2017

The Coalition Model, a Private-Public Strategic Innovation Policy Model for Encouraging Entrepreneurship and Economic Growth in the Era of New Economic Challenges

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Washington University
Global Studies Law Review

VOLUME 17 NUMBER 2 2018

THE COALITION MODEL, A PRIVATE-PUBLIC STRATEGIC INNOVATION POLICY MODEL FOR ENCOURAGING ENTREPRENEURSHIP AND ECONOMIC GROWTH IN THE ERA OF NEW ECONOMIC CHALLENGES

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ABSTRACT

Innovation driven entrepreneurial firms have an important role in contributing to job creation, generating technological innovation, and stimulating the United States economy. However, there is recently a notable decline in emerging growth entrepreneurial activity in the United States. The Coalition Model proposes ways to maximize opportunities for industry, academia, and government to collaborate and build sustainable relationships, to help convert the current challenges in the U.S. market into opportunities.

Designing a new innovation strategy will lead the United States in generating innovation, technology, and economic growth, as well as help the federal government harness new approaches for institutional change. Adopting the Coalition Model (the Model) will not only bridge some of the financial inefficiencies and information gaps associated with investment in innovation driven enterprises, but, perhaps more importantly, will serve as a catalyst for encouraging and stimulating the development of new firms and technologies.

The Model is built on the notion of taking a proactive approach to innovation. The model encourages government agencies to fund research and innovation, by identifying specific technological challenges, determining the course of the research that can benefit their needs, collaborating with audiences in the public sector, research institutions, and

universities, and private corporations to act on these needs, and advancing commercialization efforts. There are several potential benefits to adopting such a proactive policy. First, it might encourage future engineers, scientists, and innovators to take a risk and become entrepreneurs. Second, it provides direct funding to research and development needs that might not otherwise be used. Third, it can signal that there are opportunities for private investors to invest in such ventures, and perhaps even serve as some sort of certification. Fourth, it will create a direct pathway for small firms to access government procurement. Fifth, it will encourage knowledge spillovers between professionals in government, industry, and academia. Finally, it will increase awareness and incentives for private industry and academia to collaborate with the government.

The Model advocates for the Administration to adopt a targeted policy initiative (strategic development tool): the Matchmaker. The Matchmaker is a private-public equity investment fund that will invest in early-stage firms, while also addressing the commercial strategic development needs articulated by the public funding partners—a governmental agency. It will establish a channel for private firms to access government procurement and development. The initiative will function as an autonomous body, and be designed to prevent political capture. The adoption of the strategic Matchmaker fund will be to complement, and not to replace, the private market efforts in financing emerging growth firms.

INTRODUCTION

Innovation driven entrepreneurial firms[1] have an important role in contributing to job creation, generating technological innovation, and stimulating the United States economy. However, there was recently a notable decline in emerging growth entrepreneurial activity in the United States.[2] According to the 2015 Global Entrepreneurship Monitor (GEM) survey, the total entrepreneurial activity (TEA) in the United States declined from fourteen percent (14%) to twelve percent (12%).[3] The survey advances the view that fewer Americans are taking steps to start new businesses.[4] There are several reasons for this phenomenon.

Finding ways to maximize opportunities for industry, academia, and government to collaborate and build sustainable relationships will help convert the current challenges in the U.S. market into opportunities. Combining the resources of these sectors will lead to innovation-driven firm formation. This Article will advance the view that markets for allocating risk capital to early-stage ventures are inefficient and that the financing of these firms present countless underlying challenges to their prospective investors and innovators. There is a financing and information gap, which is termed the "Valley of Death."[5] The Valley of Death describes the

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* Jacobson Fellow in Law and Business, New York University School of Law. I would like to thank Robert C. Hockett, Saule T. Omarova, Lynn A. Stout, John J. Barcelo', Edward Beck, Avi Beck, and the late Theodore Eisenberg who will be sorely missed, for their insights. It is dedicated to my children Elle and Michael.

[1] William Aulet & Fiona Murray, *A Tale of Two Entrepreneurs: Understanding Differences in the Types of Entrepreneurship in the Economy* 1, 2-5 (Ewing Marion Kauffman Foundation, 2013), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2259740. According to Aulet and Murray there is a difference between innovation-driven enterprises and small medium size enterprises. ("Not all startup companies are created equal. Although both innovation-driven enterprises (IDEs) and traditional small- and medium-sized enterprises (SMEs) can provide valuable products and services and create jobs, IDEs – startups focused on addressing global markets based on technological, process or business model innovation – can potentially create hundreds or even thousands of high-skill jobs if they succeed.") William Aulet & Fiona Murray, Abstract, *A Tale of Two Entrepreneurs: Understanding Differences in the Types of Entrepreneurship in the Economy* (May 1, 2013), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2259740).

[2] *See* DONNA KELLEY, ET AL., GLOBAL ENTREPRENEURSHIP MONITOR, 2015/16 GLOBAL REPORT 112 (2015), http://www.gemconsortium.org/report/49480.

[3] *Id.*

[4] *Id.* at 20 (noting that "economies showing the lowest TEA rates . . . also show low established business ownership").

[5] *See* GEORGE S. FORD ET AL., PHX. CTR. FOR ADVANCED LEGAL & ECON. PUB. POL'Y STUD., A VALLEY OF DEATH IN THE INNOVATION SEQUENCE: AN ECONOMIC INVESTIGATION (Sept. 2007), http://www.osec.doc.gov/Report-Valley%20of%20Death%20Funding%20Gap.pdf; *see* LEWIS BRANSCOMB & PHILLIP AUERSWALD, BETWEEN INVENTION AND INNOVATION: AN ANALYSIS OF FUNDING FOR EARLY- STAGE TECHNOLOGY DEVELOPMENT (Nov. 2002), https://www.nist.gov/sites/default/files/documents/2017/05/09/gcr02-841.pdf; *see also* PHILLIP

financial barriers of firms at the early stage of technology development. Such difficulties are the product of the uncertainty, high risk and information asymmetry problems, which preclude many investors from backing such firms. Additionally, policymakers, practitioners and academics alike hold strong views that investors' emphasis on stock market liquidity, which is evidenced by the growing high frequency and algorithmic trading activity and short-term holding periods, encourages a focus on short-term results.[6] The short-term focus of investors and corporate boards is currently one of the key issues in the corporate governance debate.[7]

The newly elected United States Administration must devise an innovation strategy that will lead the world in generating innovation, technology, and economic growth, as well as help the federal government harness new approaches for institutional change. The notion that the United States is on the verge of losing its place as a world leader in generating

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AUERSWALD ET AL., UNDERSTANDING PRIVATE-SECTOR DECISION MAKING FOR EARLY-STAGE TECHNOLOGY DEVELOPMENT (SEPT. 2005), https://www.nist.gov/sites/default/files/documents/2017/05/09/gcr02-841a.pdf; *see also* Ederyn Williams, *Crossing the Valley of Death*, INGENIA (Dec. 30, 2004) http://www.ingenia.org.uk/Ingenia/Articles/284 (discussing valley of death in the UK); *see also* Philipp Marxgut, *Innovation Policy in the US – an Interview with Charles Wessner*, BRIDGES (Oct. 16, 2008), http://ostaustria.org/bridges-magazine/volume-19-october-16-2008/item/3585-innovation-policy-in-the-us-an-interview-with-charles-wessner ("There is great complacency in Washington about the US position in the world. There is relatively limited understanding in the policy community about the scale and scope of foreign investments in new technologies, including new institutions, such as ASTAR in Singapore or the large and apparently effective Chinese S&T Parks, or the highly successful Microelectronics center, called IMEC, in Flanders. Here in the US we do not need to do exactly what others are doing, but we do need to greatly strengthen the interaction between the government, the universities, and the private sector by providing a wide variety of incentives for cooperation on the new technologies that will be the basis of future industries").

[6] *See* LYNN STOUT, THE SHAREHOLDER VALUE MYTH: HOW PUTTING SHAREHOLDERS FIRST HARMS INVESTORS, CORPORATIONS, AND THE PUBLIC (2012) [hereinafter SHAREHOLDER VALUE MYTH] (According to Stout, the rise of shareholder primacy thinking began "in the 1970s with the rise of the so-called Chicago School of free-market economists. Prominent members of the School began to argue that economic analysis could reveal the proper goal of corporate quite clearly, and that goal was to make shareholders as wealthy as possible . . . the idea that corporate performance could be simply and easily measured through the single metric of share price . . . .").

[7] For discussion on shareholder value, *see* COLIN MAYER, FIRM COMMITMENT: WHY THE CORPORATION IS FAILING US AND HOW TO RESTORE TRUST IN IT (2013); *see also*, Ira M. Millstein, *Re-examining Board Priorities in an Era of Activism*, N.Y. TIMES: DEALBOOK (Mar. 8, 2013, 3:52 PM), http://dealbook.nytimes.com/2013/03/08/re-examining-board-priorities-in-an-era-of-activism/?_r=0 ("[C]orporate boards around the country should re-examine their priorities and figure out to whom they owe their fiduciary duties. . . . Some activists are using their newfound power to sway and bully management to focus on the short term, meet the quarterly targets and disgorge cash in extra dividends or stock buy backs in lieu of investing in long-term growth").

innovation, technology, and economic growth, is not a new one.[8] Economists have been warning for quite some time, even prior to the current Administration, that the United States is facing a "historic tipping point,"[9] where countries around the world are "stepping on the gas"[10] to promote innovation policies, while the United States is "slacking off,"[11] lagging behind and even worse yet, scaling back on such important policies supporting growth efforts.[12]

The Administration can mitigate some of these problems by intervening in the market in order to encourage the creation (and survival) of high-growth firms. This Article proposes a "Coalition Model," which promotes policies for innovation strategy in the form of public-private partnership initiatives. Adopting the Coalition Model bridges some of the financial inefficiencies and information gaps associated with investment in innovation-driven enterprises, but, perhaps, more importantly, will serve as a catalyst for encouraging and stimulating the development of new firms and technologies.

The Model is built on the notion of taking a proactive approach to innovation. The Model encourages government agencies to fund research and innovation, by identifying specific technological challenges, determining the course of the research that can benefit their needs, collaborating with audiences in the public sector, research institutions and universities, and private corporations to act on these needs, and advancing commercialization efforts.

There are several potential benefits to adopting such a proactive policy. First, it might encourage future engineers, scientists and innovators to take a risk and become entrepreneurs. Second, it provides direct funding to research and development needs that might otherwise not be used. Third, it can signal that there are opportunities for private investors to invest in such ventures, and perhaps even serve as some sort of certification. Fourth, it will create a direct pathway for small firms to access government procurement. Fifth, it will encourage knowledge spillovers between professionals in

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[8] *See* JOHN KAO, INNOVATION NATION: HOW AMERICA IS LOSING ITS INNOVATION EDGE, WHY IT MATTERS, AND WHAT WE CAN DO TO GET IT BACK 3 (2007).

[9] *Id.* ("In tomorrow's world, even more than today's innovation will be the engine of progress. So unless we move to rectify this dismal situation, the United States cannot hope to remain a leader. What's in stake is nothing less than the future prosperity and security of our nation").

[10] *Id.*

[11] *Id.*

[12] Richard A. Mann et al., *Starting From Scratch: A Lawyer's Guide to Representing a Start-Up Company*, 56 ARK. L. REV. 773, 773-74 (2004) ("A new business is started every eleven seconds in the United States. One in twelve Americans is currently engaged in trying to start a new business. Of the more than twenty-three million businesses in the United States, more than 98% are small businesses employing 100 employees or fewer. Most of these businesses are not long-term survivors: 24% of new businesses fail within two years while 63% fail within six years").

government, industry, and academia. And finally, it will increase awareness in private industry and academia about the benefits of collaborating with the government.

The Model advocates for the Administration to adopt a targeted policy initiative (strategic development tool): the Matchmaker fund ("Matchmaker"). The Matchmaker fund is a private-public partnership equity investment fund, in which one of the public partners is a government agency that will invest in early-stage firms. The government agency partner will invest in such early-stage firms that will serve the commercial strategic development to be articulated by the agency. The fund will establish a channel for private firms to access government procurement and development. The fund will function as an autonomous, non-bureaucratic body, and be designed to prevent political capture. The adoption of the strategic Matchmaker fund will be formed to complement, and not to replace, the private market efforts in financing emerging growth firms.

The Model allows the government to make direct equity investments in start-up firms using government-owned venture capital funds (Matchmaker), while also encouraging various private intermediaries to participate in the financings of such projects. The initiatives are designed to ensure effectiveness and prevent political distortions based on the successful case studies of Silicon Valley and Israel.

This article calls upon the government to craft policies for institutional innovation that will encourage experimentation and reduce bureaucracy in order to radically improve the performance of the Federal government by soliciting private sector and civil society collaborations. Technological innovation is the only reliable engine that can drive change and is the fundamental source of sustained productivity and growth, according to Nobel Laureate Robert Solow.[13] However, there are many challenges associated with introducing technological change into an existing organization, especially for bureaucratic organizations such as the U.S. government. In general, it is much easier for public or private management to develop and invest in new technologies, rather than implement the new technology into operations and train their employees in how to use the new tools.[14] If the current Administration intends to successfully compete in tomorrow's market place, promote growth, as well as increase productivity

[13] Robert M. Solow, *Prize Lecture: Growth Theory and After*, NOBELPRIZE.ORG (Dec. 8, 1987), http://www.nobelprize.org/nobel_prizes/economics/laureates/1987/solow-lecture.html.

[14] *See* Dorothy Leonard-Barton & William A. Kraus, *Implementing New Technology*, HARV. BUS. REV, Nov. 1985, https://hbr.org/1985/11/implementing-new-technology.

and expand the economic and social value,[15] then they must charge their new policymakers with designing and instituting sweeping innovation policies that will embrace new approaches to management, technologies and operating methods.[16] This article will accordingly promote the following policy recommendations.

There is a public debate in the U.S. concerning the role of the government in relation to the market. The U.S. has a long history of conflict with regards to the national policy and political structure concerning the government's development efforts.[17] The conflict can be traced to the times of the beginning of the Republic,[18] to the difference in philosophy between founding fathers Alexander Hamilton and Thomas Jefferson. According to legal scholar Hockett,[19] Jefferson[20] suggested that governments work best when they govern the least (favoring the non-interventionist government),

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[15] *See* Michael E. Porter & Mark R. Kramer, *Creating Shared Value: How to Reinvent Capitalism – and Unleash a Wave of Innovation and Growth*, HARV. BUS. REV., Jan. – Feb. 2011, at. 1, 5.

[16] Fred Block, *Swimming Against the Current: The Rise of a Hidden Developmental State in the United States*, 36 POL. & SOC'Y 169 (2008); *see also* KENT HUGHES, BUILDING THE NEXT AMERICAN CENTURY: THE PAST AND FUTURE OF ECONOMIC COMPETITIVENESS (Woodrow Wilson Center Press 2005); *see also* Mary J. Dent, *A Rose by Any Other Name: How Labels Get in the Way of U.S. Innovation Policy*, 8 BERKELEY BUS. L.J. 128, 130-31 (2011) ("We lack a deep, broad national understating of why promoting innovation should be a national priority. As a result, we fail to address innovation policies in a proactive, explicit, and effective way." Dent further discussed the "Volcker Rule" of the Dodd-Frank Act and stated that "polices [sic] that affect the innovation sector are frequently adopted as part of broader packages that have nothing to do with innovation"); *see* Porter & Kramer, *supra* note 15 ("The concept of shared value . . . recognizes that societal needs, not just conventional economic needs, define markets. It also recognizes that social harms or weaknesses frequently create internal costs for firms—such as wasted energy or raw materials, costly accidents, and the need for remedial training to compensate for inadequacies in education. And addressing societal harms and constraints does not necessarily raise costs for firms, because they can innovate through using new technologies, operating methods, and management approaches—and as a result, increase their productivity and expand their markets. Shared value, then, is not about personal values. Nor is it about "sharing" the value already created by firms—a redistribution approach. Instead, it is about expanding the total pool of economic and social value").

[17] Robert C. Hockett, *A Jeffersonian Republic by Hamiltonian Means: Values, Constraints & Finance in an Authentic American "Ownership Society,"* 79 S. CAL. L. REV. 45 (2005-2006) [hereinafter *Jeffersonian Republic*].

[18] *See id.*; *see also Alexander Hamilton's Final Version of the Report on the Subject of Manufactures*, FOUNDERS ONLINE, https://founders.archives.gov/documents/Hamilton/01-10-02-0001-0007 (last visited Apr. 15, 2018) (presenting validations for the encouragement of domestic manufacturing and made explicit plans for government action).

[19] *See Jeffersonian Republic*, *supra* note 17 (According to Hockett, there are fundamental differences in economic philosophies of the founding fathers, as follows: Jefferson suggested that governments work best when they govern the least, while Hamilton advocated for a strong centralized government with powers to work for the common benefit of all).

[20] *See id.* (According to Hockett, Thomas Jefferson was a member of the Southern planter aristocracy and, as a result, was somewhat prejudiced towards the "yeoman republic." Jefferson was suspicious of a central government and objected to the idea of heavy industry and over-crowded large cities, while aspiring to a civic republic comprised of small landowners, who contracted using common-interest agreements via mutual discourse).

while Hamilton[21] advocated for a strong centralized government with powers to work for the common benefit of all (favoring the interventionist government).

Other scholars, such as Block, claim that this tension was resolved fairly[22] in the twentieth century when developmental policies were formed within the context of national defense.[23] For the purposes of this article, the result of such integration is embedded in the grants and funds that were invested by the U.S. government in countless advanced technologies, such as jet planes, computers, lasers, civilian nuclear energy, and biotechnology.[24] This article advances the view that for national defense purposes, the U.S. Government must intervene in the market in order to encourage entrepreneurship and innovation policy.

There are several roles that government can take in order to intervene in the market. First, there is a "supervisory"[25] view of the government, which differentiates between the government and the market, and separates between the public and private spheres.[26] Government interventions, accordingly, are considered exogenous because the government is changing the ordinary way of things.[27]

Second, there is a "constitutive" or "foundational" view, by which governments are "internal" to and even create the markets by developing the "rules of the game."[28] According to this view, the law is "foundational" to operating markets, and the market performance is actually enhanced

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[21] *See id.* (According to Hockett, Hamilton envisioned a meritocratic republic, such as the one in which Hamilton himself had flourished and thrived in. The foundation for a national supremacy should be a strong, industrialized economy, where the nation can produce its own goods).

[22] It should be noted that politically, the debate is still ongoing in the U.S. with Republicans saying they want to do away with big government and Democrats wishing for big government. *See Jeffersonian Republic*, *supra* note 17.

[23] *See* Block, *supra* note 16, at 6; *see Jeffersonian Republic*, *supra* note 17 (Hockett further argues that the U.S. has advanced to integrate the ideals of both founders).

