerial sources. In addition, seed investing is particularly unattractive for VC fund managers in that it demands very considerable managerial input from the GP of the VC firm into the fledgling enterprises while at the same time often employing very little capital from the funds under management. (The rapid allocation of very large sums of equity finance to potential unicorn firms, is one of the significant attractions of this novel model of development.). In contrast to classic venture capital, private equity deals, and predominantly Management Buy-Outs (MBOs), have allowed increasing sums of equity, leveraged by debt, to be applied to restructuring established companies with known histories, financials, and markets. Invest Europe figures over the same period (2012-2019) show MBO accounting for 71% of total investments. Five years later, MBOs still represented 69% of all investment activity in Europe although total investment had more than doubled from Euros 41.3 to 94 billion (Invest Europe, 2020)

Accordingly, the traditional European VC model with its initial concentration of small, *specialist* early-stage funds (Murray, 1998) has been frequently characterized by very low returns and several failures. This has resulted in an exit of commercial focused VC firms from this market which practicably no longer exists outside government intervention. Seed, start-up and early-stage financing is now a minor and residual area of the total private equity market where public funded VC firms predominate (Kramer-Eis, 2015; Small Business Service, 2006 a and b; Pierrakis and Mason, 2008).

Classic VC funds in Europe have addressed this challenging asymmetry between the (high) management costs incurred and the (low) returns generated from the modest funds managed by either abandoning seed activity or by increasing funds under management and refocusing activities on later stage growth and development capital investments. A majority of surviving VC general partnerships in the UK, which started before year 2000, have reallocated their efforts entirely from VC to PE deals.

The US model of seed investing implicitly recognizes that seed capital is, in isolation, not a viable commercial product, at least not when delivered by a VC fund. Rather, it is the first, ‘intelligence seeking’ stage of a holistic investment process that will normally provide multiple rounds of follow-on finance to successful firms up to an exit event via either an IPO or a trade sale. Accordingly, US VC firms undertaking seed capital are multi-stage investors and are frequently managing aggregate funds in excess of one billion US dollars. Seed investment is essentially a ‘financial option’ on a potentially interesting company and/or new technology/innovation in a VC strategy termed by some as ‘spray and pray’ (Ewens et al, 2015). By such means, the strategically important but extraordinarily high risk/return ratio of seed capital deals are attenuated in being amortized across the total range of activities of the

fund (Dimov and Murray, 2007). This model of VC funds requires sufficient finance in the fund in order to finance multiple rounds of growth capital up until the portfolio firm's successful exit can be realised. It replaces specialist early-stage investors which restrict their activities to the earlier stages of the firm's evolution. In practice, the majority of specialist activity in seed and other early investment stages have been assumed by Business Angels investors either individually or in networks (BANs)³⁸. In this contemporary configuration of the 'financing escalator', particularly in the USA and the UK with their advanced VC/PE infrastructures, VC is only one choice of 'follow-on' financing after the business angels have assumed the responsibility for initial investment.³⁹

Current industry trends corroborate the VCs' long-run ambivalence to providing early-stage finance provision without public support. Accordingly, post both the 2000 'technology bubble' and the 2008 'global financial crisis', it has been the state which has been obliged to take on the primary burden for financing early-stage investments both directly, via grants, RandD and investor tax incentives, and in hybrid fund arrangements with both VC and BA investors.

M6: The archetype venture capitalist has razor sharp teeth, can smell blood at three kilometers, has a paranoid/psychotic need to achieve lucrative deals, reveres capital gain above all things ... and likes flower arranging.

The state as 'innocent abroad'

Writing over two millennia ago, Sun Tzu argued in his classic treatise, *The Art of War*, "know the enemy and know yourself" (1998: 26). There is perhaps little to separate business partners and enemies in this strategic sense. In order for the state to work effectively with venture capitalists, policy makers need to understand the *modus operandi* of the private sector organizations and commercial managements with which they wish to collaborate. Without a detailed understanding of the instrumentality and aggressively meritocratic culture of the risk capital sector, there is a high probability that government will not be able to engineer sufficiently attractive incentives to ensure investment professionals' collaboration. Perhaps even more likely, less experienced public departments will devise incentives that are inappropriately generous, thereby diminishing the potential public welfare by the degree of over payment to their private agents.

Venture capitalists have very demanding interests as investors. Ideally, they wish for a very high return with negligible risk. They do not court risk but rather manage it professionally – for a price broadly measured in their significant and preferential ownership of the portfolio company's stock. Governments' interest in encouraging VC firms to invest in early-stage activities requires the incentivization of GPs which would otherwise often seek to moderate risk by abandoning start-up activity and moving toward later-stage and more certain PE

³⁸ Business Angels, like specialist early-stage VC funds, are vulnerable to seeing their share ownership in a promising venture severely diluted as they seek later tranches of capital beyond their own resources in order to grow the new enterprise.

³⁹ The fact that several Western governments incentivise Business Angels, many of whom cannot be seen as professional investors, to undertake investments at the most risky and uncertain stage of the firm cycle (and which has become unattractive to professional VC managers) does raise some pressing ethical questions.

investments. Thus, it becomes important for policy makers to understand the motivations of the private collaborators in order to design incentives that achieve mutually desired outcomes.

In reality, the government will rarely attract the most successful venture capitalists to engage in hybrid activities, at least in countries with already-established private equity and venture capital industries. The investment record of such general partnerships ensures that they are well known to institutional investors. The best GPs have a waiting list of institutional investors wishing to be included in their next fund raising. Similarly, they are the first choice of the most talented entrepreneurs who wish for a ‘certification effect’ from the chosen investor. Thus, the partnerships available to the state are either VC firms with less enviable track records or, historically, commercial but untested investment teams anxious to enter the VC/PE market and seeing a government leveraged fund as one means of entry. For such managers, the hybrid fund becomes a ‘loose brick’ in the high wall surrounding the VC/PE community (Pralhad and Hamel, 1990). If such an investment team can be accepted and can subsequently demonstrate a clear competence as professional equity investors, they have the opportunity to raise substantial follow-on funds from private institutional investors on the back of their initial fund’s performance. Thus, publicly supported hybrid funds have become one of the few conduits by which new entrants can enter a rapidly maturing and consolidating VC and PE market.

As the VC industry has grown and matured, the state needs to understand clearly the terms and conditions which may reasonably be demanded of a VC co-investment partner. Just as institutional LPs hire ‘gatekeepers’ to inform them as to the most attractive VC managers and to understand contractual norms, likewise government needs to understand in detail the nature of its proposed relationship with a VC agent if both parties are to create an effective investment vehicle. Over time, the state has increasingly recognized its own negotiating power as usually the largest single investor in a hybrid fund. More recent calls for managing hybrid VC funds have been put out to public tender including the UK’s Enterprise Capital Fund which clearly states in its Guidance for Prospective Managers (British Business Bank, 2014) the expectations and demands placed on a prospective GP. Somewhat ironically, the GP applicants are now subject to the same type of analytical scrutiny that they commonly impose on potential investee firms. The UK government through its involvement in a series of new VC fund programs since 1997 has been able to accumulate its own professional competence in both designing and staffing public/private investment funds.⁴⁰ With greater enterprise policy networking, venture focused skills sets are now being disseminated between policy makers from several countries. As the playing field has leveled, venture capitalists now need to understand ‘the nature of the (public) beast’ as much as the policy makers need to understand the interests and motivations of their putative, private sector agents.

M7: Sequoia, Benchmark, and Index require their investors to wait ten years (and more) for full fund returns – government would prefer not to wait.

The state as ‘importunate’

⁴⁰ In the UK, this has culminated in the creation of the government-owned British Business Bank in 2012.