[24] *See* Block, *supra* note 16, at 6-7 (According to Block, following World War II, the Pentagon worked intimately and cooperated with other national security agencies such as the atomic Energy Commission and the National Aeronautics and Space Agency (NASA), and such cooperation and funding had a key role in developing these technologies).

[25] *See* Robert C. Hockett & Saule T. Omarova, *"Private" Means to "Public" Ends: Governments as Market Actors*, 15 THEORETICAL INQUIRIES L. 53, 56-57 (2014) ("In this capacity, governments act much as private actors do in particular markets. They employ the same means toward their ends") (the term was introduced by Hockett & Omarova).

[26] *See id.* at 54 ("Government is in this sense taken for "external" to markets, while "we," the public —for unexplained reasons categorically distinguished from "our" government — are counted as "internal" to the practices of market exchange. Call this "supervisory," or "*deus ex machina*" view of government in its relation to markets").

[27] *Id.* ("Governments 'step in' from 'outside'").

[28] *Id.* at 55 (These rules "even define markets from the . . . 'ground up'").

when regulated by the law.[29]

The third view, and the one that this article will advance, is one sustaining the government's role as a "marker actor."[30] According to legal scholars Hockett and Omarova, this view is often overlooked.[31] When the government acts as a market participant, it does so "for public rather than private ends," and in doing so, it defies the "venerable but misleading" separation between the private and public spheres.[32] Our society perhaps allows the government to act as a market participant because the government is able to have more effect (influence) on the market than private parties.[33] This article will illuminate the "market-acting role" of the US government. The notion of the United States government acting as a catalyst or even a venture capitalist is not a novel one. Throughout United States history, the governments have played the role of venture capitalists at the State and local level and even at the federal level, suggesting that public intervention in the market is acceptable and perhaps even necessary.[34]

The Coalition Model derives from the core concept of Solow that technological innovation is the only reliable engine that drives change and is a fundamental source for productivity and sustained economic growth.[35] The Coalition Model builds on Solow's model and adds that government intervention is required because it is a powerful market actor[36] and can

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[29] *Id.*

[30] *Id.* at 55-56 ("In this capacity, governments act much as private actors do in particular markets. They employ the *same* means toward their ends. They do so, however, for public rather than private ends, thereby defying, in limited ways, such venerable but misleading dichotomies as the 'public/private' divide").

[31] *Id.*

[32] *Id.*

[33] *Id.* at 56 ("They do so, moreover, with greater influence than private parties are typically able—or permitted—to bring to bear. And we permit our government this form of market power, in turn, precisely because it is public rather than private power—power wielded on behalf of and in the name of us all"). There are four recurring types of government participation (intervention) in private markets (for public ends), according to Hockett and Omarova. They are: "market-making" (means "government's playing a particular risk-bearing role that private actors themselves sometimes but not always are able to play either (a) makes a publicly beneficial market possible, or (b) facilitates an incipient such market's growth to critical mass"), "market-moving" (means "government action affects certain market prices in certain publicly beneficial ways that we cannot ordinarily trust profit-driven private actors to pursue"), "market-levering" (means "government action enables existing private markets to do better, or to do more of, what they already do in more limited or otherwise suboptimal manners"), and "market-preserving" (means "government action- typically temporary and only in extremis – prevents complete liquidation or collapse of a normally well-functioning market whose collapse would impose negative externalities"). *Id.* at 56-57.

[34] *See* JOSH LERNER, BOULEVARD OF BROKEN DREAMS: WHY PUBLIC EFFORTS TO BOOST ENTREPRENEURSHIP AND VENTURE CAPITAL HAVE FAILED –AND WHAT TO DO ABOUT IT viii (Princeton University Press 2009) [hereinafter BOULEVARD OF BROKEN DREAMS].

[35] *See* Solow, *Prize Lecture*, *supra* note 13.

[36] *See* Hockett & Omarova, *supra* note 25.

alleviate the discussed current market inefficiencies. A detailed analysis of the Matchmaker initiative and the market inefficiency that it tries to mitigate is provided below. Society becomes a stakeholder in economic growth because it empowers the government to act on its behalf. As noted above, government intervention is not a new concept because the government takes risk-bearing roles that private actors are not always able (or willing) to take for one reason or another.[37]

It also builds on the notion that the government needs to invest in knowledge, human capital, and innovation in order to encourage knowledge spillovers[38] by encouraging the formation (and survival) of new entrepreneurial firms and stimulating growth.[39]

Therefore, the United States government needs to intervene in the market in order to increase growth, entrepreneurship, and innovation.[40] The Coalition Model is designed as a policy tool for government intervention that takes the form of the proposed public-private partnerships that allow for strategic planning to benefit society for future generations.

In order to develop the coalition, the conventional community of stakeholders is expanded to include the private sector (entrepreneurial and established firms), management, academia and research community, industry and economic development organizations, federal, state, regional and local governments, the financial sector including investment banks, angel groups and venture capital groups, on top of the traditional stakeholder groups, which include: customers, employees, creditors, suppliers, and shareholders.

The Coalition Model is designed as a public-private-partnership, which describes a relationship wherein private and public resources are combined to achieve goals that will benefit both parties. Public-private-partnerships have been used to contribute to public benefit in national economies since the beginning of recorded history.[41] In the United States, technology clusters

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[37] *See id.*

[38] *See* Audretsch, *infra* note 315, at 9-10 (discussing "knowledge spillover" and how "small firms account for a disproportional share of new product innovations given their low R&D expenditures").

[39] BOULEVARD OF BROKEN DREAMS, *supra* note 34.

[40] *See* Hockett & Omarova, *supra* note 25.

[41] Louis Witters et al., *The Role of Public-Private Partnerships in Driving Innovation*, *in* THE GLOBAL INNOVATION INDEX OF 2012, at 81 (Soumitra Dutta ed., WIPO 2012), http://www.wipo.int/edocs/pubdocs/en/economics/gii/gii_2012.pdf (discussing the following examples of public-private-partnerships (PPPs):

> "[I]n the city-state of Athens in the 4th century BC, prominent citizens made major contributions in order to stage public festivals and religious events and to build public buildings and monuments. Some centuries later, when the Roman army conquered large parts of Europe and the Mediterranean region, civilians worked hand-in-hand with the army to exploit the new

in Silicon Valley and Route 128 emerged thanks to government intervention in the market (in the form of public-private-partnerships) as noted above. Moreover, much of the technological advancement, which revolutionized the market and our lives, such as the Internet,[42] was made possible thanks to public-private-partnerships.

Public-private-partnerships are defined as "contractual agreements between a public agency or public-sector authority and a private-sector entity that allow for greater private participation in the delivery of public services, or in developing an environment that improves the quality of life for the general public."[43]

The Coalition Model is a form of public-private-partnership that uses various methods of collaboration, which combine the government's forward-thinking policies and the private sector's innovative efforts, as well as the support from nonprofit organizations and private intermediaries. This article, therefore, promotes the view of the role of government as a market participant and calls for an intervention in the market for national security and economic reasons.

The subsequent parts of this article examine the U.S. Government intervention in the market throughout history. Part II introduces the historical economic and legal evolution of the model, starting with the Declaration of Independence in Section (1), the period between 1865 and 1920 in Section (2), and a discussion of the rise of the large, vertically integrated American corporation in Section (3). Section (3) also includes two important examples: (a) the story of the Advanced Projects Research Agency (ARPA), and (b) the successful outcome of the Small Business Innovation Research (SBIR) program. Section (c) then describes the changes in the United States market from patterns of vertical corporate development (such as the example of corporations in Route 128) towards a

territories and build needed infrastructure. PPPs have a long history in the United States of America (USA) as well: the principle that government and political leaders should use and support private businesses—in order to develop scientific advancement and innovations for the benefit of the society—was well established at the time the country's constitution was written. One of the first instances of a PPP in the New World occurred in 1742 when Benjamin Franklin established the American Philosophical Society of Philadelphia, which— together with the Pennsylvania House of Representatives—sponsored the founding of the University of Pennsylvania, the first medical school in the British colonies. The purpose of this collaboration was to make advancements in agriculture, science, and medicine available to all citizens. Another, more recent, renowned project that brought the business world and government together in the public interest was the building of the Paris metro: the tunnels were constructed by the city, while the tracks, energy, signaling, and rolling stock were provided by the operator, a Belgian entrepreneur").

[42] *See* Block, *supra* note 16, at 9.

[43] Witters et al., *supra* note 41, at 81 ("Under such a legal construction, the partners share risk, reward, and responsibility for a shared investment. These partnerships are not simply tools for funding projects, but they require full commitment from all partners for the entire undertaking").

network of organizations (such as Silicon Valley). Section (4) provides an overview of the Startup America initiative and additional federal initiatives led by the Obama Administration that were intended to promote innovation, entrepreneurship and economic growth. Section (5) provides constructive criticism to previous government intervention in the market.

In Part III, the Matchmaker initiative component of the Coalition Model is emphasized. The Coalition Model is derived from Solow's model.[44] Solow introduced the notion that innovation stimulates growth.[45] This part explains the model and the choice of the public-private-partnership form, as well as introduces a proposal for a government Matchmaker venture capital fund initiative. The Matchmaker initiative is a targeted policy effort aimed at designing a platform for a competitive venture capital industry in the United States that promotes government venture capital investments in early-stage technology firms (start-ups) for national security purposes. Section (1) provides an overview of the role of the Venture Capital industry in the U.S. innovation process. Section (2) introduces the Matchmaker initiative, with an emphasis on the governance mechanisms. Part (a) introduces the fund's "General Partner." Sub-section (i) introduces the compensation structure, while giving examples of In-Q-Tel (the CIA VC fund). Sub-section (ii) introduces the incentives & safeguards. Sub-section (iii) discusses the required bidding process. Sub-section (iv) introduces the matching component and additional incentives to the "Upside." Part (b) introduces the Limited Partners, especially the applicable U.S. government agency, in Sub-section (i). sub-section (ii) explains the mission and supervision. Sub-section (iii) introduces the user-friendly application process. Part (c) introduces the Private Investors.

Part IV is an international comparison with Startup Nation's (Israel) successful Yozma funds initiative. Section (1) introduces the "Yozma" funds initiative. Section (2) reviews the reasons for Israeli government intervention in the market. Section (3) provides a summary of Inbal, an Israeli government intervention that failed but led to the design of Yozma. Section (4) provides an overview of the successful Yozma design. Section (5) compares Yozma with similar Silicon Valley initiatives.

Part V addresses the criticism of whether the Matchmaker is designed to prevent potential abuse. Section (1) introduces the problem of inadequate monitoring of public management. Section (2) provides an overview for the

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[44] Robert M. Solow, *A Contribution to the Theory of Economic Growth*, 70 Q. J. ECON. 65 (1956); *see also* Robert M. Solow, *Technical Change and the Aggregate Production Function*, 39 REV. ECON. & STAT., Aug. 1957, at 312; *see also* Solow, *Prize Lecture*, *supra* note 13.

[45] Solow, *Prize Lecture*, *supra* note 13.

lack of market discipline of government-owned firms. Section (3) discusses illegal behavior and corruption of public managers. Section (4) discusses the issues of the political capture of business objectives.

Part VI offers a summary of concluding thoughts about the Coalition Model and its applications.

I. THE HISTORY OF THE UNITED STATES GOVERNMENT AS A MARKET PARTICIPANT

A nation's innovative system has a tendency to mirror its deliberate determination to maintain and expand its economic strength.[46] This part provides a historic-doctrinal review of the processes that shaped the U.S. national innovation system, focusing on the role of the U.S. government as a "market actor."[47]

A. The Declaration of Independence

In the course of gaining its independence, the United States government was able to establish institutional support, by which ingenuity could thrive.[48] There were several factors that contributed to changes in the innovation market during the period of independence. This Article will only address the following two. First and foremost, the United States Constitution, which instituted far-reaching changes and guaranteed an internal joint market, allows residential United States entrepreneurial ventures to expand and supply the national market.[49]

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[46] Scholars found that the national security concerns of the nations had been central in shaping their innovation systems; *see* RICHARD NELSON, NATIONAL INNOVATION SYSTEMS: A COMPARATIVE ANALYSIS 508 (Oxford Univ. Press 1993); *see also* PETER DRUCKER, INNOVATION AND ENTREPRENEURSHIP 257 (Harper & Row 1985) ("There must be an economy full of innovators and entrepreneurs, with entrepreneurial vision and entrepreneurial values, with access to venture capital, and filled with entrepreneurial vigor").

[47] *See* Hockett & Omarova, *supra* note 25 at 55-56. It should also be noted that President Obama's administration took an interest in government-facilitated multi-stakeholder processes with regards to the Internet. *See* U.S. DEP'T OF COMMERCE, COMMERCIAL DATA PRIVACY AND INNOVATION IN THE INTERNET ECONOMY: A DYNAMIC FRAMEWORK, at iii (2010), https://www.ntia.doc.gov/files/ntia/publications/iptf_privacy_greenpaper_12162010.pdf ("The United States has developed a model that facilitates transparency, promotes cooperation, and strengthens multi-stakeholder governance that has allowed innovation to flourish while building trust and protecting a broad array of other rights and interests"); *see also* Symposium, *The 11th Annual Digital Broadband Migration Symposium: The Dynamics of Disruptive Innovation*, 10 J. TELECOMM. & HIGH TECH. L. 1 (2012).

[48] Louis P. Cain, *Entrepreneurship in the Antebellum United States*, *in* THE INVENTION OF ENTERPRISE: ENTREPRENEURSHIP FROM ANCIENT MESOPOTAMIA TO MODERN TIMES 331 (David S. Landes, et al., eds, 2010) ("There was general agreement among the new country's leaders that the national government was not functioning efficiently under the Articles of Confederation, so a constitutional federal system was introduced relatively quickly").

[49] *Id.* ("The representatives of the individual states conscientiously guarded their powers and, in

Another important evolution and invention during that period that stimulated innovators to take a risk and start a new innovation-driven business was patent law, which gave innovators strong property rights, while also allowing knowledge spillovers and sharing of information. Historian Steven Lubar stated that the "[n]ineteenth-century patent law embodied a delicate balance of monopoly, to encourage invention; the dissemination of new ideas, to encourage the increase of knowledge; and ease of use of patents, to encourage innovation."[50]

B. The period between 1865 and 1920

During the period between 1865 and 1920, the State governments (rather than the federal government) had an active role in subsidizing transportation, making western lands accessible to those who wanted to develop them, mapping the location of raw material properties and financing education (and institutions) in order to supply technological knowledge, according to economic historian Lamoreaux.[51] During that period, holders of intellectual property enjoyed strong protection, provided by the US patent laws. In addition to the modest cost protection, the creation of a strong patent law system helped to spread the vast information of novel technologies.[52]

An additional important development during that period was the establishment of the National Banking System. By creating the National Banking System, the federal government succeeded in instituting a standardized national currency that decreased transactions costs in interregional trade.[53] Despite the fact that at that period the National

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Article I, Section 8, relinquished to the federal government only those rights they believed were essential. Article I, Section 10, restricts individual state's dealing with foreign powers and prohibits the creation of state paper money. It included the famed contract clause that establishes the sanctity of contract, the deliberate protection of property rights, and the equally famed commerce clause that prohibits restrictions on interstate commerce").

[50] Steven Lubar, *The Transformation of Antebellum Patent Law*, 32 TECH. & CULTURE, 932, 934 (1991); *see also* Cain, *supra* note 48, at 331.

[51] Naomi R. Lamoreaux, *Entrepreneurship in the United States*, *1865-1920*, *in* THE INVENTION OF ENTERPRISE: ENTREPRENEURSHIP FROM ANCIENT MESOPOTAMIA TO MODERN TIMES 391-92 (David Landes et al. eds., 2010) (According to Lamoreaux, state and local governments, from approximately 1865-1920, played a more dynamic part in the economy, but even at those levels, governments mainly got involved in ways that improved the security and transparency of economic transactions. That policy changed only with the rise of big business, when governments started taking a considerable regulatory function – first at the state level and then at the federal level).

[52] *Id.*

[53] *Id.*

Banking System had some wretched consequences that enhanced economic uncertainty,[54] the end result of creating a national standardized currency was overall beneficial.

C. The Rise of Large, Vertically Integrated American Corporations

The market economy in the twentieth century in the United States has classically been characterized as the "harnessing of technology by entrepreneurs working for large vertically integrated American corporations", according to historian Margaret Graham, "at first as a wholly private sector phenomenon, and then in cooperation with an increasingly interventionist federal government."[55]

Graham divided that period into three different parts with respect to entrepreneurship.[56] The first, characterized as the fiscally frenzied interwar period, covers the years of 1920 to 1941.[57] According to Graham, the U.S. government tried to push for productivity and supplied many opportunities in the fast-growing industries.[58] However, this development was followed by a rapid downfall of the numerous new companies prior to and throughout the Great Depression. The era ended with the U.S. entering into World War II.[59]

The second period covers the years between 1941 until 1974, from World War II until the commencement of a lengthy phase of inflation, which began with the Vietnam War.[60] According to Graham, during that period, large corporations did not regard innovation as a high priority. Moreover, innovation was unsolicited and unwelcomed in various sectors of the U.S. industry, excluding areas selected for "high-tech" businesses, which were desirable to the U.S. military advancements and were at times crossovers that could commercialize technology that was initially developed for military purposes for civil products.[61]

The third period, between 1975 and 2000, is sometimes referred to as the

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[54] *Id.*

[55] Margaret B.W. Graham, *Entrepreneurship in the United States, 1920-2000*, *in* THE INVENTION OF ENTERPRISE: ENTREPRENEURSHIP FROM ANCIENT MESOPOTAMIA TO MODERN TIMES (David Landes et al. eds., 2010).

[56] *Id.* at 404.

[57] *See id.* (according to Graham, this era is characterized by a search for economic self-regulation).

[58] *See id.*

[59] *Id.*

[60] *Id.*

[61] *See id.* (according to Graham, there was constant national mobilization during that era; however, there was fairly stagnant economic equilibrium, highlighting optimization).

third industrial revolution.[62] This period is distinguished from the previous two due to the combination of the information revolution and globalization trends.[63] It began with a period of stagflation and was perpetuated by the U.S. financial institutions' insurgency.[64] It concluded in a sequence of financial bubbles and the collapse of the telecommunications industry and the dot-com craze.[65] The following are some examples of successful government intervention in the market during these periods.

1. Advanced Projects Research Agency (ARPA)

The Advanced Projects Research Agency (ARPA) example is an illustration of a successful intervention of a U.S. government policy during the 1960s, which was responsible for the invention of the Internet.[66] The Pentagon created the ARPA in order to provide funding for technologies following the "Soviet success with Sputnik".[67]

The initiatives of ARPA computer offices cultivated a diverse and distinct government model that funded research. It took a proactive approach to innovation, in stark contrast to other federal agencies, which were generally reactive. It was highly active in determining the course of the research.[68] Its goal was to generate a scientific community in order to focus on specific technological challenges, with audiences in the public sector, universities and private corporations.[69] ARPA operated small offices staffed with top engineers and scientists, who were given extensive budget autonomy to sponsor promising ideas.[70]

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[62] *See id.*

[63] *Id.*

[64] *Id.*

[65] *Id.*

[66] *See id.*; *See also* Block, *supra* note 16 (according to Block, in 1962, ARPA's Information Processing Techniques Office (IPTO) was originally established, and played a central role in the development of computer science. IPTO granted funds to establish computer science departments at major universities and financed a series of research project that successfully pushed forward developments in human-computer interface).

[67] *See* Block, *supra* note 16, at 7.

[68] *See id.* (According to Block, "ARPA did not leave most of the initiative in the hands of the research community, therefore, it's policy was different from other federal agencies, such as the National Science Foundation, which relied on peer review of research proposals").

[69] *Id.*

[70] *Id.* at 7. ("ARPA made a practice of hiring visionary technologists and giving them a very high degree of autonomy to give out research funds. The organizational structure was extremely lean with very small staffs and a minimum of paperwork. ARPA's Information Processing Techniques Office (IPTO) was initially established in 1962 and played a central role in the advance of computer technology in the 1960s and 1970s. IPTO provided the resources to create computer science departments at major universities and funded a series of research project that successfully pushed forward advances in the human-computer interface. In fact, many of the technologies that were ultimately incorporated into the

ARPA did not draw a line between "basic research" and "applied research."[71] Funding was granted to various groups such as start-up firms, university-based researchers, and industry syndicates.[72] In order to prevent abuse or waste, ARPA staff transferred resources from unproductive groups to more promising, productive and profitable ones.[73]

APRA provided firms with venture capital-like services including mentoring, strategic planning, technological and business brokering services.[74] It assisted firms in reaching the phase of commercial capability.[75] It made cooperative connections among resources, ideas and people from diverse development and research sites, which is an essential component to the proposed "Coalition" model.[76]

The government played the crucial role of a "market-maker,"[77] as it took the risk-bearing role (that private actors during that period were not able to play) and essentially made the high technology world and Internet that we know and use today possible.

2. The Small Business Innovation Research (SBIR) Program

The Small Business Innovation Research (SBIR) program is another example of a successful government intervention in the market via the creation of legislation aimed at stimulating an existing market or even starting a new market.[78] It is also a leading example of a United States

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personal computer were developed by ARPA-funded researchers").

[71] *Id.* at 8.

[72] *Id.*

[73] *Id.* at 7-8 (according to Block, ARPA employed visionary and creative technologists and gave them the autonomy to grant research funds).

[74] *Id.* at 8.

[75] *Id.*

[76] *Id.*

[77] *See* Hockett & Omarova, *supra* note 25 (according to Hockett & Omarova, "market-making" means "government's playing a particular risk-bearing role that private actors themselves sometimes but not always are able to play either (a) makes a publicly beneficial market possible, or (b) facilitates an incipient such market's growth to critical mass").

[78] There is a long list of important federal legislation concerning innovation: Bayh-Dole Act, Pub. L. No. 96-517, 94 Stat. 3015-28 (codified as amended at 35 U.S.C. §§ 200-201 (2000 & Supp. II 2002)); Stevenson-Wydler Technology Innovation Act of 1980, 15 U.S.C. § 3701 (1980); Small Business Innovation Development Act of 1982, 15 U.S.C. § 638 (2006); National Cooperative Research Act, Pub. L. No. 98-462, 98 Stat. 1815 (1984) (codified at 15 U.S.C. §§ 4301-05); NSF Establishes Program for Engineering Research Centers (1985); Small Business Technology Transfer Act of 1992, Pub. L. No. 102-564, 106 Stat. 4249 (codified as amended 15 U.S.C. § 638 (2006)); Department of Commerce Advanced Technology Program (ATP) (1988); Manufacturing Extension Program (1988); Defense Industrial and Technology Base Initiative (1991); High Performance Computing Act of 1991, Pub. L. No. 102-194, § 102, 105 Stat. 1495, 1598-99 (codified at 15 U.S.C. § 5512) (1991); Small Business Research and Development Enhancement Act of 1992, 15 U.S.C. § 638 (1992). For further details on this legislation *see* Block, *supra* note 16, at 11-12.

public-private partnership that stimulates innovative new technologies.[79]

The SBIR program was founded in 1982, and was intended[80] to encourage "small businesses"[81] to develop new products and processes as well as present valuable research for the nation's research and development efforts.[82] The program mandates the eleven federal agencies (with extramural research budgets in excess of $100 million) to allocate a certain percentage[83] of their total extramural research and development budgets for grants or contracts to small businesses[84] conducting research and development that have commercialization potential and meet the needs of the United States Government.[85]

The SBIR program continues to play an important strategic role in the United States' innovation efforts. In the words of its founder Roland Tibbetts, "[t]he US leads the world in three areas important to economic

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[79] *See* CHARLES WESSNER, SBIR AND THE PHASE III CHALLENGE OF COMMERCIALIZATION: REPORT OF A SYMPOSIUM 9 (National Academics Press 2007). According to Wessner:

> "Commercializing SBIR-funded technologies though federal procurement is no less challenging for innovative small companies. Finding private sources of funding to further develop even successful SBIR Phase II projects—those innovations that have demonstrated technical and commercial feasibility—is often difficult because the eventual 'market' for products is unlikely to be large enough to attract private venture funding. As Mark Redding of Impact Technologies noted at the conference, venture capitalists tend to avoid funding firms focused on government contracts citing higher costs, regulatory burdens, and limited markets associated with government contracting."

[80] *About SBIR*, SBIR/STTR, http://www.sbir.gov/about/about-sbir (last visited Nov. 7, 2017) (The following are the program's objectives: "Stimulate technological innovation; Meet Federal research and development needs; Foster and encourage participation in innovation and entrepreneurship by socially and economically disadvantaged persons; [and] Increase private-sector commercialization of innovations derived from federal research and development funding").

[81] "Small businesses" for the purpose of the Act are businesses with less than 500 people.

[82] *See* WESSNER, *supra* note 79, at xiii ("SBIR grants and contracts are intended to stimulate innovative new technologies to help agencies meet the specific research and development needs of the nation").

[83] For example, 2.8% of such budget in 2014.

[84] It should be noted that the SBIR does not fund "Phase III" innovation, which is a stage of development when the company and technology is expected to obtain private funding or government contracts. Instead, funding is targeted to the pre-commercial stage of technology development. *See* Matthew R. Keller & Fred Block, *Explaining the Transformation in the US Innovation System: The Impact of a Small Government Program*, 11 SOCIO-ECON. REV. 629, 640 (2013) ("Initially, the program provided up to $50,000 (now $150,000 under the 2011 authorization) in 'Phase I' support – generally up to 6 months – to 'explore [] the technical merit or feasibility of an idea or technology.' Phase I awardees could subsequently apply for up to $500,000 (now $1,000,000) of 'Phase II' funding – generally up to 2 years of work – during which 'R&D work is performed and the developer evaluates commercialization potential'").

[85] This program facilitates the award of approximately $2.5 billion every year. *See* Keller & Block, *supra* note 84, at 640 (The federal agencies "were given considerable leeway to determine how they met their obligations under the Act; they could provide funds as grants or contracts and they could solicit proposals with narrow or broad specifications of relevant research").

growth - basic research, small high tech firms and venture capital. SBIR pulls them together."[86] There are many examples of successful companies that received early-stage financing from SBIC, such as Symantec, DaVinci, Qualcomm and iRobot.

Participation in the SBIR program affords many benefits (in addition to funding) including advanced networking and protection of intellectual property. Participants in the program "get preferential access to federal procurement opportunities."[87] There are protections for participating companies in the program (who do not yet have patent rights), which protect their innovative ideas from theft by competitors or peer reviewers.[88] It should be noted that the government (for a fee) has the right to license the technology of the small company that participates in the SBIR program. However, the technology itself remains the property of the company.[89]

There are several events and legislations that contributed to the establishment of the SBIR program. In 1958, the Small Business Investment Companies (SBICs) Act[90] was enacted in order to offer matching federal funds for private investment (it was used by individual angels in order to fund innovation).[91] In 1977, the United States National Science Foundation (NSF) responded to various processes in the market and shifted its policy, from focusing on research and sciences to establishing a pilot, the SBIR program, which was designed to encourage small firms to develop their ideas and innovations into products and processes.[92]

The NSF's SBIR initiative was a response to the following factors and events. First, in the late 1970s, the American economy suffered through two oil supply shocks, recessions, rising prices, and stagnant productivity, in addition to facing rising international competition from Japan and Germany.[93] These economic crises and challenges invoked a nationwide reaction and established novel public policies, which centered on long-

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[86] *See* About SBIR, *supra* note 80.

[87] *See* Keller & Block, *supra* note 84, at 640 ("[A]gencies that engage in substantial procurement, such as the Department of Defense (DOD), would expect to purchase successful technologies, or link them to projects pursued by prime contractors. SBIR legislation fostered such relationships by providing awardees with preferential access to federal procurement opportunities").

[88] *See id.* ("These protections helped to assure small firms that peer reviewers and potential competitors such as prime defense contractors would be less inclined to 'borrow' ideas from firms that have not yet obtained patents"); *see also* WESSNER, *supra* note 79.

[89] *See* Keller & Block, *supra* note 84, at 640-41.

[90] Small Business Investment Companies Act of 1958, 72 Stat. 384 (codified as amended at 15 U.S.C. §§ 681-687h (1958)).

[91] SBIC was used by individual angels in order to fund innovation. *See* Darian M. Ibrahim, *Financing the Next Silicon Valley*, 87 WASH. U. L. REV. 717, 741 (2010).

[92] *See* Keller & Block, *supra* note 84, at 639 (According to Keller and Block, "NSF had traditionally focused on academic science and engineering research, and the pilot program represented a significant shift").

[93] *See* HUGHES, *supra* note 16, at 2.

standing productivity growth.[94]

Second, there was an increase in appreciation of the fact that small firms drive innovation.[95] Third, there were constant deliberations within the Executive Branch on how to encourage innovation and stimulate the United States market[96] due to concerns about a diminishing competitiveness of the United States (during the period of stagflation).[97]

The pilot program was very successful, and during the 1980s the United States Congress passed several laws that allowed the NSF to institute the SBIR program. The first legislation was the Bayh-Dole Act (1980),[98] which allowed scientists, for the first time, to keep the intellectual property rights of innovation that was developed from federal funds. Scientists who received funds from the federal government to conduct research could form new startup firms that could profit from discoveries that arose from the federally funded research and even own the intellectual property. In that way, the Bayh-Dole Act encouraged startup formation.[99]

The second legislation was the Stevenson-Wydler Technology Innovation Act (1980),[100] which was the first technology transfer law. It was enacted in order to improve and develop cooperative research between publicly funded entities and corporations by requiring federal laboratories

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[94] *Id.*

[95] *See* Keller & Block, *supra* note 84, at 629.

[96] *Id.* at 639 ("As early as the Nixon Administration, there was recognition of the urgency of capitalizing on US technological leadership to strengthen competitiveness. Hurt (2011) shows that many ideas about the use of public-private partnerships to facilitate technology development emerged in a comprehensive review carried out by the Nixon Administration, but they were not implemented when the Administration was overcome by Watergate").

[97] *Id.* at 639-40 ("[T]hese ideas re-emerged during the Carter Administration in the Domestic Policy Review on Industrial Innovation that was itself a response to concerns about declining US competitiveness. Headed by Jordan Baruch, Assistant Secretary of Commerce, the review began in 1978 and culminated in a series of Industrial Innovation Initiatives Proposed by Carter in October, 1979. Two immediate results of the effort were the passage by Congress in 1980 of the Stevenson-Wydler Technology Innovation Act and the Bayh-Dole Act. Stevenson-Wydler authorized Commerce and NFS to create Centers for Industrial Technology and to promote cooperative research between corporations and publicly funded entities"); *see also* James Turner, *The Next Innovation Revolution: Laying the Groundwork for the United States*, INNOVATIONS: TECH., GOVERNANCE, & GLOBALIZATION, June 2006, at 123.

[98] Bayh-Dole Act, *supra* note 78.

[99] While the SBIR provided a flow of government dollars to support startups, the legislation of the Bayh-Dole Act actually encouraged startup formation. The Bayh-Dole Act authorized university-based scientists to form new startup firms that could exploit the discoveries that transpired from the federally funded research, while their startup company would own the intellectual property. *See* Keller & Block, *supra* note 84, at 641 ("Parallel efforts were designed to shift the focus of scientists and engineers at government laboratories toward technologies with commercial potential. If these efforts were successful, SBIR would be a source of funding.").

[100] Federal Technology Act of 1986, Pub. L. No. 99-502, 100 Stat. 1785 (codified as amended at 15 U.S.C. § 3710c (1989)).

to actively engage in technology transfer.[101] It allowed federal laboratories to transfer technology to nonfederal entities easily. It also authorized the NSF to create Centers for Industrial Technology.[102]

The third legislation was the Small Business Innovation Development Act (1982),[103] which recommended and then formed the SBIR (then NSF pilot) program. It also called for larger federal backing for small innovative firms.[104]

The fourth legislation was the Small Business Technology Transfer (STTR) Act,[105] which was created in order to enhance collaboration between small firms and a university or federal laboratory.

In the past, the tone from other (than NSF) federal agencies towards the SBIR was hostile. According to Matthew Keller and Fred Block, "[a]dministrators saw it as a tax on research funds; it reduced their discretion and added considerable costs of screening applications and contracting with multiple small firms since the legislation provided no funds to cover administration."[106]

Nevertheless, federal agencies changed their attitude towards SBIR (especially ones that were directly involved with the programs). Thanks to the successful SBIR program, officials quickly learned that "small firms were often able to deliver new capabilities, more quickly than large, established contractors which tended to be slower and more bureaucratic."[107]

To sum up, according to economists Keller and Block,[108] this small government program (SBIR) played a central role[109] in revolutionizing the role of innovation in the United States economy via four distinctive mechanisms: encouraging engineers and scientists to become entrepreneurs; direct funding; signaling opportunities for private investors (and

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[101] The Stevenson-Wydler Technology Innovation Act compels federal laboratories to set apart a certain percentage of the laboratory budget exclusively for technology transfer activities. Stevenson-Wydler Act, *supra* note 78.

[102] *See* Keller & Block, *supra* note 84, at 640 ("This recommendation was implemented in 1982, under Roanld Reagan, when the Small Innovation Development Act was signed into law. The legislation had bipartisan support, but Senator Kennedy played a central role in marshalling it through the Senate"); *see also* Arthur Obermayer, *Senator Ted Kennedy's Role in the Birth of the Small Business Innovation Research Program*, (Aug. 28, 2009), http://www.zynsys.com/sbir/Kennedy_&_SBIR.pdf.

[103] Small Business Innovation Development Act, *supra* note 78.

[104] *Id.*

[105] Small Business Technology Transfer Act, *supra* note 78. The STTR provides aid to collaborations between a university or federal lab and a small firm.

[106] *See* Keller & Block, *supra* note 84, at 641.

[107] *See id.*

[108] *See id.* (They suggest the term "social resonance" in order to show "how even small government programs can play an important role in altering large scale institutional dynamics").

[109] *See id.* (Keller & Block propose the term "social resonance" to capture the catalytic role that the SBIR, a government program, played given the right circumstances).

certification); and creating pathways to government procurement.[110]

SBIR was a federal government initiative that changed the United States innovation system during the 1980s. Federal, state and local government initiatives influenced innovation and development efforts in states such as Massachusetts and California.

D. Startup America & Additional Federal Initiatives led by the Obama Administration to Promote Innovation, Entrepreneurship and Growth

In recent years, efforts were made by the Obama administration to boost innovation by encouraging technology incubation and venture capital. President Obama[111] launched the "Startup America" program, a national drive to present mentorship and funding in order to grow new businesses.[112]

Startup America is an umbrella initiative that included the following efforts. First, it centered on increasing entrepreneurial education and mentorship.[113] Second, it included proposals to boost entrepreneurs' access to capital.[114] Third, it attempted to limit regulatory barriers to starting and growing companies.[115] Fourth, it prompted technology commercialization efforts by universities.[116] Finally, it aimed at generating new entrepreneurial opportunities in crucial industries such as education, healthcare and energy.[117]

On September 27, 2010, Congress and President Obama[118] signed into

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[110] *See id.*

[111] *See* Russell Nichols, *State Governments: The Latest Venture Capitalists*, GOVERNING MAGAZINE (Mar. 2011), http://www.governing.com/State-Governments-Latest-Venture-Capitalists.html (As part of his State of the Union pledge to "win the future" by boosting innovation, President Obama stated: "Part of the mission of the program is to eliminate the capital gains tax on some small business investments and speed up the patent process. The U.S. Small Business Administration was directed $2 billion to match private-sector investment capital for under-the-radar startups and firms with high-growth potential").

[112] *Id.*

[113] *See* Aaron Chatterji et al., *Clusters of Entrepreneurship and Innovation* (National Bureau of Economic Research, Working Paper No. 19013, 2013), http://www.nber.org/papers/w19013.pdf.

[114] *Id.*

[115] *Id.*

[116] *Id.*

[117] *Id.*

[118] Jesse Lee, *President Obama Signs Small Business Jobs Act – Learn What's in It*, THE WHITE HOUSE (Sept. 27, 2010), http://www.whitehouse.gov/blog/2010/09/27/president-obama-signs-small-business-jobs-act-learn-whats-it (According to President Obama, the act is "important because small businesses produce most of the new jobs in this country. They are the anchors of our Main Streets. They are part of the promise of America – the idea that if you've got a dream and you're willing to work hard, you can succeed. That's what leads a worker to leave a job to become her own boss. That's what propels a basement inventor to sell a new product – or an amateur chef to open a restaurant. It's this promise

law the Small Business Jobs Act (the "Act"),[119] which authorized the establishment of the Small Business Lending Fund Program (that was administered by the Treasury Department) in order to "increase the availability of credit for small businesses."[120] While from the outset it was admirable that the administration was concerned with small businesses and introduced legislation aimed at boosting the economy by creating jobs, there were some issues with the Act that should be addressed.

For example, there should be a distinction between an innovation driven entrepreneurial firm and a small medium business enterprise.[121] As journalist Annie Lowery puts it, "[s]cupper the image of Mark Zuckerberg handcrafting a new service to revolutionize how we socialize and adding thousands of jobs to the economy. Replace it with the image of a gas-station owner, servicing a crowded market, happy to be able to make his kid's soccer games without a boss breathing down his neck, and more wary of innovation than eager for it."[122]

Several scholars[123] have attempted to define what constitutes an "entrepreneur," and show that the classic small business owner is different than the innovation driven entrepreneur.[124] Erik Hurt and Benjamin

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that has drawn millions to our shores and made our economy the envy of the world").

[119] Small Business Jobs Act of 2010, Pub. L. No. 111-240, 124 Stat. 2504 (2010).