There is a conflict between the duration of political and investment cycles. Both parties face significant time costs. For VCs, the effect is to orientate investments to sectors with quick returns, e.g. ICT, social media, and near-market technology commercialisation. For government, quick policy gains reap political rewards.

In order to engage successfully with the VC industry and meet its own objectives, the state has had to learn the routines by which this specialist form of entrepreneurial finance is conducted. These industry practices often evolve for highly pragmatic reasons. Equity funding in a classic VC scenario will follow the J Curve (Meyer and Mathonet, 2005) with the cumulative value of the fund being less than the money committed for the first years of the fund's operations. Bürgel (2000) in one of the first forensic studies of VC performance analyzed detailed investment cash flows on a sample of some eighty UK based funds. He demonstrated that funds typically did not start to show a positive net gain in value until around the fifth year of operation. It is because of the long gestation of many young enterprises before demonstrating any significant commercial value (Miller and Friesen, 1984; Agarwal and Audretsch, 2001) that the GPs have to require of limited partners that their investment is locked in for an industry standard (in the US and Europe) of a minimum ten year period.

Considerable time is needed to demonstrate unequivocally the investment performance of a VC fund. The more complex the sector invested in, the longer this time period is likely to be.⁴¹ This lag is difficult for the state particularly as the provision of 'cheap' public financing to a private investor raises considerable governance issues. The state rightly wishes to see the positive consequences of its risk bearing actions. Yet, the demands made on such funds for evidence of success or, more vaguely, 'public value-added' are often importunate if made unrealistically early into the investment cycle. Auditing the 'net present value' of a highly immature portfolio firm is illusory and the industry recommended practice of carrying investments 'at cost' until an independent evaluation event is appropriate given the high uncertainty. It is a source of added pressure on less informed investors that failed investments are much more likely to be realized before investment successes in a fund. In the argot of the VC industry: 'lemons ripen before plums'.

The need to consider time effects on the investment cycle is a key issue in ensuring informed governance and audit practices. Timing can also have a huge influence on a VC programme's evaluation (Nightingale et al., 2009). Yet, it remains the exception for government programmes to have robust quantitative evaluation methodologies defined *before* a new programme is launched. Critically, the agreement among all parties for the full provision of investment performance data to government assessors and their active involvement in a staged (interim and final) evaluation process *prior to the release of government funding* is rarely secured. Similarly, few governments are prepared to make public the independent evaluations of such programmes.⁴² Here, the OECD, the European Commission and The World Bank have a valuable role in disseminating good practice and publishing comparative performance data. Their efforts, and those of academic researchers, have been materially

⁴¹ VC firms concentrate predominantly on 'near to market' technologies including software, internet service, ecommerce. The greater time needed to realize returns in medicine and green technology can be much longer and more problematic for an investor.

⁴² Here, the Nordic governments should be congratulated for the transparency of their GVC evaluations.

assisted by the growing availability and quality of international data sets focused specifically on venture capital and private equity activity and performance.

M8: Specialist users of advanced technological products and services rarely insist that the technology they purchase was conceived, designed and manufactured in a nomadic community of two hundred souls on the north side of a fjord some five hundred miles from the nearest Starbucks.

The state as 'romantic or holy fool'

VC is used by the state as a tool to support enterprise and innovation. It is also frequently given a social distributive role by government. Western democratic states generally recognize a constitutional responsibility to protect and nurture the welfare of all of the diverse communities and groups of citizens within their national borders. This is in part articulated in a redistributive function that transfers resources from the nation's centers of highest economic activity to regions or communities more remote or otherwise disadvantaged. A significant proportion of total public activity is allocated to these tasks and involves education, training, employment and capital investment activities across a range of public administration offices.