[120] *See id.* The Act authorizes the creation of the Small Business Lending Fund Program administered by the Treasury Department to make capital investments in eligible institutions, in order to increase the availability of credit for small businesses.

[121] *See* Annie Lowrey, *Why Small Businesses Aren't Innovative*, SLATE (Sept. 19, 2011), http://www.slate.com/articles/business/small_business/2011/09/why_small_businesses_arent_innovative.html ("The bulk of small businesses being created, in short, are not particularly innovative ones. Few spend any money on research or development, getting a patent, or otherwise trademarking a new idea. Most simply help provide already-crowded markets with familiar goods such as legal work or gas or nearby groceries. Nor are they *growing* businesses either"). *See also* Aulet & Murray, *supra* note 1 (MIT professors Aulet and Murray on the difference between the two definitions: "Not all startup companies are created equal. Although both innovation-driven enterprises (IDEs) and traditional small- and medium-sized enterprises (SMEs) can provide valuable products and services and create jobs, IDEs – startups focused on addressing global markets based on technological, process or business model innovation – can potentially create hundreds or even thousands of high-skill jobs if they succeed").

[122] *See* Lowrey, *supra* note 121.

[123] *See* Erik Hurst & Benjamin Wild Pugsley, *What Do Small Businesses Do?* 73-75 (Brookings Papers on Economic Activity, Fall 2011), https://www.brookings.edu/wp-content/uploads/2016/07/2011_fall_bpea_conference_hurst.pdf ("[E]conomic theory usually considers entrepreneurs as individuals who (1) innovate and render aging technologies obsolete (Schumpeter, 1942), (2) take economic risks (Knight (1921); Kihlstrom and Laffont (1979); Kanbur (1979), and Jovanovic (1979)), or (3) are considered jacks-of-all-trades in the sense that they have a broad skill set (Lazear, 2005). Policy makers often consider entrepreneurs to be job creators or the engines of economic growth").

[124] *Id.* (discussing the distinction between small businesses that intend to innovate and small business participants that "provide a relatively standardized good or service to an existing customer base. Specifically, these industries primarily include skilled craftsmen (e.g., plumbers, electricians, contractors, and painters), skilled professionals (e.g., lawyers, accountants, and architects), insurance and real estate agents, doctors, dentists, mechanics, beauticians, restaurateurs, and small shop keepers (e.g., gas station owners and grocery store owners)").

Pugsley[125] demonstrate in a new study that the distinction between the small business owner and an innovation driven entrepreneur is very important because most small businesses do not innovate, remain small in size throughout their existence and do not provide the desired job creation that policy makers are intending to create. Moreover, Hurt and Pugsley also illustrate how very few of the small businesses in the market actually spend resources on innovation, such as filing for protection of intellectual property rights (that include registering for a patent, copyright or trademark) or investing in research or development.[126]

The Jumpstart Our Business Startups (the "JOBS") Act,[127] which was signed into law by President Barack Obama on April 5, 2012, is another legislative effort worthy of mention. This Act has been met with mixed reviews and reactions.[128] On one hand, entrepreneurs and emerging growth companies are able to use novel practices in order to raise capital.[129] On the other hand, critics (securities regulators, consumer and investor advocates) worry about Ponzi schemes and the future potential fraud to unaccredited investors. The media focuses on the aspect of crowdfunding.[130] However, there are various new ways of raising capital according to the JOBS Act.[131] A comprehensive discussion of such securities laws concerns, as well as other legal considerations, are outside the scope of this article, and should be explored in additional research and commentary.[132]

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[125] *Id.* (explaining that "nearly half of all new businesses report providing an existing good or service to an existing market").

[126] *Id.*

[127] Jumpstart Our Business Startups Act of 2012, Pub. L. No. 112-106, 126 Stat. 315 (2012) (codified in scattered sections of Title 15 of United States Codes).

[128] *See* Chatterji et al., *supra* note 113 ("The focus of the JOBS Act was on reducing the financial reporting requirements for small firms and facilitating crowd funding, making it easier for individuals to invest in or contribute funds to start-ups. It raised the limit of Regulation A securities offerings to $50 million, lifted the ban on general solicitation, and created a new class of companies—called emerging growth companies—that will have fewer disclosure requirements").

[129] Anat Alon-Beck, *The Law of Social Entrepreneurship - Creating Shared Value Through the Lens of Sandra Day O'Connor's iCivics*, 20 U. PA. J. BUS. L. (forthcoming), .

[130] The SEC will make a final determination on this issue following a 90-day period for the public to issue comments.

[131] *See* Chris Brummer & Daniel Gorfine, T*he JOBS Act Isn't All 'Crowdfunding*,*'* FORBES (Oct. 8, 2013, 8:00 AM), http://www.forbes.com/sites/realspin/2013/10/08/the-jobs-act-isnt-all-crowdfunding/ (discussing the JOBS Act and explaining some of the main impacts, as follows: 1) There are special rules for 'Emerging Growth Companies' in order to encourage initial public offering (IPO). Twitter just used this provision for its IPO. 2) There will be significant changes to rules governing private offerings with regards to General Solicitation and Accredited Investors. 3) The legalizing of crowd investing (vs. crowdfunding). 4) Regulation A. 5) Private companies can remain private for a longer period of time as the Act increases the limit on the number of shareholders that a company may have prior to being subject to the Exchange Act annual reporting requirements).

[132] *See* Chatterji et al., *supra* note 113 ("The federal government has also taken other lower profile steps, under the banner of Startup America, to explicitly to promote high-growth entrepreneurship. The

E. Criticism

Since the beginning of the financial crisis in 2008, governments have experimented with vast public interventions both in the U.S. and other Western economies.[133] The U.S. government, like many Western governments,[134] focused on financing the mainly inadequately run and very troubled firms in the economy.[135]

Both the Bush and Obama administrations tried to restart the market by dealing with the "troubled assets" that were overcrowding the banks' balance sheets—mainly due to housing-related loans and securities.[136] In September 2008, the Bush Administration proposed to use $700 billion of public funds on direct purchases of these troubled assets.[137] However, the Bush administration eventually decided to call off this plan after running into forceful opposition, especially since it seemed it would be hard for the U.S. Treasury to assess the worth of these troubled assets.[138]

In March 2009, the Obama Administration announced a plan called the "Public-Private Investment Program" for investing up to $ 1 trillion in order to finance competing and privately managed funds devoted to buying these troubled assets.[139] If market crisis calls for immense public resources to be used for interventions, then perhaps funds should be dedicated to advancing new enterprises instead of exclusively being used for bailing out troubled entities.[140]

Entrepreneurial businesses contribute to job creation as they employ about half of the private-sector workers in the United States, and contribute to market innovation as they generate "approximately half of non-farm private GDP," according to William Bygrave.[141] This article calls for an intense focus on entrepreneurship and venture capital as means of

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Obama Administration modified the Small Business Investment Company program to offer two new $1 billion funds to invest in high-growth businesses. Several government agencies, including the SBA, Veterans Affairs, and the Department of Energy have sponsored business accelerators. The USPTO also announced a new fast track 12-month patent application process that is especially targeted at entrepreneurial firms. The National Institutes of Health have simplified the process to license technologies for biomedical start-ups").

[133] *See also* BOULEVARD OF BROKEN DREAMS, *supra* note 34, at 1.

[134] The Swiss government infused $60 Billion into UBS in exchange for ten percent of the firm's equity. *S*ee *id.* at 1 ("UBS Given an Infusion of Capital").

[135] *See id.* (The US Government invested "over $150 Billion in AIG . . . in September and October in exchange for 81 percent of the firm's stock").

[136] Lucian A. Bebchuk, *Buying Troubled Assets*, 26 YALE J. ON REG. 343, 344 (2009).

[137] *Id.*

[138] *Id.*

[139] *Id.*

[140] *See also* BOULEVARD OF BROKEN DREAMS, *supra* note 34, at 1; WILLIAM BYGRAVE, ANDREW C. CORBETT & ANDREW ZACHARAKIS, ENTREPRENEURSHIP 4 (2d ed. 2011).

[141] *See* BYGRAVE & ZACHARAKIS, *supra* note 140, at 2.

innovation that are the building blocks of our economy. In order to advance significantly and reliably, U.S. regulators, as well as their international counterparts, should concentrate on reviving the start-up market, with an emphasis on innovative technology, venture capitalists and high-growth entrepreneurial firms.

III. THE MATCHMAKER PUBLIC-PRIVATE INVESTMENT FUND INITIATIVE

The Matchmaker public-private venture capital investment fund initiative builds on the Coalition Model, in order to proactively promote innovation, technology and new venture formation, while also bridging some of the financial inefficiencies and information gaps associated with investment in early-stage innovation driven enterprises. It encourages U.S. government agencies to fund research and innovation by identifying specific technological challenges and collaborating with audiences in the public sector, research institutions and universities, and private corporations in order to advance commercialization efforts based on these challenges. There are several potential benefits to adopting such a proactive policy. First, it might encourage future engineers, scientists and innovators to take a risk and become entrepreneurs. Second, it provides direct funding to research and development needs that might otherwise not be used. Third, it can signal that there are opportunities for private investors to invest in such ventures, and perhaps even serve as some sort of certification. Fourth, it will create a direct pathway for small firms to access government procurement.

The "Matchmaker" initiative is a promising targeted policy endeavor aimed at designing a platform for a competitive venture capital industry in the United States that promotes venture capital investment in early stage technology firms (start-ups). The proposed design is intended to attract the participation of professional venture capital fund managers (from the private market) to the Matchmaker initiative in order to produce public-private venture capital funds. The Matchmaker venture capital funds will be legally separate and independent of the government and will focus on making equity investments in private-sector early stage start-up firms while using government-supplied funds.

Another benefit of the Matchmaker funds would be the advancement of continuous procurement relationships between the government agency that will provide the funding and the technology companies that the funds will invest in. This initiative will allow the government agencies to secure innovative technology that will be updated according to the constantly developing needs of the commercial market, to keep up with technology advancement, and to secure funds for its research and development

missions.

The purpose of this initiative is not to create a new high-technology industry, but rather to create a platform for investment in early stage technology innovations, research and development. It is based on the successful Israeli Yozma Program[142] as well as on the experience of the success story of Silicon Valley.[143]

A. The Reasons for Government Intervention in the Current Market

The following are various reasons that require government intervention in the market in the form of the proposed Matchmaker initiative. First, economic analysis encourages government to present subsidies to small high-technology firms because the social returns from such firms' research and development expenses might surpass their private returns.[144] The social return to the government is much greater than to private investors[145] because private investors cannot reap the full benefits of their investment through profits where radical innovation is concerned.[146] Moreover, some scholars suggest that the spillover problems are predominantly acute among small firms because they are commonly incapable of effectively defending their intellectual property or extracting the majority of the rents in the product

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[142] *See* Gil Avnimelech & Morris Teubal, *Evolutionary Targeting*, 18 J. EVOL. ECON. 151, 159 (2008) [hereinafter *Evolutionary Targeting*] ("[T]he Yozma program [was] implemented during 1993-1998"). It was a policy that essentially created the platform for the Israeli venture capital industry. *See* Gil Avnimelech & Morris Teubal, *Evaluating Venture Capital Policies: Methodological Lessons from the Israeli Experience* 14, Paper Presented at the DRUID Summer Conference 2003 on Creating, Sharing and Transferring Knowledge (June 2003) [hereinafter *Methodological Lessons*]. It should be noted that the purpose of the Yozma Program was not to create a new high-technology industry, rather the venture capital industry evolved from an existing Israeli foundation of high-technology capabilities, innovation, research and development.

[143] *See* ANNALEE SAXENIAN, REGIONAL ADVANTAGE: CULTURE AND COMPETITION IN SILICON VALLEY AND ROUTE 128 (1996) [hereinafter REGIONAL ADVANTAGE]; *see also* Ronald J. Gilson, *The Legal Infrastructure of High Technology Industrial Districts: Silicon Valley, Route 128 and Covenants not to Compete*, 74 N.Y.U. L. REV. 575, 588 (1999); *see also* Richard A. Booth, *Give Me Equity or Give Me Death – The Role of Competition and Compensation in Silicon Valley*, 1 ENTREPRENEURIAL BUS. L.J. 265, 271 (2006).

[144] *See* Josh Lerner, *The Government as Venture Capitalist: The Long-Run Impact of the SBIR Program*, 72 J. BUS. 285 (1990) [hereinafter *Venture Capitalist*]; *see* Zvi Griliches, *The Search for R&D Spillovers*, SCAND. J. ECON., Supp. 1992, at 29, (evaluating calculations of the social rates of return for research and development).

[145] *See*, *e.g.*, Browyn H. Hall, *The Private and Social Returns to Research and Development*, *in* TECHNOLOGY, R&D, AND THE ECONOMY 140 (Bruce L.R. Smith & Claude E. Barfield eds., The Brookings Institution 1995) (providing evidence that the social return to R&D is much above the private return); *see* Yoram Margalioth, *Not A Panacea for Economic Growth: The Case of Accelerated Depreciation*, 26 VA. TAX REV. 493 (2007); *see also* Griliches, *supra* note 144, at 251-52.

[146] *See*, *e.g.*, Hall, *supra* note 145; *see* Margalioth, *supra* note 145; *see also* Griliches, *supra* note 144, at 252.

market.[147]

Second, by giving awards to start-up firms, the government is certifying these start-ups to the private market. The offering of a start-up company's equity may be associated with the "lemons" problem and "adverse selection."[148] As noted earlier in this Article, there is a financing and information gap, which is called the "Valley of Death."[149] The Valley of Death describes the financial difficulties that start-up firms experience in the early-stage of their companies' technology development, which is the stage between the early stage of discovery (that is generated from basic research) to the later stage of commercialization of the product or process. It results from the uncertainty, high-risk and information asymmetry problem, which is associated with investing in start-ups, and precludes investors from backing such firms.

The following are five broad stages in the innovation process, as well as the financial sources that are usually available to start-up at these stages. First, the stage of basic research, where funding is usually available to entrepreneurs from government sources like NSF, NIH, SBIR phase I, and from private corporate resources such as funding that large corporations allocate for the purposes of research and development; second, the stage of proof of concept or invention, where financing sources usually include private Angel investors, corporate research and development funds, government funding from SBIR phase II and technology labs; third, the

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[147] *See Venture Capitalist*, *supra* note 144; *see also* Edwin Mansfield et al., *Social and Private Rates of Return from Industrial Innovations*, 91 Q. J. ECON. 221, 234 (1977).

[148] *See* George A. Akerlof, *The Market for "Lemons": Quality Uncertainty and the Market Mechanism*, 84 Q. J. ECON. 488, 493 (1970) (discussing the "adverse selection" problem, as well as firms' offerings of equity that may be associated with the "lemons" problem); *see also* Manuel Utset, *Reciprocal Fairness, Strategic Behavior & Venture Survival: A Theory of Venture Capital Financed Firms*, 2002 WIS. L. REV. 45, 56 (2002); *see also* PAUL A. GOMPERS & JOSH LERNER, THE VENTURE CAPITAL CYCLE 129 (1999).

[149] *See* Arnold C. Cooper et al., *Entrepreneurs' Perceived Chances for Success*, 3 J BUS. VENTURING 97 (1988) ("67% of new businesses fail and discontinue within four years"); U.S. GEN. ACCOUNTING OFFICE, SMALL BUSINESS EFFORTS TO FACILITATE EQUITY CAPITAL FORMATION 19 (2000), http://www.gao.gov/assets/240/230896.pdf ("[A]pproximately 80% of new businesses . . . fail or no longer exist within 5 to 7 years of formation due to a lack of financial depth, a lack of management expertise, an unworkable business idea, or some combination of these factors. The perceived high risk associated with new and rapidly growing companies is also borne out by the past performance of venture capital investments in the informal, unregulated equity capital market. According to a recent study by the National Association of Seed and Venture Funds, only about 10 percent of venture capital investments meet their expected rate of return"); THOMAS ZIMMERER & NORMAN M. SCARBOROUGH, ESSENTIALS OF ENTREPRENEURSHIP AND SMALL BUSINESS MANAGEMENT 10 (3d ed. 2002) (asserting that 24% of small businesses fail within two years and 63% fail within six years); Amy E. Knaup, *Survival and Longevity in the Business Employment Dynamics Data*, BUREAU OF LABOR STATISTICS MONTHLY LAB. REV., May 2005, at 50, 51 (stating that 34% of new businesses fail within their first two years and 56% fail within four years).

early-stage technology development stage, which is often termed as the Valley of Death because of the entrepreneur's hardship in getting financing for this stage; fourth, the stage of product development, where private venture capitalist traditionally invest in start-up firms; fifth and last, the production or marketing stage, where financing sources include private venture capitalists, corporate venture capital, private equity or commercial debt.

The Valley of Death can have a considerable effect on the productivity of government supported research and development efforts,[150] especially since an alarming study by Paul Gompers and Josh Lerner explains that there is a ninety percent failure rate among early-stage firms who could not get venture capital backing.[151] If the government will intervene and give awards to such firms, it will also certify the firms to private investors. Such certification can tackle the informational asymmetries problem that otherwise precludes investments.[152]

Therefore, there is a market need for government intervention in order to encourage the creation, survival and growth of entrepreneurial firms, since the government already spends money (in the first innovation stage) in trying to boost research and development initiatives and "knowledge spillovers" (an exchange of ideas among individuals).

Third, government intervention is primarily necessary at these times when private investors effectively have no appetite for investing in risky start-up companies.[153] In recent years, large public firms are shying away from investments in research and development initiatives due to a philosophy of "shareholder primacy," which precludes mangers from pursuing long-term projects or investments in entrepreneurial firms with uncertain returns[154] because they are "exposed to 'stock market sickness' & short-term thinking," which results in very low "social impact."[155]

Fourth and finally, due to the recent economic crisis and unstable economic environment, even venture capital investors, who might traditionally invest in such early innovation stages, are also reluctant to

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[150] Ford et al., *supra* note 5; *see* Branscomb & Auerswald, *supra* note 5; *see also* Auerswald et al., *supra* note 5.

[151] Paul Gompers & Josh Lerner, *The Money of Invention: How Venture Capital Creates New Wealth*, UBIQUITY (Jan. 2002), http://ubiquity.acm.org/article.cfm?id=763904; *see also*, U.S. GEN. ACCOUNTING OFFICE, *supra* note 149, at 19 (approximately eighty percent of new businesses fail within five to seven years from their formation).

[152] *See Venture Capitalist*, *supra* note 144.

[153] *See* Joseph A. McCahery et al., *Corporate Venture Capital: From Venturing to Partnering*, *in* THE OXFORD HANDBOOK OF VENTURE CAPITAL 4 (Douglas Cumming ed., 2012).

[154] *See* SHAREHOLDER VALUE MYTH, *supra* note 6.

[155] *See also Methodological Lessons*, *supra* note 142, at 14.

partake in such funding and prefer later stage investments.[156]

B. The Role of the Venture Capital Industry in the U.S. Innovation Process

The venture capital industry has played, and continues to play, an important role in the United States innovation process for the following reasons. First, venture capitalists are active investors who provide many value added services to the technology companies that they invest in. Such services can vary, and include: strategic planning, mentoring, guidance, selecting management, lawyers, accountants, writing a business plan, etc.[157] Second, venture capitalists are fundamental to the formation of startup firms.[158] Third, venture capitalists are actively engaged with the following innovation networks: global as well as local technology markets,[159] financial institutions,[160] specialized labor markets[161] and professional business service markets.[162] Finally, venture capital investment spurs more technological innovation than corporate venture capital investment.[163]

Venture capital firms use unique contracts and organizational capabilities in order to overcome the uncertainty, risk, information asymmetry, agency,[164] "lemons" and "adverse selection"[165] related problems. The following are a few examples of studies that describe the successful outcomes from the relationship between venture capital investors and their portfolio firms in the United States (as compared to startup firms that were not backed by venture capitalists).[166] First, startup companies that

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[156] *See* McCahery et al., *supra* note 153, at 4.

[157] For further information on services provided by VC, *see* GOMPERS & LERNER, *supra* note 148.

[158] *See Methodological Lessons*, *supra* note 142, at 4.

[159] *See id.*

[160] *See id.*

[161] *See id.*

[162] *See id.*

[163] *See* Samuel S. Kortum & Josh Lerner, *Assessing the Contribution of Venture Capital to Innovation*, 31 RAND J. ECON. 674, 674 (2000) (Kortum and Lerner found that on average each dollar invested by Venture Capital contributes to the rate of patents three to four times more than corporate R&D. Moreover, from the late 1970's to the mid 1990's VC represented only three percent of corporate R&D, but are responsible for ten to twelve percent of privately funded innovation); *see also* Joseph Bankman & Ronald J. Gilson, *Why Start-Ups?*, 51 STAN. L. REV. 289, 289 (1999) (reviewing tax treatment of startups).

[164] *See* GOMPERS & LERNER, *supra* note 148, at 129.

[165] Akerlof, *supra* note 148, at 493; *see also* Utset, *supra* note 148, at 56; *see also* GOMPERS & LERNER, *supra* note 148, at 129.

[166] It should be noted that the research based on the Israeli VC industry showed similar results concerning the performance of venture capital backed firms. According to Avnimelech and Teubal, this includes a "higher success rate (Exit rate: IPO or M&A), younger age at IPO, higher IPO valuation, and higher growth in sales." *Methodological Lessons*, supra note 142, at 5.

are backed-up by venture capitalists enjoy a greater access to global markets.[167] Second, venture capital investors enable their portfolio companies to go public faster (it seems that investor uncertainty is reduced due to venture capital presence and monitoring), and, in effect, help their portfolio companies to get lower interest rates on bank loans.[168] Third, there is superior overall post initial public offering performance of venture capital backed portfolio firms, both in terms of overall growth rate and stock price.[169] Finally, venture capital backed firms invest a larger fraction of their total expenses in research and development, as well as have higher growth rates in terms of revenues and assets.[170]

C. The Initiative – Governance Mechanisms

The initiative proposes to establish public-private equity funds, which will be organized as independent not-for-profit corporations, in order to bridge the financial and information gap between budding commercial innovation and the technology needs of a participating government agency.[171] There is extensive literature on regulatory capture, which

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[167] *See Methodological Lessons*, supra note 142, at 4.

[168] *See* William L. Megginson & Kathleen A. Weiss, *Venture Capitalist Certification in Initial Public Offerings*, 46 J. FIN. 879, 882-83 (1991); *see also* Christopher B. Barry et al., *The Role of Venture Capital in the Creation of Public Companies: Evidence from the Going-Public Process*, 27 J. FIN. ECON. 447, 449-50 (1990) (It appears that "venture capitalists are able to bring public the firms they back earlier than would have otherwise been possible"). This likely occurs because of the industries in which the venture capitalists focus. Venture capitalists take a monitoring role, demonstrated by serving on the board, maintaining the investment beyond the IPO, and holding a large equity position in a portfolio firm. Investor uncertainty is reduced with the quality of the venture capitalist's monitoring skill. A decrease in investor uncertainty was found to decrease IPO underpricing. These findings support the notion that venture capitalists play an important role in new enterprise.

[169] *See* Megginson & Weiss, *supra* note 168, at 879 (comparison of venture capital backed IPOs with non-venture capital backed IPOs from 1983 through 1987, which are "matched as closely as possible by industry and offering size." They conclude that the presence of venture capitalists (in the issuing firms) serves to "lower the total costs of going public and to maximize the net proceeds to the offering firm"); *see also Methodological Lessons*, supra note 142, at 5.

[170] *See* William L. Megginson, *Toward a Global Model of Venture Capital?*, 16 J. APPLIED CORP. FIN. 89 (2005) ("Venture capitalists create value through their role as active investors, and government and business leaders around the world have come to realize that venture capital and private equity investing can be a significant force in promoting economic development and technological progress. In general, countries with English common law codes offer greater protection to investors; the ratio of venture capital spending to GDP for common law countries is nearly double that in civil law countries. Government efforts to promote venture capital would probably be better focused on eliminating regulatory road-blocks, lowering taxes, and providing a favorable investor climate"); *see also Methodological Lessons*, *supra* note 142, at 5.

[171] *See* John T. Reinert, Comment, *In-Q-Tel: The Central Intelligence Agency as Venture Capitalist*, 33 NW. J. INT'L L. & BUS. 677, 679 (2013) (noting that there are attempts/desires by government agencies (Army, NASA & USA Postal Service) to invest in technology ventures); He cites *Memo to Techies: This Army Wants Your Energy Ideas*, WALL ST. J.: Deals & Deal Makers, May 9, 2003, at C5; News Release, *NASA Forms Partnership with Red Planet Capital, Inc.*, NASA (Sept. 20, 2006), http://www.nasa.gov/home/hqnews/2006/sep/HQ_06317_red_capital.html; *see also* Marc Kaufman,

suggests that government involvement in the market may be distorted as a result of politicians or interest groups that wish to use the intervention for their own private benefit.[172] The following design will try to prevent the regulatory capture from the government investment, by structuring the Matchmaker funds as independent bodies with autonomous management (and private market incentives).[173]

1. The "General Partner"

Each participating federal agency will appoint independent private investment professionals to manage its Matchmaker fund. Reputable and established private equity managers (and staff) will be recruited from the private venture capital industry and will be granted competitive (compared to private industry) compensation schemes.[174]

The track record of a venture capital fund manager is extremely important for several reasons. First, entrepreneurs prefer to work with fund managers who have a good track record of making successful deals and a lot of money in the past. These managers will stand a better chance of getting into the best deals in the future than managers with no experience in

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NASA Invests in Its Future with Venture Capital Firm, WASH. POST Oct. 31, 2006, at A19; Joe Davidson, *Postal Service Desperate for Good Ideas*, WASH. POST, June 23, 2010, at B03.

[172] *See generally* George Stigler, *The Economic Theory of Regulation*, 2 BELL J. ECON & MGMT. SCI. 3 (1971); *see* Sam Peltzman, *Towards a More General Theory of Regulation*, 19 J. L. & ECON. 211, 245 (1976); *see also* GOMPERS & LERNER, *supra* note 148, at 315 ("the theory of regulatory capture suggests that direct and indirect subsidies will be captured by groups that stand to gain substantial benefits and whose collective political activity is not too difficult to arrange").

[173] BUS. EXEC. FOR NAT'L SEC., ACCELERATING THE ACQUISITION AND IMPLEMENTATION OF NEW TECHNOLOGIES FOR INTELLIGENCE: THE REPORT OF THE INDEPENDENT PANEL ON THE CENTRAL INTELLIGENCE AGENCY IN-Q-TEL VENTURE 6 (2001), http://news.findlaw.com/cnn/docs/inqtel/inqtel80701rpt.pdf [hereinafter BENS REPORT]; *see also* IAN MACMILLAN ET AL., CORPORATE VENTURE CAPITAL: SEEKING INNOVATION AND STRATEGIC GROWTH (2008). In this study, the U.S. federal government pays attention to the rising role of corporate venture capital (CVC) in technology innovation. *See also* Connie K. N. Chang, Stephanie S. Shipp & Andrew J. Wang, *The Advanced Technology Program: A Public-Private Partnership for Early Stage Technology Development*, 4 VENTURE CAPITAL: AN INT'L J. ENTREPRENEURIAL FIN. 363 (2002) for an example (from 1990 to 2007) where the U.S. government attempts to act as a catalyst for innovation, by providing funding to research institutions; *see also* Maryann P. Feldman & Maryellen R. Kelley, *Leveraging Research and Development: Assessing the Impact of the U.S. Advanced Technology Program*, 20 SMALL BUS. ECON. 153, 163 (2003) (evaluating the successful results of the ATP program & the companies that received funding from ATP); In 2007, ATP was replaced by the Technology Innovation Program (TIP) Program; *see generally*, *Technology Innovation Program*, NIST, http://www.nist.gov/tip (last visited Apr. 16, 2018); *see also* America Competes Act, Pub. L. No. 110-69, § 3012, 121 Stat. 572, 593 (2007); *s*ee also Josh Lerner, *When Bureaucrats Meet Entrepreneurs: The Design of Effective "Public Venture Capital" Programs*, ECON. J., Feb. 2002, at F73, F80 [hereinafter *Bureaucrats Meet Entrepreneurs*]; *see also* Samuel Kortum & Josh Lerner, *Assessing the Contribution of Venture Capital to Innovation*, 31 RAND J. ECON. 674, 675 (2000).

[174] *See Bureaucrats Meet Entrepreneurs*, *supra* note 173.

the industry. Additionally, managers with good records will typically have already built strong networks, so they can help their portfolio companies with introductions to potential customers and possible partners. Finally, the government agency must take into account the manager's commitment as well as past experience with early-stage investment in entrepreneurial firms.

The managers will act similarly to "general partners" (who invest in and manage the fund), whereas the government will act similarly to a "limited partner" (who is passive and only invests money).

a) Compensation

It is extremely important to make sure that the Matchmaker managers will be properly compensated for the fund to be successful and to prevent the situation of a revolving door (when a manager in a public position leaves for a higher paid private position). Therefore, based on the Israeli case study, and the Silicon Valley successful venture capital model, the managers will be compensated with a share of the profits generated by the fund. The government will pay them an annual management fee of two percent and a carried interest of up to twenty percent of the profits of the fund (some private equity funds today pay even more than that to their management).[175]

The mission of compensating managers of public funds in democracies can be particularly difficult, according to Lerner.[176] For example, the story of the first government funded venture capital firm, In-Q-Tel, illustrates the hardships of modeling government funds after private equity funds.[177]

In-Q-Tel was established in 1999[178] in order to provide the U.S. Central Intelligence Agency ("CIA") with access to innovating technologies, by investing in emerging firms (small stake investments) and by using venture-like processes.[179] In order to encourage recruitment of established managers

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[175] This incentive mechanism is very common in Silicon Valley and is called "2 and 20." *See*, *e.g.*, Laura Saunders, *Billionaires Decry "Carried Interest,"* WALL ST. J.: TOTAL RETURN (Jan. 20, 2012, 4:05PM), http://blogs.wsj.com/totalreturn/2012/01/20/billionaires-decry-carried-interest/; *see also* DOUGLAS J. CUMMING & SOFIA A. JOHAN, VENTURE CAPITAL AND PRIVATE EQUITY CONTRACTING: AN INTERNATIONAL PERSPECTIVE 3-5 (2009).

[176] *See* BOULEVARD OF BROKEN DREAMS, *supra* note 34, at 176.

[177] *Id.*

[178] During the time of its establishment, the idea of a government-funded venture capital firm was entirely novel. *See* Steve Henn, *In-Q-Tel: The CIA's Tax-Funded Player in Silicon Valley*, NPR (July 16, 2012, 9:43AM), http://www.npr.org/blogs/alltechconsidered/2012/07/16/156839153/in-q-tel-the-cias-tax-funded-player-in-silicon-valley ("Whether you have realized it or not, over the past 13 years In-Q-Tel has changed your life. 'Much of the touch-screen technology used now in iPads and other things came out of various companies that In-Q-Tel identified,' Smith says"); *see also* BOULEVARD OF BROKEN DREAMS, *supra* note 34, at 176 ("For many of the start-ups, which had targeted corporate customers, the challenges of breaking into government procurements were daunting").

[179] *See* BOULEVARD OF BROKEN DREAMS, *supra* note 34, at 176 (In-Q-Tel also served as a bridge that was able to present new firms to the portfolio of the CIA and to underline the role of the government

and staff from the venture capital industry, and to prevent them from leaving to more lucrative private positions, the CIA offered a rewarding compensation scheme, which was very unusual compared to typical government jobs.[180] The compensation included a flat salary, a bonus paid based on how well In-Q-Tel met government needs, and an employee investment program, which took a pre-specified portion of each employees salary and invested alongside the portfolio.[181] After a few successful years, newspapers, like the New York Post,[182] criticized this compensation model, accusing its managers of using taxpayers' money for their own personal benefit,[183] even though the model was successful and very acceptable in the private world.

b) Incentives & Safeguards

Despite potential criticism, this article recommends compensating the managers of the Matchmaker fund according to the private market, so that the managers will have incentives for the fund to grow. It is important to note further that there is an inherent risk for possible abuses by management, or conflicts of interest. Therefore, the following four important safeguards will need to be instituted.

First, in order to hold the managers accountable to their investment decisions, they will be required to bring their own capital to the fund. The participating federal agency of each Matchmaker fund will determine the

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as a new customer for products developed that were by emerging growth firms); *see also* BENS REPORT, *supra* note 173 ("Unlike a true venture capital model, In-Q-Tel is more aptly described as a 'technology accelerator,' seeking speed and agility in discovering innovative IT solutions for the Agency. In-Q-Tel differs from private venture capital models in the following ways. In-Q-Tel: Places its value proposition on obtaining IT solutions, not foremost on return on equity or asset; Deals always result in a product or service (e.g. feasibility assessment, test product or prototype); Investments are more likely to provide value to the portfolio companies beyond cash: Investment is "smart money" in its portfolio companies; that is, In-Q-Tel provides portfolio companies with intellectual capital, technology-related experience and the Agency as a potential test-bed; and Due diligence process is more strict: In-depth investigation into the company's structure and financial status as well as the ability of the proposed technology to meet the Agency problem domain is completely evaluated before forming a contract"); *see also* Reinert, *supra* note 171, at 679.

[180] *See* BOULEVARD OF BROKEN DREAMS, *supra* note 34, at 176.

[181] For example, in 2012, its CEO, Christopher Darby, earned roughly $1 million. *See* Henn, *supra* note 178.

[182] Christopher Byron, *Penny Stock Spies*, N.Y. POST (April 25, 2005), http://www.rgmcom.com/articles/nypost17.html.

[183] *Id.* (These compensation arrangements, especially allowing the In-Q-Tel employees to invest alongside the portfolio investments, according to the New York Post, were "almost identical to the so-called 'Raptor' partnerships through which top officials at Enron Corp were able to cash in personally on investment activities of the very company that employed them"); *see also* BOULEVARD OF BROKEN DREAMS, *supra* note 34, at 178.

amount of capital required as well as initiate a competitive bidding process for the fund manager positions.

Second, in addition to bringing their own capital, the managers will be required to line up investments from other private investors and legitimate accountable sources. If a considerable share of the Matchmaker funds arrives from the private managers, then they are expected to concentrate on making sure that their investments thrive, as noted earlier by Lerner[184] and the Israeli government's example. Lerner described the reasons for the failure of the New York City Discovery Fund, which did not demand the fund's managing groups to match any funds that were invested by the city.[185]

Third, it is important to design the model so that the private sector partners only do well if the investments generate a good return.

Fourth, the future investment goals must be clear and defined, and linked to the wider targets of the federal agency that launches this model.[186]

c) Bidding Process

The following are the ways in which the prospective Matchmaker fund managers can compete for the right to participate in the program. First, they will need to commit a certain maximum portion of capital that they will be willing to commit and contribute as private equity capital. Second, they will need to specify the size of the fund that they seek to establish. Third, there will be an evaluation of the managers' reputation, previous achievements and previous dedication to small and medium enterprises and involvement with the other stakeholders. Fourth and finally, the federal agency will also consider factors relating to the fund's long-term strategic investment objective, as well as the industries and research that they would like to promote.

d) Matching Component and Another Incentive to the "Upside"

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[184] *See* BOULEVARD OF BROKEN DREAMS, *supra* note 34, at 138-40 ("[M]any examples can illustrate the real danger that the fund managers will have the wrong incentives. The Discovery Fund, for instance, was a $76 million fund organized by New York City in 1995, with funding entirely from the public sector and public utilities that focused on doing business in the city. The city hired a local venture group, Prospect Street Ventures, to run the fund, which was launched with a great deal of fanfare, including Mayor Rudy Giuliani's pledge that it would generate 4,000 jobs. Yet the effort is generally regarded as a failure. . . . It was natural to wonder whether the lack of demand for matching funds and the failure to set a mandate that matched city's economic development needs intensified the problems that the fund encountered").

[185] *Id.*

[186] *Id.* at 138.

The following suggestion is based on the successful incentive mechanism that was used by the Israeli government in the Yozma program. The creativity of Yozma was in the design of the risk-reward model. While the Israeli government collectively shared the risk with the foreign (and local) investors, it offered the investors the potential to reap all of the reward. In the same way, the federal government agency will share the risks associated with establishing the Matchmaker funds with the private actors, while also providing them with "incentives to the upside."[187]

The long-term goal of the federal government agency, in this initiative (unlike the In-Q-Tel example), is not to continue and remain an equity holder in the funds. Instead, the agency would present the private managers (general partners) with the option of inexpensively buying out its equity stake, in the event that the fund becomes profitable.[188] The agency stake in the fund could be bought out once it had served its primary function (to attract professional venture capital investors to invest in early stage technology firms) rather than carry on indefinitely.

The "upside" is that the private fund managers have a "call option," for a period of five years, on the agency's stake in fund. Therefore, in the event that the fund becomes profitable, the private managers can buy the agency's stake at cost, plus a five to seven percent interest.[189] For that reason, from the fund manager's standpoint, it is an extremely good deal.

The government agency will match a significant portion of the private management investment in the fund. In the Israeli Yozma example, the matching ratio was one to one, and the government only maintained a forty percent equity stake in the Yozma funds.

This article supports the idea of private capital entities partaking in government investment because it will increase the total capital introduced into the market, and it gives the managers of the public-private fund incentives to do well.

Additionally, the Matchmaker managers are encouraged in certain situations to invest in conjunction with other venture capital firms.

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[187] *See Evolutionary Targeting*, *supra* note 142, at 159 (discussing Yozma's incentives to the "upside").

[188] *See* BOULEVARD OF BROKEN DREAMS, *supra* note 34, at 178 (discussing In-Q-Tel employees equity compensation).

[189] *See Evolutionary Targeting*, *supra* note 142.