At the same time as having a range of social policy actions, the state is also interested in stimulating future economic activity by investing in new innovative and productive capacity both at the research and commercial stages. Resources to create new high-tech industries are attractive to all regions in an economy and none more so than for economically depressed regions that have often declined from an illustrious industrial past. Yet, the reality of scale and scope advantages, particularly within networked economies demonstrating exponential benefits of proximity and growth, is that new investment in technology and other 'new knowledge' assets is likely to be much more fruitful if added incrementally alongside existing assets in so-called 'high-tech clusters'. Agglomeration economics privileges, via multiple spillovers, established innovation centres (Audretsch and Feldman, 1996; Porter, 1998).

Thus, policy makers face a conflict between their heads and their hearts. The more efficient allocative decision would be to invest in existing areas of research excellence where marginal benefits outweigh marginal costs. At best, most countries outside the largest world economies will only have a very small number, if any, of centres of genuinely world-class technology. But the political process assumes responsibility for socially redistributive actions regardless of efficiency arguments. In an ideal world, the stage would be set for an informed debate over priorities, means and ends. The reality is often quite different.

Much of regional policy is more accurately understood as a process of social transfer despite being presented as an economic investment in enterprise/innovative capacity. Publicly supported VC funds are particularly vulnerable to being 'hijacked' by social and regional interests. Venture capital is politically attractive and smacks of modernity with highly educated and well paid work forces, clean industries and warm images of California. As a result, less economically developed regions of many advanced Western economies (and some developing countries) are characterized by the presence of small, early-stage VC funds. They commonly do not survive beyond the exhaustion of the public subsidy. (Such hybrid funds

for obvious reasons are rarely in receipt of genuine ‘matched financing’ from private investors.) They are the outward manifestation of policies that have uncritically seen the link between venture capital and innovation as causal and sufficient. The overlaying of a European economic development and investment infrastructure through the European Union can add another layer of opportunity and sometimes policy confusion for European states. Indeed, the rules of much of European regional development funds activity can proscribe placing risk finance into areas which are not officially classified as economically disadvantaged. The term ‘disadvantaged’ can often be interpreted as regions that have neither the supply nor the quality of universities, research laboratories, large and small technology businesses, knowledge workers or managerial manpower. Yet each of these human capital resources is required for the construction an innovation ecosystem able to be augmented by venture capital activity. Thus, the very regions that can use this funding least effectively are often the places most likely to be in receipt of this form of social financing. Hans Christian Andersen was prescient. It is not just emperors who do not have new clothes. Regions can sometimes be equally naked.

In explaining the misallocation of venture finance activities into social programs, we are *not* suggesting that poor or less advantaged regions are less deserving and/or should be excluded. In contemporary society such discrimination should be unacceptable. What we are suggesting is that to dragoon a specific set of (innovation/enterprise) policy instruments in order to engage in inappropriate (social) policy actions is likely to be sub-optimal for both policy goals, irrespective of the criteria employed. Frequently, the objective of locally employed public servants is to maximize inward transfers of public monies regardless of the opportunity cost of this allocation. Thus, in the case of a VC initiative, antecedent questions determining the quality and volume of technological opportunities sufficient to sustain a VC fund structure with a reasonable probability of attractive financial returns are rarely asked. Rather, the investment case and subsequent evaluation is couched in less precise terms of equality, social spill-overs and infrastructure improvements. In these rather common circumstances, public attempts to subsidize the emergence of a local VC industry in unconducive environments have rarely resulted in commercially viable, long-run investment entities.

M9: The good thing about evaluating seed and incubator funds on the cost of capital (IRR) to the government is that it is relatively unambiguous, clear and simple. The bad thing is that such a method of evaluation is completely inappropriate.