2. The Limited Partners

a) The U.S. government agency

There has to be a government agency that will be in charge of supervising, forming, as well as encouraging other agencies to take part in Matchmaker venture capital funds initiatives.

It is highly recommended that there is a specific agency that will be tasked with supervising and managing this initiative. There are several examples for the need to have a designated agency in charge of a government initiative to support entrepreneurial firms, and research and development. One example is the successful SBIR program, which was in charge of mandating the eleven federal agencies (with extramural research budgets in excess of $100 million) to assign a certain percentage[190] of their total extramural research and development budgets for grants or contracts to small businesses.[191]

Another example is the Advanced Technology Program (ATP), which is another successful public-private partnership example,[192] of United States government providing funding to research institutions in order to encourage innovation. Moreover, in 2007, ATP was replaced by the Technology Innovation Program (TIP) Program, which "provides cost-shared funding to speed the development of high-risk, high-reward, transformative research. This research is targeted to key societal challenges that are not being addressed elsewhere."[193] TIP is part of the National Institute of Standards and Technology (NIST).

The agency will encourage other agencies to start their own or co-invest in Matchmaker funds. There already is an example of a successful public-private venture capital fund. See In-Q-Tel, the CIA's venture capital fund, which was discussed above.[194] There are also other attempts and desires by

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[190] For example, 2.8% of such budget in 2014.

[191] *See* WESSNER, *supra* note 79 (The SBIR program does not fund 'Phase III' innovations, which is a stage of development that is targeted under this initiative. Instead, funding is targeted to the pre-commercial stage of technology development); *see also* Keller & Block, *supra* note 84, at 640.

[192] The ATP is an example of the US government acting as a catalyst for innovation, by providing funding to research institutions. *See* Feldman & Kelley, *supra* note 173, at 163 (evaluating the successful results of the ATP program and the companies that received funding from ATP). In 2007, ATP was replaced by the Technology Innovation Program (TIP) Program.

[193] TECHNOLOGY INNOVATION PROGRAM: TRANSFORMING AMERICA'S FUTURE THROUGH INNOVATION 1 (2009), http://www.nist.gov/tip/upload/tip_2009_annual_report.pdf (TIP defines a societal challenge as "a problem or issue confronted by society that when not addressed could negatively affect the overall function and quality of life of the Nation and as such justifies government attention."); *see also* Reinert, *supra* note 171.

[194] However, it must be noted that the CIA enjoys a distinctive grant of discretionary power, which according to Reinert, was made by the Second Continental Congress to Ben Franklin & to the Committee of Secret Correspondence. *See* Reinert, *supra* note 171 (citing the CIA Act, which grants the CIA an

various government agencies, such as the United States Army and the United States Postal Service, to start their own public-private venture capital funds.[195] Other agencies, like NASA, have also started their own venture capital firms (Red Planet Venture Capital firm).[196]

1. Mission & Supervision

This initiative is also built on the belief that the private managers will be subject to the oversight of the private market. The Matchmaker fund should nevertheless be reviewed annually by the government agency (limited partner) in order to determine the progress of the fund and whether additional funding is required. Another option is to appoint an outside firm that will review the Matchmaker fund on an annual basis.[197] It should be noted that the funds require long-term strategic goals. In order to evaluate if the portfolio companies in the fund are meeting their expected rate of return, it is common to allow technology companies five years and biotechnology companies ten years. Moreover, usually only about ten percent of the venture capital fund's investment meet their projected rate of return, but they are supposed to make up for the rest of the portfolio companies that weren't as successful.[198]

The Matchmaker initiative will also serve as a vehicle that will take to the government agency privately developed innovative projects that can serve the agency's needs. The Initiative establishes a channel for private firms to access government procurement and development, and for the government firm to be able to catch up with the market's technological advancements.

A major benefit of the Matchmaker fund to both parties is the introduction to continuous procurement opportunities between the government agency (that provides the funding) and the private technology companies that the fund will invest in. However, the fund should not be measured on whether the government agency was able to use the technology and improve its commercial needs. For that purpose, there should be another

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extensive authority to expend funds "for purposes necessary to carry out [the CIA's] functions"); *See* Cent. Intelligence Agency Act of 1949, ch. 227, § 8(a), 68 Stat. 208, 212 (*codified* as amended at 50 U.S.C. § 403(j) (2006)).

[195] *See* Reinert, *supra* note 171, at 680.

[196] *See id.* For more information *see* NASA News Release, *supra* note 171. *See also* Kaufman, *supra* note 171.

[197] See Mark Muro, *Economic Cluster Policy Begins to Work*, BROOKINGS (July 9, 2013), https://www.brookings.edu/blog/the-avenue/2013/07/09/economic-cluster-policy-begins-to-work/.

[198] *See* U.S. GEN. ACCOUNTING OFFICE, *supra* note 149, at 19 ("[O]nly about 10 percent of venture capital investments meet their expected rate of return").

arm within the agency, which would be in charge of implementing these changes.[199]

2. User-friendly Application Process

The Matchmaker initiative must have a user friendly and straightforward application process (based on the Yozma vs. Inbal example), without burdensome bureaucratic hurdles, reporting requirements and paperwork, which are frequently coupled with other governmental programs**.**

b) Private Investors

The Matchmaker management is encouraged to bring on additional sources of funding, including from private investors, who will also act as limited partners. This initiative is built on the belief that other private investors will be willing to trust the Matchmaker fund managers, and accordingly invest in the fund, because the managers will be subject to the oversight of the private market.

II. STARTUP NATION'S YOZMA INITIATIVE

In 1984, the Israeli government enacted the Law for the Encouragement of Industrial Research and Development (1984), which establishes the Office of the Chief Scientist ("OCS"), of the Ministry of Economy (formerly known as the Ministry of Industry, Trade and Labor).[200] The Office of the Chief Scientist was established in order to supervise and

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[199] This suggestion is given due to recent critics who maintain that part of In-Q-Tel's responsibilities (and metrics for success) is to improve the agency's technological advancement.

[200] *See* Hedva Ber, *Is Venture Capital Special? – Empirical Evidence from a Government Initiated Venture Capital Market* 8 (Samuel Neaman Institute: Science, Technology and the Economy, Working Paper STE-WP-9, 2002)

> [A] public committee had recommended various ways of encouraging venture capital in order to boost economic growth in general, and the high-tech industry in particular (Securities Authority, 1989). The committee stressed that government support for the VC industry should have two aims—to make it easier to obtain finance for VC investment, and to create the conditions for the development of a VC market, specializing primarily in managing investment and encouraging the participation of specialized financial entities. In this context, it was decided in 1991 to support the establishment of VC funds that would undertake and manage investments in R&D; this would be achieved by providing government guarantees for the purchase of shares in funds via the "Inbal" government insurance company. In this framework, three VC funds were founded in 1991–93, whose investments were guaranteed by the state. At the next stage, in 1992, at the initiative of the Ministry of Commerce and Industry, the "Yozma" government VC fund was set up in order to establish VC funds in cooperation with private foreign investors, and was allocated equity of $ 100 million. Until its dissolution, the fund, which was set up for a limited period of seven years, supported the establishment of ten private VC management funds, which together had raised capital of $ 2.7 billion by 2000.

execute the government's policy for support of industrial research and development ("R&D").[201] The OCS's main goals and incentives are to: (1) aid in the development of technology in Israel as a means of promoting economic progress; (2) increase the knowledge base of industry in Israel; (3) encourage entrepreneurship and technological innovation; (4) strengthen Israel's scientific potential; and (5) fuel high value-added R&D and finally stimulate R&D partnerships both in the national and international communities.[202]

Additionally, the OCS constantly develops and offers a variety of ongoing support programs that enable Israel to lead in high technology entrepreneurship, both in the national and international arenas, and collaborate in the cross-regional development and research efforts.[203] Two of the main strategic development programs, established in 1991-1992, were the Technology Incubator program[204] and the Yozma funds initiative.[205] The Technology Incubator is outside the scope of this article and is discussed in a separate article.

Economists Gil Avnimelech and Morris Teubal argue that Yozma (a government targeted program) and the emergence of a venture capital industry in Israel are distinctive examples that may possibly inspire future government design of a set of "infant industry" support programs.[206] These examples, moreover, can play a significant role in distinguishing the guidelines for "evolutionary targeting,"[207] and identifying the "required set

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[201] *See* Israel Innovaion Center (formerly the Office of the Chief Scientist and MATIMOP), http://www.matimop.org.il/.

[202] *Id.*

[203] *See id.* (There are many programs, such as the following: the Heznek-Seed Fund (the government matches an investment in a seed company, and later on, when the company is successful, gives the investors the option of purchasing the government's shares); the Tnufa Program (is intended to aid the entrepreneur in her preliminary endeavors to build a prototype, design a business plan, and register a patent); the Magneton and Noffar programs (are designed to encourage applied academic research in order to promote technology transfer to industry); and the Magnet Program (encourage formation of consortia that is comprised of academic institutions and individual firms in order to develop pre-competitive technologies). *See also R&D Funds*, ISRAEL BUS. CONNECTION, http://www.israelbusiness.org.il/financialassistance/rdfound (last visited May 1, 2018).

[204] *See* Lesha R. Chaifetz, *The Promised Land: An Examination of the Israeli High-Tech Industry*, 23 U. PA. J. INT'L ECON. L. 385, 389 (2002).

[205] *Overview: Creating a Professionally Managed Venture Capital Market in Isreal*, THE YOZMA GROUP (2000), http://www.yozma.com/overview/.

[206] *Evolutionary Targeting*, *supra* note 142, at 154.

[207] *Id.* at 160:

> Evolutionary Targeting is one aspect of the application of the system-evolutionary perspective to ITP and to innovation-led and knowledge-based economic growth. Based on market-led development processes accompanied by policy-enhancements at critical points, it involves the design and implementation of targeted programs the objective of which is promoting the emergence of a multiagent structure. Evolutionary Targeting operates by

of pre-emergence conditions of industry emergence."[208]

A. The "Yozma" Funds Initiative

In 1992, the Israeli government decided to intervene in the market and act as a venture capitalist.[209] The Israeli government established a $100 million fund, which was wholly owned by the public sector, called the Yozma Venture Capital Ltd.[210] The main goals of the Yozma initiative were to create a platform in order to stimulate and encourage international venture capital investments in Israeli firms, as well as establish ten new venture capital funds in order to encourage future formations of local Israeli venture capital funds.[211]

The Yozma program has the following three innovative fundamental characteristics. First, the Israeli government deliberately established privately owned (and managed) venture capital funds, which had a clear government component.[212] The Yozma initiative is an example of a successful private-public-partnership model. Each of the ten original drop-down funds participating in the Yozma program had to be represented by the following private and public partners. The public party was the Israeli government, and the private parties were Israeli venture capitalists in training, a foreign venture capital firm, and an Israeli investment company

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triggering and enhancing cumulative processes. The central idea behind the actual targeting is to leverage existing high quality (Class A) market forces for the purpose of building multiagent structures. Evolutionary Targeting differs from the old "picking-winners" policy and from Korea's post 1960s targeting (both of which are based on policy-led mechanisms), and from fully unprompted market-led processes. It is based on a new, market- friendly and bottom–up view of targeting industries. It operates by enhancing market-led variety and pre-selection through horizontal policies, and accelerating market-led selection and development/reproduction processes through coordination activities, targeted incentives, institutional changes, and other policies. Evolutionary Targeting involves a number of policies and policy actions related to multiagent structures: (1) promotion of pre-emergence conditions to generate policy targeting candidates (variation); (2) determination of relevant criteria for socially desirable multiagent structures and selection of those to be targeted; (3) identification of system and market failures blocking the unaided emergence of selected multiagent structures; (4) determination of targeted policy objectives, design, timing, and implementation oriented to triggering (or reinforcing) and sustaining cumulative emergence processes; and (5) termination of targeted support.

[208] *Id.* at 155.

[209] *Id.* at 157 n.5, 161 ("Yozma is a case of a successful targeted program, which followed 24 years horizontal grants to business sector R&D programs . . . . The motivation for this program was the need to solve a specific problem—the post R&D commercial failure of large numbers of Israeli startups during the second half of the 1980s").

[210] *See* BOULEVARD OF BROKEN DREAMS, *supra* note 34, at 156-57.

[211] *See* DAN SENOR & SAUL SINGER, START-UP NATION: THE STORY OF ISRAEL'S ECONOMIC MIRACLE 161 (Grand Central Publishing 2011).

[212] *Evolutionary Targeting*, *supra* note 142, at 159.

or a bank.[213]

Second, the Israeli government required Israeli venture capital firms to partner with foreign venture capital firms.[214] The Yozma initiative was able to attract foreign investors by using a relatively unique financial model whereby the Israeli government agreed to match funds to any foreign international venture capital fund (as well as local Israeli venture capitalist) that agreed to invest money in the partnership. The Israeli government would match a significant portion of the joint investment; however, the partnership would also have to include an Israeli investment group[215] so that the Israelis could learn from the seasoned foreign venture capitalists. The Israeli government generally took a forty (40) percent equity stake in the newly established private-public partnership venture capital fund.[216]

Third, the Israeli government shared the risk in establishing the funds with the private actors, as well as provided additional "incentives to the upside" to the private actors.[217] It should be noted that the long-term goal of the Israeli government was not to continue and remain an equity holder in the private-public partnership venture capital funds. Instead, the government would present the private partners with the option of inexpensively buying out its equity stake, in the event that the fund was profitable.[218] The ingenuity of the Yozma initiative was in the risk-reward model. While the Israeli government collectively shared the risk with the foreign (and local) investors, it offered the investors the potential to reap all of the reward.[219] The Israeli government could be bought out once it had served its primary function (to attract foreign investment and start the fund, rather than carry on indefinitely). The "upside" was that in the event that the future venture capital funds became profitable, then the private investors would have a "call option" on the Israeli government's shares. The call option was for a period of five years, at cost, plus a five to seven percent

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[213] Additionally, the Israeli government designated one $20 million Yozma fund solely to directly invest in technology companies; *see* SENOR & SINGER, *supra* note 211, at 156.

[214] *Evolutionary Targeting*, supra note 142, at 159.

[215] *Id.*

[216] "Yozma was the outcome of an interactive policy process that included the Treasury, the private sector, and foreign investors. The government participated in the formation of ten privately owned venture funds and contributed 40% of each fund's capital. The focus was on seed and early stage investments in technology startups." *See* TUCK SCHOOL OF BUSINESS AT DARTMOUTH: CENTER FOR PRIVATE EQUITY AND ENTREPRENEURSHIP, NOTE ON PRIVATE EQUITY IN ISRAEL (last updated Aug. 2, 2005), http://www.tuck.dartmouth.edu/uploads/centers/files/israel.pdf.

[217] *Evolutionary Targeting*, supra note 142, at 162 n.12.

[218] *Id.*

[219] *Id.*

interest.[220] Therefore, from an investor's standpoint it was an extremely good deal.[221]

B. The Need for Israeli Government Intervention in the Market

The reasons to why the Israeli government decided to intervene in the market are different than the current conditions in the U.S. market. Prior to Yozma, there was only one venture fund active in the nation, Athena Venture Partners.[222] During that period (around 1993), Israeli entrepreneurs had difficulty with getting venture capital financing.[223] In order to get funding for their projects, Israeli entrepreneurs had to turn to the following limited avenues: apply to the Office of the Chief Scientist (OCS) for matching grants,[224] apply for Israel-U.S. Binational Industrial Research and Development ("BIRD") foundation grants,[225] use connections and personal

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[220] *Id.* (According to Avnimelech and Teubal, Yozma "did not provide guarantees nor tax benefits; nor was it accompanied by new regulation rules for Pension Funds (Capital Gains tax was relatively low at the time and Pension Funds were allowed to invest a small amount on VC subject to Government regulation. In both respects Israel's situation was 'level playing field' with that of other countries at the time)"). "Yozma did not simply provide supply, risk sharing incentives to investors-- as was common in other Government VC support programs (it did not provide guarantees nor tax benefits; nor was it accompanied by new regulation rules for Pension Funds18); its main incentive was in the 'upside' that is when VC investments where very profitable. Each Yozma fund had a call option on Government shares, at cost (plus 5-7% interest) and for a period of five (5) years." *Methodological Lessons*, supra note 142, at 15.

[221] *Evolutionary Targeting*, supra note 142, at 162.

[222] *See* BOULEVARD OF BROKEN DREAMS, *supra* note 34.

[223] *Evolutionary Targeting*, *supra* note 142, at 159-60:

> During pre-emergence (1985–1992) a number of critical dynamic sub-processes operated which led to 'selection' or 'identification of focal points' of the future high tech cluster. Thus, through the activity of numerous market agents who undertook trial and error activities with respect to organization of VC and startup companies, and through government policy experimentation and learning, a consensus was arrived at as to the desirable characteristics of VC and startup companies—born global startups, which also focus on global capital and product markets; and LP VCs oriented to early phase finance and support of high tech startup (with an additional focus on software and communications technologies). At some point during early emergence (1993–1995) this led to an accelerated entry of VC companies fed by a cumulative process with positive feedback. It is then that the industry attained a size, which enabled it to sustain a large number of supporting institution and services. The strong selection and reproduction processes that operated during the emergence led both to acceleration of activity and to the reconfiguration of the high tech cluster."

[224] *See* SENOR & SINGER, *supra* note 211.

[225] *See Encouragement for Industrial R&D in Israel*, STATE OF ISRAEL MINISTRY OF INDUS. & TRADE OF THE CHIEF SCIENTIST, http://www.donner-tech.com/israeli_r_d_law.pdf (last visited Apr. 18, 2018); *see also What is BIRD*, BIRD FOUNDATION, http://www.birdf.com/What-is-BIRD/ (last visited Nov. 12, 2017) (according to the BIRD Foundation's statement, it "was established by the U.S. and Israeli governments in 1977 to generate mutually beneficial cooperation between the private sectors of the U.S. and Israeli high tech industries, including start-ups and established organizations. BIRD provides both matchmaking services between U.S. and Israeli companies, as well as funding covering up to 50 percent of project development and product commercialization costs. . . . BIRD supports approximately 20 projects annually. The cumulative sales of products developed through BIRD projects

resources (the art of "bootstrapping"),[226] or depend on bank debt financing,[227] which was seldom granted to entrepreneurs with immature and uncertain ideas or projects.

The problem that the Israeli government tried to solve was that, even though entrepreneurs were meeting their scientific objectives and working on promising technologies, they were unable to raise the funds to further develop and commercialize their products.[228]

The other major objective for Yozma was to attract foreign venture capital funds to invest in Israeli firms.[229] Venture capital investors traditionally invested in firms in close proximity to their geographic location. Therefore, the Israeli government needed to give foreign venture capital investors substantial incentives in order to buy into the Yozma program. It was not financing alone that the government wanted to encourage, but also the venture capital value added services that traditionally accompanied the investment, such as mentoring, networking, evaluation of business plans and commercial feasibility of the invention.[230]

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have exceeded $8 billion. Since its inception in 1977, BIRD has approved over 800 projects with leading companies in the U.S., for example: ADM, American Red Cross, Applied Materials, Avaya, Bayer Pharmaceutical, Becton Dickinson, Bio-Rad Laboratories, Eastman Kodak, General Dynamics, General Electric, Guidant, IBM, J&J, KLA- Tencor, Molex, Motorola, Procter & Gamble, SanDisk, Spansion, Telcordia, Texas Instruments, Tyco and others"); *see* SENOR & SINGER, *supra* note 211 ("[Y]et 74% of high-tech exports out of Israel were generated by just 4% of high-tech companies").

[226] *See* SENOR & SINGER, *supra* note 211.

[227] *See* BOULEVARD OF BROKEN DREAMS, *supra* note 34, at 156.

[228] *Id.*; *see also* Gil Avnimelech, *A Five-phase Entrepreneurial Oriented Innovation and Technology Policy Profile: The Israeli Experience*, 16 EUR. PLAN. STUD. 81, 88 (2008) ("[P]olicy-makers believed that the way to overcome these deficiencies was to foster a domestic VC industry, which then became a strategic priority. The outcome was two VC-directed programmes - Inbal (since 1991), which failed; and Yozma (implemented during 1993–1997), which was very successful and was credited with triggering the creation of the domestic VC industry. The critical design dimensions of the Yozma programme dealt with the specific system failures blocking the VC emergence in Israel") (citations omitted).

[229] *See also id.* at 91-92 ("During Israel's VC industry pre-emergence phase (1985–1992), a considerable amount of business experiments took place; which facilitated identification of the basic design features of the future VC targeted programme. These experiments pertained to start-up and VC companies and activities. There was learning about a new start-up business model, which is oriented from "day-one" to global product and capital markets with strong implications for its strategy. For example, it became increasingly important and recognized that start-ups must from year one search for linkages with the leading high-tech clusters and markets. Moreover, it became increasingly important to adopt US security and exchange commission standards and accountancy rules and other attire of US high-tech companies. Some of the start-ups were successful and pointed the way to others. Business experiments and learning also occurred in relation to VC companies and activities") (citation omitted).

[230] *Id.*

C. Inbal (Israeli Government Intervention that Failed) led to Yozma

Israeli policy makers came up with the Yozma model, following experimentation and an extensive lengthy preparation, which involved the search for the possible causes for the problem of the weak "economic impact of companies having received R&D subsidies from the OCS."[231] According to economist Avnimelech, Israeli policy makers tried to learn from the successful story of Silicon Valley. Accordingly, many OCS officers visited Silicon Valley, conducted interviews with various US stakeholder groups, such as venture capitalists, entrepreneurs, officers of the small business administration, and with investment banks.[232]

The first Israeli government targeted attempt at creating a venture capital industry, which was via the implementation of the Inbal program, was actually unsuccessful. The Inbal (government insurance company) program, which was launched in 1991, prior to Yozma, was an effort by the Israeli government to stimulate publicly traded venture capital funds by essentially "guaranteeing the downside of their investments."[233] The Israeli government (via Inbal) guaranteed up to seventy percent of the initial capital assets of the four Inbal venture capital funds that were traded on the Israeli stock market.[234] Moreover, the managers of the Inbal funds had to deal with certain restrictions on their investments, as well as with government bureaucracy and preparation of lengthy and cumbersome periodic reports.[235] The Inbal venture capital funds and the program were not successful.[236]

Israeli policy makers were able to draw the following conclusions due to the failure of Inbal, which led to the development of Yozma.[237] They needed

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[231] *Id.* at 12 ("The high impact of these search and learning processes was underpinned by the successful development of experience-based policy capabilities at the OCS—the result of over 20 years of operational experience in managing incentive programmes in support of R&D and innovation").

[232] *Id.* ("The high impact of these search and learning processes was underpinned by the successful development of experience-based policy capabilities at the OCS—the result of over 20 years of operational experience in managing incentive programmes in support of R&D and innovation").

[233] *Id.*

[234] *See* Gil Avnimelech & Morris Teubal, *Evolutionary Innovation and High Tech Policy: What Can We Learn from Israel's Targeting of Venture Capital* 8 (Samuel Neaman Institute: Science, Technology and the Economy Program, Working Paper STE-WP-25, 2005) [hereinafter *Targeting VC*] ("Inbal (1991) - a Government owned Insurance company, which gave partial (70%) guarantees to traded VC funds. Four VC companies were established under Inbal regulations. This early VC support program failed to create a VC industry").

[235] *Id.*; *see also Methodological Lessons*, *supra* note 142, at 14.

[236] *Targeting VC*, *supra* note 234; *see also Methodological Lessons*, *supra* note 142, at 14.

[237] *See* Gil Avnimelech, *VC Policy: Yozma Program 15-Years perspective*, (Presented at the DRUID Conference, 2009), https://ssrn.com/abstract=2758195 [hereinafter *Yozma Program*] ("Four sets of factors seem to have been responsible for Yozma to become an effective trigger of Israel's ICT Cluster: a) favorable background conditions; b) policy and market forces' experimentation during the pre-emergence period; c) timing - the time overlap between Yozma implementation on the one hand and the

to develop a mechanism that would draw the participation of professional venture capital agents in the Yozma program, in order to produce venture capital funds that could provide Silicon Valley-like added services, such as mentoring, networking, and evaluations of business plans.[238] They decided to select the limited partnership form (instead of publicly traded funds), for the formation of the venture capital funds, and put emphasis on early stage investment. According to economists Avnimelech and Teubal, another reason for selecting the limited partnership model for Yozma had to do with the experiences with the Inbal publicly traded venture capital funds that were "exposed to 'stock market sickness' & short-term thinking,"[239] which resulted in very low "social impact."[240]

The Inbal program had several weaknesses that Yozma was able to deal with. First, investors in publicly traded venture capital funds had difficulty with contributing to the operation of the fund.[241] Second, publicly funded venture capital funds (as compared to private ones) encountered more difficulty with swiftly exploiting the reputation that is usually earned from early exits, and, therefore, with raising new capital.[242] Third, Inbal's failure was also due to the limits that it placed on the funds' management compensation as well as their decision-making ability.[243] Finally, Inbal was lacking in incentives for the "upside" and therefore did not attract professional venture capitalists.[244]

The Yozma fund was accordingly designed in 1992 to overcome the abovementioned challenges, and especially to create a platform for a competitive venture capital industry in Israel.[245] The Yozma program was intended to create venture capital funds, which will be active and invest a critical mass of capital in the Israeli market, while also collaborating with (as well as learning from) foreign limited partners, and growing a network of international contacts and connections.[246]

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rising Nasdaq index and expanding market for ICT on the other; and d) the successful design and implementation of the Yozma program").

[238] *Id.* at 15 n.9.

[239] *Methodological Lessons*, *supra* note 142, at 14.

[240] *Id.*

[241] *Id.*

[242] *Id.*

[243] *Id.*

[244] *Id.*

[245] *See Yozma Program*, *supra* note 237, at 6-7.

[246] *Id.*

D. The Successful Yozma Design

The results of the Yozma initiative exceeded expectations and are noteworthy. Yozma I was created in 1993 and in the following three years established ten drop-down funds.[247] The initial Israeli government owned Yozma I venture capital fund was established a $100M investment, as follows: $80M of the investment was directed at the ten drop-down funds, whereas the remaining $20M was to be invested directly in Israeli high-tech companies.[248] The ten initial Yozma I funds, which were created between the years 1992 to 1997, raised just over $200 Million with the funding support of the Israeli government.[249]

The following is a description of the structure of the ten drop-down Yozma funds. One of the requirements for the establishment of the Yozma funds was that each of the resulting funds would have to assign at least two limited partners, one from an established Israeli financial institution and the other from an established foreign institution. It should be noted that the new entity, the venture capital fund, had to be an autonomous new organization, which was not owned by any of the existing financial institutions.[250]

The "upside" incentive that Yozma provided to private investors was that they could leverage their profits through acquisition of government shares, because each of the ten Yozma funds had a call option on Government shares, at cost (plus interest), for a period of five years.[251] The Yozma I fund and ten drop-down funds were autonomous and independent Israeli venture capital limited partnerships.[252] They also had an emphasis on early-stage investment in Israeli high-technology companies. Each of the ten Yozma Israeli venture capital funds was managed by a local Israeli

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[247] *See* YOZMA GROUP, *supra* note 205 (According to Yozma's web-site, "[w]ith the backing of prominent American, European and Israeli investors, Yozma successfully launched its second fund, Yozma II, which commenced operations in September 1998 and its third fund, Yozma III in 2002. Yozma II & III continued the successful strategy of making direct investments in technology companies and to play a significant role as a value added investor by recruiting senior managers, formulating business strategies, raising additional capital rounds and attracting strategic and financial investors to its portfolio companies").

[248] *See Yozma Program*, *supra* note 237, at 7 ("The basic thrust was to promote the establishment of domestic LP VC funds that invested in very young Israeli high tech startups with the support of government and with the involvement of reputable foreign VC investors").

[249] *See* SENOR & SINGER, *supra* note 211.

[250] *See Yozma Program*, *supra* note 237, at 7 ("[T]"his was made to assure a competitive industry, which is not lacked-in to the old financial system's routine). When a fund fulfilled these conditions, the Government would invest (through Yozma) 40% (up to 8M$) of the funds raised. Thus the $100M of Government funds would draw at least $150M of private sector funds (domestic and foreign)").

[251] *See id.* "The incentives to the 'upside' also stimulated entry of professional VC firms and managers (when you have higher returns the government incentive becomes more significant). The program also assured the realization of learning through the compulsory participation of foreign financial institutions (most of them were well-experienced foreign VC companies"

[252] *Id.* at 8.

management team, which partners with an established Israeli financial institution and a reputable foreign venture capitalist.[253]

The ten original Yozma funds were managing Israeli funds totaling $2.9 billion. One decade following their inception, the Israeli venture market has also expanded to sixty additional funds, which were managing approximately $10 billion.[254] According to Dan Senor and Saul Singer, the "magnitude of this success shows that the ratio of VC investment to GDP is far higher in Israel than elsewhere."[255]

Another feature that set the Yozma initiative apart from other Israeli government programs at that time was that it eliminated many of the bureaucratic hurdles. It was all about simplicity, employing a user-friendly governmental application system and a simple reporting mechanism. There were no cumbersome application processes or complex reporting requirements.[256]

Moreover, Yozma not only "imitated" the Silicon Valley success story, it also adopted US venture capital friendly legal structures that would attract foreign investors, which was key to its success.[257] There are examples of foreign government programs, such as in Malaysia, which were designed to

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[253] *Id.*

[254] *See* YOZMA GROUP, *supra* note 205 (Yozma also "helped a significant number of its portfolio companies go public on major stock exchanges in the US and Europe. In addition, the group was instrumental in placing its portfolio companies for an investment or acquisition by leading corporations such as America On Line, Cisco, Computer Associates, ECI Telecom, General Instruments, Johnson & Johnson, Medtronic, Microsoft, Sequoia Capital and Benchmark").

[255] BOULEVARD OF BROKEN DREAMS, supra note 34, at 157.

[256] *See* BOULEVARD OF BROKEN DREAMS, *supra* note 34, at 183; s*ee also Yozma Program*, *supra* note 237, at 5, 8 (Avnimelech is comparing between Yozma and Inbal, and describing the bureaucracy that Inbal fund managers had to deal with).

[257] *See* Ber, *supra* note 200, at 15:

> The structure of the funds' activity in Israel is almost identical with that in the US. The Israeli funds were set up for a limited period of seven years (as compared with ten years in the US), at the end of which they are liquidated (although the management funds may continue functioning). During this period they invest in firms in order to bring them to a stage where they can realize their investment (henceforth, exit). In other words, the activity of the funds—from the time the firms are selected and throughout the stage of investment in them—is undertaken for one purpose. Because the lifetime of each fund is limited, the management fund tends to open a new one every three years. The funds are set up as limited partnerships so that the capitalists (limited partners) are not involved in the current activity of the fund, and just receive periodic statements. The payment to the managers of the VC funds is usually divided into two: current annual payment as a percentage of the fund's capital (which in Israel is 2–2.5 percent), and a percentage of the yield on successful investments (20–25 percent), which is usually received only after the initial capital has been repaid to the capitalists (i.e., not at the first exit).

encourage entrepreneurship but failed[258] because they tried to simply "import" a design from another country without changing the legal or tax structures, ultimately wasting taxpayers' money. Some of the Yozma fund's legal features included: (1) a fixed life of ten (or seven) years, (2) a limited partnership, modeled after Delaware partnership law, which was the standard practice in the United States, and (3) a flow through tax status.[259] The payment to the venture capital funds managers were also modeled after the Silicon Valley "2 and 20" rule, and were typically divided as follows: annual payment as a percentage of the fund's capital (2–2.5 %), and a percentage of the yield on successful investments (20–25 %), which is obtained only after the initial capital was repaid to the investors (capitalists).[260] Had the government not adopted these new legislation features and the Israeli treasury department resisted them, it is unlikely that the program would have become successful.[261]

E. Yozma vs. Silicon Valley

The emergence of the Israeli high-tech industry in the 1990s is very similar to that of Silicon Valley.[262] Both Israel and Silicon Valley emerged from multi-faceted collaborations between academic and research institutions, private local firms and public intervention (such as grants and continued military spending in technology). However, according to Avnimelech and Teubal, Silicon Valley didn't have a background "backbone" program that parallels the Israeli government's implementation of its horizontal R&D grants scheme.[263] There are US government programs that support R&D and small entrepreneurial firms, such as the SBIR,[264] which was discussed above and was a federal government initiative that changed the United States innovation system during the 1980s. SBIR, for example, was not a targeted policy, such as Yozma, because it was not

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[258] *See* BOULEVARD OF BROKEN DREAMS, *supra* note 34, at 111 ("The frequent failures among public programs to stimulate entrepreneurship and venture capital suggest that many pitfalls face these efforts. The stark truth is that many more initiatives have been unsuccessful than successful").

[259] *See* SENOR & SINGER, *supra* note 211, at 157.

[260] *See* Ber, *supra* note 200, at 15.

[261] *See* SENOR & SINGER, *supra* note 211, at 166-170.

[262] Gil Avnimelech & Morris Teubal, *Venture Capital Policy in Israel: A Comparative Analysis & Lessons for Other Countrie*s 1-55 (Presented at the International Conference: Financial Systems, Corporate Investment in Innovation and Venture Capital, Brussels, 2002) [hereinafter *Comparative Analysis*].

[263] *Id.*

[264] *Id.* at 37; *see also Venture Capitalist*, *supra* note 144, at 285-86 (SBIR "has provided over $7 billion to small high-technology firms between 1983 and 1997 [and] awardees enjoyed substantially greater employment and sales growth than the matching firms").

designed to create a venture capital industry.[265]

Avnimelech and Teubal compared Yozma to other international (including US) government programs that supported the venture capital industry, such as programs that provide supply and risk sharing incentives to investors.[266] There are several unique features of Yozma. First, its main incentive - the "upside" – if the future venture capital funds became profitable, then the private investors had a "call option" on the Israeli government's shares. The call option was for a period of five years, at cost, plus a five to seven percent interest.[267] Second, Yozma guaranteed a "learning from others" process (or a realization of "supply side learning,") because it mandated the participation of a foreign financial institution.[268] Third, the Yozma funds were structured to allow informal interaction amongst the different managers of the funds.[269] Fourth, there was active participation of the government, the Office of the Chief Scientist) (The Chief Scientist was the founder of Yozma - Yigal Erlich), and the other OCS officers at the board meetings of all the Yozma funds.[270] Fifth, there was an aggressive investment policy and steady stimulation of co-investment between the Yozma Funds.[271] Sixth, on the "demand side," the support for the industry was provided by other Israeli government "backbone" R&D support programs as well as by the Technological Incubators Programs,[272] discussed below.

V. CAN THE NEW INITIATIVE FOR THE GOVERNMENT'S INTERVENTION IN THE MARKET IN THE FORM OF GOVERNMENT OWNED ENTERPRISES PREVENT ABUSE?

There are many who oppose the idea of an interventionalist government. Moreover, there are several arguments that criticize government owned enterprises, like the ones suggested in this Article (i.e., the Matchmaker),

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[265] *See Comparative Analysis*, *supra* note 262, at 6 (noting there were other general policies that had an effect on venture capital formation in the US, such as the reduction in capital gains tax, but they are not targeted policies).

[266] *Id.* at 19. Yozma "did not provide guarantees nor tax benefits; nor was it accompanied by new regulation rules for Pension Funds." *Id.*; *see also id.* at 20 n.20 ("Capital Gains tax was relatively low at the time and Pension Funds were allowed to invest a small amount on VC subject to Government regulation. In both respects Israel's situation was 'level playing field' with that of other countries at the time").

[267] *Id.* at 20.

[268] *See Comparative Analysis*, *supra* note 262, at 20.

[269] *Id.*

[270] *Id.*

[271] *See id.*

[272] *Id.*

due to their inefficiency and even wastefulness. The following are some of these arguments.

A. The problem of Inadequate Monitoring of Public Management

There are several theories that deal with the problem of inadequate monitoring of public managers, in this case, the managers of the Matchmaker model. Agency theory deals with the shirking behavior of agents.[273] The government as a stakeholder in the Coalition model must deal with the uncertainty surrounding the actual innovation development, [274] on top of the potential opportunistic conducts of the managers.[275]

Managers of the Matchmaker must deal with information risks – the "adverse selection" challenge[276] – prior to any engagement with or investment in a startup or idea. The managers will be in charge of acquiring information about the potential portfolio companies, ideas, technology and processes. They will also be required to select the appropriate venture or idea based on the information provided and make sure that the venture is not investing in "lemons."

Property rights theory also discusses the problem of inadequate monitoring of managers. In the model, the monitoring issue can arise as a result of the government ownership stake, and the fact that the government's stake is not traded in the open market. Therefore, it excludes the transferability of the ownership.[277]

Finally, public managers have to deal with challenges of complying with formal decision-making procedures and bureaucracy that are associated with getting government funding or grants.[278]

Answer

First, according to Michael Jensen and William Meckling, agency problem is a common problem and exists in all enterprises and cooperation

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[273] *See*, *e.g.*, Bengt Holmstrom, *Moral Hazard and Observability*, 10 Bell J. Econ. 74, 75 (1979).

[274] *See supra* note 148 and accompanying text.

[275] *See also* GOMPERS & LERNER, *supra* note 148, at 127-31; *see also* Utset, *supra* note 148, at 54-55.

[276] Akerlof, *supra* note 148, at 493; s*ee also* Utset, *supra* note 148, at 56 n.21; *see also* GOMPERS & LERNER, *supra* note 148, at 129.

[277] *See* Michael C. Jensen & William H. Meckling, *Specific and General Knowledge and Organizational Structure*, *in* MICHAEL C. JENSEN, FOUNDATIONS OF ORGANIZATIONAL STRATEGY 103 (Harvard Univ. Press 1998).