The state as ‘irrational rationalist’

Private Equity has become in the last twenty-five years a new ‘alternative asset class’ primarily available for institutional investors that wish to introduce a further level of diversity and variance into their core portfolios of equities, bonds and other investments (see the industry promotional literature of the NVCA, BVCA, EVCA/Initiative Europe). Early investors into upper-quartile VC and private equity funds have seen highly attractive, long term returns (Rosa and Raade, 2006; BVCA, 2019; European Investment Fund 2017; and

Initiative Europe, 2019⁴³). A core requirement of an asset class is sufficiently long-term and credible quantitative metrics in order that professional investors and actuaries may be able to construct mixed instrument portfolios of desired risk/return trade-offs. The very nature of a typically ten-year, fixed term VC fund is such that performance metrics are not instantly available compared to that of a traded public stock. However, over the investment cycle, investors can gain an increasingly accurate representation of terminal fund performance from year five and beyond (Bürgel, op cit.). Internal Rate of Return and capital gain multiples are the two most commonly accessible measurements of VC fund performance (Fenn et al., 1995; Gompers and Lerner, 1999). Such measures which reflect the opportunity costs of investment allocations are entirely appropriate for commercial investors in their assessment of the effectiveness of the general partners of their funds. Over time, standardized investment guidelines imposed by VC and PE national associations on their members have reduced the idiosyncrasies and occasionally misinformation of GPs' performance reporting to institutional investors (LPs).⁴⁴

It is entirely reasonable that early-stage funds conform to industry practice in their reporting procedures. However, when such funds are public/private hybrids, the information provided only allows for a strictly economic or commercial evaluation. While this is of pre-eminent importance to the private partners in such a relationship, it is only of partial value to the public investor. It needs to be remembered that most public LPs agree to accept subordinated returns in order to ensure the necessary leverage incentives to their private co-investors in the fund. For the public investor, often requiring a base return determined by the cost of the state's capital, a commercially attractive return is important primarily in ensuring the continued participation of the private partners as investors and mentors in potentially valuable young firms. The objective of their public support of the hybrid fund is in the long run, public welfare returns contingent on the new investment activity. Thus, the state is primarily interested in creating an infrastructure and competencies conducive to the accelerated production of new knowledge assets and, critically, their effective commercial exploitation.

The celebrated Israeli Yozma Program started in 1993 as a public initiative from the Office of the Chief Scientist before being privatized in 1997. It signaled these wider interests by offering, at its formation, to sell the public involvement in the ten new VC funds created by the program back to the participating private investors within the first five years.⁴⁵ In essence, the Israeli state acted as a catalyst in promoting the emergence of a VC industry. It then withdrew from a direct commercial involvement when the investment results clearly indicated the commercial viability of investment activities fueled by Israeli intellectual property and publicly supported, advanced research capabilities (Avnimelech et al., 2004). In

⁴³ The British and European VC industries, via their industry bodies produce a range of publicly available research reports detailing investment activity and performance on an annual basis. See for example: <https://www.bvca.co.uk/Research>. The USA similarly produces activity and performance details via the NVCA. In each case, the national associations use a variety of specialist data collection and analyses companies to ensure a measure of 'independence' in the analyses presented.

⁴⁴ It is interesting to note how weak institutional investors' influence on GP practices, fees and rewards systems has been in the VC and PE industries until recent times. The industry has been noteworthy in its lack of transparency on both its costs and performance until the huge scale of contemporary investment funds involved has made such requirements an imperative.

⁴⁵ While the Israeli government required a predetermined exit premium, private partners in eight of the ten supported funds bought out the Israeli public interest to continue as exclusively private VC funds.

the USA, the Small Business Administration's SBIC program is arguably the best known, and most emulated, of such state-assisted schemes. However, the running of two quite separate SBIC schemes has added some confusion. The *debenture* SBIC program, which was created in 1958 and uses the state to facilitate loans to licensed SBICs in order to leverage private capital, has been judged a success (US Small Business Administration, 2003). A second program, the *participating securities* SBICs, started as an experiment in 1994 and was designed to encourage early-stage investments by the SBA investing additional equity directly in the SBICs via a public investment. This latter scheme was terminated in 2004 after the sharp market turndown in technology stocks in the year 2000 left the SBA with a total investment exposure of over \$11 billion.

A strictly commercial appraisal would be positive to both the Israeli Yozma (Avnimelech, 2009) program and the UK's 3i (Investors In Industry) initiative which was also successfully privatized in 1994 just under fifty years after its creation. The SBA's debenture SBICs would be seen as commercially positive, despite many failed funds, and the participating securities variant would be judged a commercial failure. Yet, a strictly commercial analysis of investment returns would greatly underestimate the impact of these three publicly sponsored programmes on three of the largest and most successful VC industries in the world. The US and UK programs were materially responsible for training the first national cohort of professional venture capitalists/fund managers in the post war period up until the early/mid 1980s. Similarly, the Yozma program purposely replicated an advanced risk capital investment infrastructure in Israel by the late the 1990s (Avnimelech, 2009). Their policy impact has been very considerably larger than an exclusively economic analysis of fund returns would suggest.

However, all too often, the state's efforts are measured against the benchmark of private investor interests. Wider cost benefit analyses incorporating mechanisms that price the externalities and spillovers of the fund's activities are an exception. For example, the training of investment managers; the orientation of university research departments to commercial spin-out activities; the construction of a professional SME support network (aka. 'ecosystem') of accountants, lawyers, patent attorneys etc.; and the dissemination of innovative practices throughout the wider business community are each noteworthy as evaluation criteria. They are frequently absent from programme evaluations conducted by public agencies. This is not to argue that the performance of the fund is of secondary relevance to the state. A failed fund is likely to produce little of the desired externalities and spillovers noted. However, the investment activity's financial performance is a *necessary but insufficient* benchmark. Public program evaluations have to address both the advantages and limitations of using market measures in a policy context if they are not to draw erroneous policy conclusions.

M10: It is evident that the Institutions of State can change and adapt to meet new ideas and opportunities. After all, the Dark Ages in Europe only lasted five hundred years.

The state as 'architect not mechanic'

One can 'kick start' a motorbike ... but not a VC industry. It is all too infrequently noted that the evolution of a credible VC industry is measured in decades rather than in single years (see

issues of ‘path dependency’ in M2). It is also tempting for policy makers to concentrate on the ‘tactics’ of setting up a new fund without a wider understanding of the necessary ‘strategies’ that need to be put into place to create a conducive *on-going* environment for risk capital activity. As noted, a frequent question posed by policy makers is: how can one emulate the successes of a US or UK VC industry? In seeking to answer this question, the new institutional economics of North (1990 and 2005) and others is of considerable utility. These scholars have recognized, in seeking to define supportive entrepreneurial and investment environments, the critical importance of ‘context’ and ‘the rule of law’ (Alperovych et al, 2018; La Porta et al., 1997 and 2000). A growing awareness of the importance of context is also similarly being seen in the field of entrepreneurship research and policy formation (Audretsch, Grilo et al. 2007) where there is an increased recognition of the need to establish supportive ecosystems complementary to individual entrepreneurial activity. To date, entrepreneurship as a subject area has largely been dominated by individual-level and dispositional approaches (Shane and Venkataraman 2000, Shane 2003, Sorensen 2007).⁴⁶ Accordingly, the three conditions that Gilson (2003) argues must exist simultaneously if a VC industry is to emerge - i.e. entrepreneurs; funds for investment; and an investment vehicle that creates the right incentives - are quite correct. However, they too are ‘necessary but not sufficient’ conditions. Their creation and employment is only possible if institutional precursors allow a benign environment in which such resources can be mobilized.

For the innovator, access to legal protection and redress can be critical. An abiding concern as to the piracy of their intellectual property by dishonest firms both at home and abroad is one of the single most defining characteristics of the young innovative firm. The need to protect their intellectual assets and the associated economic rents strongly influences how, when and where they announce innovations, set up their businesses, protect their IP, sell their products and services and with whom they will trade and collaborate (Coeurderoy and Murray, 2008). The security provided by the institutional and legal environments to vulnerable young firms influences the location decision (OECD, 2018b; World Bank, 2020). Without the entrepreneur’s confidence in the protection of the firm’s valuable and innovative assets via recourse to national institutions that defend individual property rights regardless of the status of the owner (foreigner/citizen, large firm/start-up firm etc.), the economy’s credibility is severely undermined.