[278] *See* Fillipo Belloc, *Innovation in State-Owned Enterprises: Reconsidering Conventional Wisdom*, 48 J. ECON. ISSUES 821, 827 (2014).

forms.[279] Therefore, it is not a unique characteristic of a public or quasi-public enterprise.

The analysis of the Agency theory assumes that the main problem is to align the interests of the principal and agent, and to get the agent to follow the principal's orders, without taking into account the agent's interests. Perhaps it would be wise to also take into account the agent and its interests, in order to make sure that the principal will keep its end of the bargain. The initiative addresses this concern, as discussed in this article below.

Second, it is possible that the fact that the shares of the Matchmaker are not easily transferrable, can cause poor monitoring of the management because it provides ownership stability and hence not enough incentives for management to work hard and maximize profit.[280] However, it is also possible that ownership instability can weaken and decrease managements' incentive to innovate.[281]

There is empirical evidence that suggests that active markets actually have a negative effect on innovative investment strategies, as follows. While a firm is not listed on the market, management is in reality more inclined to invest in innovating research because it has more tolerance towards failures,[282] mainly because outside investors cannot observe (or closely) monitor the rate of project advancements.[283] Managers may abstain from investing in risky innovation if they are under a constant threat of loosing

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[279] *See* Michael C. Jensen & William H. Meckling, *Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure*, 2 J. FIN. ECON. 305, 309 (1976)

> The problem of inducing an "agent" to behave as if he were maximizing the "principal's" welfare is quite general. It exists in all organizations and in all cooperative efforts— at every level of management in firms, in universities, in mutual companies, in cooperatives, in governmental authorities and bureaus, in unions, and in relationships normally classified as agency relationships such as those common in the performing arts and the market for real estate. The development of theories to explain the form which agency costs take in each of these situations (where the contractual relations differ significantly), and how and why they are born will lead to a rich theory of organizations which is now lacking in economics and the social sciences generally.

[280] *See* Belloc, *supra* note 278, at 828.

[281] *See id.*

[282] *See* Daniel Ferreira et al., *Incentives to Innovate and the Decision to Go Public or Private*, REV. OF FIN. STUD., Jan. 2014, at 256, 256 ("We show that it is optimal to go public when exploiting existing ideas and optimal to go private when exploring new ideas. This result derives from the fact that private firms are less transparent to outside investors than are public firms. In private firms, insiders can time the market by choosing an early exit strategy if they receive bad news. This option makes insiders more tolerant of failures and thus more inclined to invest in innovative projects. In contrast, the prices of publicly traded securities react quickly to good news, providing insiders with incentives to choose conventional projects and cash in early"); *see also* Belloc, *supra* note 278, at 827 ("By contrast, publicly traded securities require disclosure of all the relevant information and their market prices quickly react to business successes and failures, thereby encouraging insiders to choose conventional projects").

[283] *See* Ferreira et al., *supra* note 282, at 266; *see also* Belloc, *supra* note 278, at 827.

their jobs and of a change in both ownership and management.[284]

As noted in this article, the information asymmetry problems are even more complex in the Matchmaker examples, as compared to other public enterprise initiatives, due to the fact that the managerial decision-making in high-technology requires more knowledge than the general managerial skills.[285] The startup manager is required to apply, verify and understand the technical information necessary for the managerial decision-making process.[286] That is one of the reasons why this article strongly suggests that the managers appointed will have the requisite professional private sector experience, know-how and involvement. It should be noted that professional venture capital funds also face and are able to overcome the same information asymmetry issues.[287]

Moreover, security markets are often inefficient.[288] In the event that public managers' performance is measured by the securities market, managers might increase their emphasis on short-term profits, which will, in turn, sacrifice long-term innovative investment strategies because they would like to avoid being replaced.[289]

Third, government owned firms can (and are advised to) reduce the amount of bureaucratic decision- making processes. See the examples of In-Q-Tel case study above.

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[284] Andrei Shleifer & Lawrence Summers, *Breach of Trust in Hostile Takeovers*, *in* CORPORATE TAKEOVERS: CAUSES AND CONSEQUENCES 33-56 (A. Auerbach ed., Univ. of Chicago Press 1998).

[285] *See* Jensen & Meckling, *supra* note 277, at 12 (Jensen and Meckling established that agency problems due to conflicts between investors and managers can have an effect on the interest of both equity and debt holders to supply capital and invest ("[i]t is generally impossible for the principal or the agent at zero cost to ensure that the agent will make optimal decisions from the principal's viewpoint. In most agency relationships the principal and the agent will incur positive monitoring and bonding costs (non-pecuniary as well as pecuniary), and in addition there will be some divergence between the agent's decisions and those decisions, which would maximize the welfare of the principal")). For further discussion on agency problems and strategies to reduce them, *see also* John Armour, Henry Hansmann & Reinier Kraakman, *Agency Problems and Legal Strategies*, *in* THE ANATOMY OF CORPORATE LAW: A COMPARATIVE AND FUNCTIONAL APPROACH (Reinier H. Kraakman et al. eds., Oxford Univ. Press 2d ed. 2009).

[286] *See also* Utset, *supra* note 148, at 57; *see also* GOMPERS & LERNER, *supra* note 148, at 127-31 (discussing the information asymmetry issue and other risks that venture capitalists face while dealing with start-ups).

[287] According to a report by U.S. Gen. Accounting Office, only ten percent of VCs manage to get a return on their investment. U.S. GEN. ACCOUNTING OFFICE, *supra* note 149, at 19.

[288] *See* Lynn Stout, *Are Stock Markets Costly Casinos? Disagreement, Market Failure and Securities Regulations*, 81 VA. L. REV. 611, 650 (1995).

[289] Jeremy C. Stein, *Takeover Threats and Managerial Myopia*, 96 J. POL. ECON. 61, 62 (1988).

B. Lack of Market Discipline of Government-Owned Firms

There is a long debate in economic literature on the relationship between innovation production and market competition.[290] The argument against implementation of this initiative is that there is no market discipline on government owned firms because of the "soft budget constraint problem."[291] As a result of the soft budget constraint problem, managers of the proposed Matchmaker initiative will not be concerned with the portfolio firm's financial conditions and will subsequently undertake reckless strategies.[292]

Answer

As for the issue of the unrestricted budget, a hard budget constraint can be imposed in practice.[293] Furthermore, Fillipo Belloc notes that in order to encourage innovation, there is a need to center on long-term investment and strategy. Therefore "an excessive short-term attention to cash flows" might actually discourage innovation.[294] Moreover, according to Phillipe Aghion et al., the incentives of management to innovate might in reality increase if they are "insulated" from penalties for failure of the portfolio innovative

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[290] Phillipe Aghion et al., *Competition and Innovation: An Inverted-U Relationship*, 120 QUARTERLY J. ECON. 701, 701 (2005); *see* also Belloc, *supra* note 278, at 829.

[291] *See* J. Kornai, *Resource-Constrained Versus Demand-Constrained Systems*, 47 ECONOMETRICA 801, 806 (1979) (The budget constraint of a firm is soft if the government helps the firm out of trouble - i.e. the government covers firm's losses - through subsidies, tax exemption, credit granted at soft conditions, etc.); *see also* Belloc, *supra* note 278, at 829.

[292] *See id.*; *see also* Andrei Shleifer & Robert W. Vishny, *Politicians and Firms*, 109 Q. J. ECON. 995, 997 (1994) (analyzing political influence on firms); *see also* MARY SHIRELY & AHMED GALAL, BUREAUCRATS IN BUSINESS: THE ECONOMICS AND POLITICS OF GOVERNMENT OWNERSHIP, WORLD BANK POLICY RESEARCH REPORT 10 (1995) ("[M]any governments did not reward managers who attained contract targets; where bonuses or other rewards were offered, soft targets frequently undermined their impact … politicians carefully weigh any change in state enterprise policies, preferring those that benefit their constituents and help them remain in power") (This argument has been largely used to support privatization initiatives as a commitment device of the government to harden the budget constraint of firms); *see* Klaus M. Schmidt, *The Costs and Benefits of Privatization: An Incomplete Contracts Approach*, 12 J. L. ECON. & ORG. 1, 1 (1996). Schmidt argues that "different allocations of ownership rights lead to different allocations of inside information about the firm, which in turn affect both allocative and productive efficiency. Privatization is seen as a commitment device of the government to credibly threaten to cut back subsidies if costs are high in order to give managers better cost-saving incentives (a 'harder budget constraint'). The cost of privatization is that allocative efficiency is distorted."

[293] *See* Belloc, *supra* note 278, at 830 ("[T]o the best of my knowledge, the causal relationship between soft budget constraints and the output of innovation has not been investigated"); *see also* Kornai, *supra* note 291, at 807.

[294] *See* Belloc, *supra* note 278, at 834-35.

projects.[295]

C. Illegal Behavior and Corruption of Public Managers

Public managers' actions can have serious effects on economic activity.[296] There are many examples of public manager's misbehavior, such as rent-seeking, corruption or other illegal activities, that can not only hamper the manager's decision-making process, but may also reduce the incentives and opportunities to invest in innovation.[297] It should be noted that the illegal behavior might also result from various conflicts of interest of public managers.[298]

Answer

It is true that managers in general, whether public or private, can behave illegally for various reasons. Additionally, public managers can also be involved in situations of conflict of interest, "but it is difficult to say a priori whether this happens to a greater (or lower) extent than for private managers," according to Belloc.[299] Managers of private firms also have their fair share of conflicts of interest with other stakeholders, for example, due to their investment in securities or derivatives of other firms.[300]

In the Coalition Model, the managers are dealing with industrial sectors

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[295] Phillipe Aghion et al., *Innovation and Institutional Ownership*, 103 AM. ECON. REV. 277, 278 (2013).

[296] *See* Belloc, *supra* note 278, at 830.

[297] There are many examples of causes to possible corruption of public managers, such as ones resulting from pressures of interest groups, lobbies, or even individual persons influence. *See id.*; *see also*, Andrei Shleifer & Robert W. Vishny, *Corruption*, 108 Q. J. ECON. 599, 599 (1993) (Shleifer and Vishny introduce "two propositions about corruption. First, the structure of government institutions and of the political process are very important determinants of the level of corruption. In particular, weak governments that do not control their agencies experience very high corruption levels. Second, the illegality of corruption and the need for secrecy make it much more distortionary and costly than its sister activity, taxation. These results may explain why, in some less developed countries, corruption is so high and so costly to development").

[298] *See* Belloc, *supra* note 278, at 831.

[299] *Id.*

[300] Iman Anabtawi & Lynn A. Stout, *Fiduciary Duties for Activist Shareholders*, 60 STAN. L. REV. 1255, 1256 (2008) ("[G]reater shareholder power should be coupled with greater shareholder responsibility… the rules of fiduciary duty traditionally applied to officers and directors and, more rarely, to controlling shareholders, should be applied to activist minority investors as well"); *see also* Belloc, *supra* note 278, at 831 (There are many forms of self-dealing by corporate insiders in private corporations, including appropriation of corporate opportunities, excessive compensation, self-serving financial transactions and outright theft of corporate assets); *see also* Simeon Djankov et al., *The Law and Economics of Self-Dealing*, 88 J. FIN. ECON. 430, 430 (2008) ("[T]hose who control a corporation, whether they are managers, controlling shareholders, or both, can use their power to divert corporate wealth to themselves, without sharing it with the other investors. Various forms of such self- dealing include executive perquisites to excessive compensation, transfer pricing, taking of corporate opportunities, self-serving financial transactions such as directed equity issuance or personal loans to insiders, and outright theft of corporate assets") (internal citations omitted).

and hence with business objectives that are similar to those of private managers in the market. Therefore, their behavior can be analogous to their private manager counterparts.[301]

D. Political Capture of Business Objectives

The main argument for the privatization of government owned firms has been the political capture of business purposes and objectives.[302] There are several examples of politicians who control government (particularly state) owned firms. Politicians, who would like to make their constituencies happy, are concerned with job creation. Therefore, they have a tendency to push for more recruitment than necessary in order to create jobs and spend more (in excess) than the private market would on an initiative.[303] Moreover, politicians can also push for initiatives, projects and corporations that will essentially be tools to transfer wealth to their supporters, partners or relatives.[304] These examples can seriously hamper the innovation process and diminish the productive process.[305] Moreover, governments can elect to pay higher wages to government workers (higher than are customary in the

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[301] *See* Belloc, *supra* note 278, at 832; *see* Christopher Hood, *A Public Management for All Seasons*, 69 PUB. ADMIN. 3, 3 (1991) (discussing the group of ideas known as 'new public management' (NPM), as well as their criticism) (NMP is a movement that encourages public administrations and non-profit firms to implement pay-for-performance programs); *see also* Bruno S. Frey & Matthias Benz, *Can Private Learn from Public Governance?*, 115 ECON. J. 377, 377 (2005) (According to Frey and Benz, "in view of recent corporate scandals, private governance can learn from public governance: (1) Goal-oriented intrinsic motivation of agents should be supported by fixed incomes and an extensive selection process of employees; (2) Extrinsic, but non-monetary incentives (e.g. conferring orders and titles) can be used; (3) The power of actors should be restricted by a clear division of power, appropriate rules of succession and institutionalised competition for positions in firms." Frey and Benz further criticize the current private sector management compensation that "has often increased still more, even though share prices have plummeted. This suggests that, in actual fact, the compensation of managers has little to do with performance. Rather, the reason for the steady increase in compensation is now widely seen in the fact that managers are able to exert considerable control over how much money they get. Some managers even resorted to unlawfully misrepresenting their firms accounts in order to raise their private incomes. A particularly troubling aspect is that, in many instances, extended pay-for-performance plans have created the very incentives to commit fraud, by making it attractive to produce short-term increases in share prices") (internal citations omitted). *Id.* at 378.

[302] *See* Andrei Shleifer, *State Versus Private Ownership*, J. ECON. PERSP., Fall 1998, at 133,142, 148 (arguing the "importance of ownership as the source of capitalist incentives to innovate"; and that "state firms are inefficient not just because their managers have weak incentives to reduce costs, but because inefficiency is the result of the government's deliberate policy to transfer resources to supporters").

[303] *See* Belloc, *supra* note 278, at 832.

[304] *See id.*

[305] *See* Shleifer, *supra* note 302, at 141 (arguing that "[g]overnments throughout the world have long directed benefits to their political supporters, whether in the form of jobs at above-market wages or outright transfers").

private market), which will surpass the productivity levels.[306]

Answer

It is true that one of the main concerns of any government led initiative is the fear of political abuse. As discussed in the proposed model, in terms of governance, autonomous Matchmaker VC organizations must be formed, and the management must be independent in order to set goals, supervise, and most of all limit the dangers of political pressures and abuse.[307]

Additionally, according to Belloc, there are actions, such as increasing wages and employment or settling production plants in depressed areas, which government can take that do not lessen the social welfare but correct market failures or internalize negative externalities.[308]

Moreover, Belloc discusses the fact that the uncertainty of re-election gives politicians an incentive to behave.[309] There are several factors that can contribute to the citizens' ability to hold politicians accountable for abuse of power,[310] such as free press,[311] political framework,[312] and participation rights.[313] Therefore, to prevent a public manager from misbehaving, appropriate incentives must be put in place, as well as institutional and economic systems.

VI. CONCLUSIONS

At a time when the American economy continues to try to ramp up and recover economically, the proposed Coalition Model is intended to pave the way for policymakers to consider and institute new initiatives that can encourage innovation, drive growth, create new entrepreneurial firms and increase the overall productivity, profitability and sustainability of American businesses.

It is based on the economic growth theory offered by Solow.[314] Solow postulated that technological innovation is the only reliable engine that can drive change and is the fundamental source of sustained productivity and growth.

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[306] Giacomo Corneo & Rafael Rob, *Working in Public and Private Firms*, 87 J. PUB. ECON. 1335, 1338 (2003).

[307] *See also* BOULEVARD OF BROKEN DREAMS, *supra* note 34.

[308] *See* Belloc, *supra* note 278, at 832.

[309] *See id.* at 833 (Belloc argues that politicians react to incentives, such as economic and non-economic, and cultural, like any other individual does).

[310] *Id.*

[311] Aymo Brunetti & Beatrice Weder, *A Free Press Is Bad News for Corruption*, 87 J. PUB. ECON. 1801, 1801 (2003).

[312] *See* Belloc, *supra* note 278, at 833.

[313] *See id.*

[314] Solow, *supra* note 13.

The Coalition Model builds on Solow's postulations by adding the following: first, the government needs to invest in knowledge, human capital and innovation in order to encourage knowledge spillovers.[315] Second, there is a need to encourage the formation and survival of new entrepreneurial firms, because they are predominantly innovative and stimulate growth.[316] Third, the United States Government has an important role in developing growth in the market.[317] This article calls for the government to take part in the proposed public-private partnerships and to take into account strategic planning that can benefit society for future generations.

Operationally, these concepts are configured through the Coalition model's Matchmaker (government investment in start-ups) Initiatives. The Matchmaker is a private-public equity investment fund that will function to invest in early stage firms, while also addressing the commercial strategic development needs articulated by the funding governmental agency. It also establishes a channel for private firms to access government procurement and development. This initiative will function as autonomous body, and is designed to prevent political capture.

This Coalition Model, based on emerging variations in Israel and Silicon Valley, is proving to be successful in addressing economic growth and sustainability in America.

This article also joins the call for a return to a basic "managerialism" philosophy.[318] Managers of public corporations nowadays cannot realistically pursue long-term projects, such as R&D, because such projects cannot generate immediate financial returns to their shareholders. Therefore, this model calls for management to take into account the interests of all stakeholders.

While this Model tries to address a number of solutions to grow the economy and encourage innovation, it has limitations. The one-model fits all format for the various regions, states, and government agencies can run into problems given geopolitical realities at the local, state, federal and international levels which can confound these relations at any given level.

Also, legal scholars will be challenged in the future in terms of rewriting

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[315] David B. Audretsch, *Entrepreneurship: A Survey of the Literature* 5 (Enterprise Directorate-General, European Commission, Enterprise Papers No. 14, 2003) ("Entrepreneurship has become the engine of economic and social development throughout the world. The role of entrepreneurship has changed dramatically between the traditional and new economies").

[316] BOULEVARD OF BROKEN DREAMS, *supra* note 34, at ch. 1.

[317] *See* Hockett & Omarova, *supra* note 25, at 57.

[318] *See* Lynn A. Stout, *On the Rise of Shareholder Primacy, Signs of Its Fall, and the Return of Managerialism (in the Closet)*, 36 SEATTLE U. L. REV. 1169, 1181-82 (2013).

and reinterpreting intellectual property and antitrust laws, but that is not within the scope of this Article.

Using the Coalition Model and its variants should, as seen from encouraging preliminary results, develop into a new high bar standard for helping to expand strategic and sustained economic growth, innovation and development for generations to come.