Pettigrew (2008) rightly observed that government agencies must focus on both policy and process.⁴⁷ The processes by which a viable VC industry emerges still remains poorly understood. Market-oriented programs to stimulate VC tend to focus both on enabling contexts and incentives that will attract private sector involvement and co-investment.⁴⁸ Yet, the relatively small number of sustainable, national VC industries in existence to date - despite governments’ continued interest in entrepreneurial finance - indicates that policy and process are not yet fully integrated.

⁴⁶ We are grateful to Erko Autio for guidance in discussions on the role of context to Entrepreneurial research.

⁴⁷ Seminar address at the Academy of Management’s Annual Conference, Anaheim, California August 2008

⁴⁸ The UK government and the Small Business Service post 1997 would be an exemplar of market-oriented policies with a strong co-investment focus. The Regional VC Funds, The Enterprise Capital Funds, the High-Tech Fund and the more socially focused Bridges Fund were each launched with public money for a primarily policy purpose yet managed by strongly incentivized private sector agents.

Concluding Comments

In the highly dynamic world of VC, several contemporary changes that may have longer term relevance are evident. However, this paper has not sought to address the influence of, for example, unicorn companies on the behaviour of VC investors despite their material impact. Nor has this paper looked at the role of equity crowdfunding which may change the economics of VC investment at the very earliest stages of the investment cycle. Finally, the accelerating interest of China in national and global VC activity has been substantial for both political and economic reasons. But again, although this particular variant of government VC merits considerable attention by academics and policy makers alike, a greater understanding of the PRC's actions must be left to another paper.

What this revision of the original 2010 meditations paper has sought to do it to confirm the longer-term characteristics – and vulnerabilities and opportunities – of the state engaging directly with the capital markets in order to establish and maintain *de novo* early-stage venture capital activity.

The state's pursuance of additional if not different goals from the traditional private VC and investor partners means that there is room for both collaboration and conflict. The emergence of the state as the single biggest investor in the early-stage VC market in several countries over the period since the collapse in the international market for new technology stocks in the year 2000, and more recently following the global financial crisis of 2007-9, indicates the centrality of the government's role in the financing of both enterprise and innovation via the platform of start-ups and young companies. This focus is a substantial and continuing policy ambition for governments in both the developed and (increasingly) the developing world.

This *hands-on* behavior of the state and its agents means that policy makers have to learn 'how to do venture capital' in order to craft effective policy instruments that encourage public and private co-investment activity. Ignorance within financial communities holding strong vested interests encourages moral hazard. It is to inform this governmental learning process that the Ten Meditations are promulgated. Essentially, they seek to reinforce a number of key and generic messages related to the state's actions and ambitions:

- The creation of a sustainable VC industry is measured in decades
- Policy makers have to understand profoundly (the nature and timing of) changing industry dynamics
- The incentives for the private sector to engage have to be material, and aligned with public goals
- Using venture capital to achieve social goals may often be 'a bridge too far'
- Venture capital can only flourish in benign and supportive (legal and fiscal) environments for enterprise and entrepreneurs
- Few countries have the scale and scope of scientific and technological innovation to supply exclusively the needs of a viable and sustainable, domestic VC industry
- For a majority of nations, a successful VC industry will require a transnational perspective and behaviour

With relatively few exceptions, historic Government intervention in early-stage VC activity has rarely been successful. Where it has succeeded, programme designers have demonstrated a clear understanding of the diverse interests, actions and possible complementarities of both public and private participants. In short, government has had to emulate and adapt successful venture capitalists' behaviour and professionalism in their crafting of policy instruments. They have also had to build and strengthen the conducive institutional environments or ecosystems which are required for high growth firms to flourish. There are indications that public policy makers are learning these lessons.

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