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Incubator Cities: Tomorrow's Economy, Yesterday's Start-Ups

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INCUBATOR CITIES: TOMORROW'S ECONOMY, YESTERDAY'S START-UPS

*Abraham J.B. Cable**

Venture development funds (“VDFs”) are products of state and local government law that use public funds to invest in local start-ups, in the hope that these companies will then attract venture capital investment. Existing analysis by legal scholars largely assumes that establishing a private venture capital market is essential to encouraging entrepreneurship. This article challenges that assumption. It argues that VDFs and other policies focused on encouraging venture capital are outmoded and inconsistent with the ultimate economic development goals of state and local governments.

In many industries, entrepreneurs can now get by with less capital because the cost of developing a product is rapidly declining due to technological advances (e.g., cloud computing) and other developments (e.g., the ability to market an app through Apple’s App Store). But venture capital funds continue to seek out investments in a small number of industries that still require a great deal of capital, such as biotech firms trying to develop new drugs. This narrow focus is inconsistent with the advice of economic development experts to pursue industry-neutral policies that broadly encourage entrepreneurial activity in all of its forms. Also, policies oriented towards venture capital may undermine goals of employment diversity and stability because companies seeking venture capital pursue particularly high-risk business strategies that often fail.

This article recommends that state and local governments shift their policies to encourage, or at least not hinder, alternatives to venture capital.

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INTRODUCTION

When articulating his economic agenda in 2011, President Obama and members of his cabinet took to the road to demonstrate a commitment to entrepreneurship. But their first stop was not Palo Alto, Boston, or other established high-tech centers. Instead, they headed to Cleveland, Ohio to appear with the chief executive officer of an economic development initiative named JumpStart.¹ JumpStart is an example of a “venture development fund” or “VDF.”² It invests in Cleveland-area start-up companies using funds contributed by the State of Ohio. Jumpstart wants to produce more Cleveland-based companies that are viable candidates for subsequent venture capital (or “VC”) investment.³

The President’s JumpStart visit symbolizes the elevated status of venture capital as a public policy initiative. In numerous ways, law and policy favors venture capital as a form of finance. The industry has roots in significant public subsidy programs, typically referred to as “state-sponsored venture capital.”⁴ Since the late 1950s, the Small Business Administration has funneled billions of dollars in public funds to start-up companies through privately-managed small business investment companies (“SBICs”),⁵ which some observers credit with providing a template for private venture capital.⁶ By 1986, most states had established funds dedicated to investing in local start-ups or set aside public pension dollars for

1. John Dearborn, *President Spreads Innovation Agenda to Middle America*, HUFFINGTON POST (Mar. 2, 2011, 1:35 PM), http://www.huffingtonpost.com/john-dearborn/obama-spreads-innovation-_b_829935.html (“By bringing the President, five cabinet and two senior administration members to a Midwest city whose venture capital investment growth managed to outpace much of the country in 2010, the White House has shone a spotlight on the potential of entrepreneurship for economic recovery.”); Sabrina Eaton, *President Barack Obama to Tout Entrepreneurship Next Week in Cleveland*, CLEVELAND PLAIN DEALER (Feb. 16, 2011, 12:01 AM), http://blog.cleveland.com/open_impact/print.html?entry=2011/02/president_barack_obama_to_tout.html.

2. See, e.g., *About*, NEW ORLEANS STARTUP FUND, <http://www.neworleansstartupfund.com/about/> (last visited April 12, 2013) (follow “faq” hyperlink) (listing JumpStart as an example of a venture development fund).

3. JumpStart’s website highlights its focus on encouraging VC financing in the region. It includes in its mission statement: “accelerat[ing] the growth of early-stage businesses and ideas into venture-ready companies.” It produces annual reports monitoring levels of VC investing in the region, and it measures its success in part by the amount of follow-on funding obtained by its portfolio companies. See *Our History*, JUMPSTART, INC., <http://www.jumpstartinc.org/aboutus/ourhistory.aspx> (last visited Aug. 13, 2012).

4. In this context, “state” does not distinguish between federal, state, or local government. It simply denotes use of public funds.

5. Michael B. Staebler, *An Overview Of The Small BUS. Investment Company Program*, PEPPER HAMILTON LLP (April 2010), http://www.nasbic.org/resource/resmgr/Legal_Issues/pepper_hamilton_overview.pdf (“Over the years, SBICs have provided \$56 billion of funding to more than 107,000 businesses, including well-known companies such as Apple Computer, Federal Express, Cray Computers, Callaway Golf and Outback Steakhouse.”).

6. JOSH LERNER, *BOULEVARD OF BROKEN DREAMS: WHY PUBLIC EFFORTS TO BOOST ENTREPRENEURSHIP HAVE FAILED — AND WHAT TO DO ABOUT IT* 10 (2009) (“[T]he Small Business Investment Company (SBIC) program in the United States led to the forma-

privately managed VC funds committing to invest locally.⁷ Managers of VC funds enjoy regulatory exemptions at the state and federal level.⁸ Local governments provide office space to companies targeting VC funding and give tax credits to investors in those companies.⁹ This article refers to these types of VC-friendly policies as “venture development.”

Despite the prominence of venture development, one can detect discontent with the VC model by listening closely to key players. Gatherings of entrepreneurs feature presentations on “what’s next” for funding start-ups.¹⁰ One angel-investor website includes links to over 40 articles on the topic “The VC Model Is Broken.”¹¹ In a 2009 Kauffman Foundation report, Paul Kedrosky, a VC manager and frequent commentator on the industry, wrote that venture capital “has become conflated with entrepreneurship in the popular imagination as well as in policy circles, with the result being a widespread and incorrect belief that venture capital is a necessary and sufficient condition in driving growth entrepreneurship.”¹²

Underlying this discontent is a perception that entrepreneurship and venture capital are heading in opposite directions. Changes in technology and business processes allow entrepreneurs to operate with less capital.¹³ Entrepreneurs can now develop and market products without expensive equipment (for example, through cloud computing services) or proprietary sales and distributions systems (for example, through platforms like Apple’s App Store).¹⁴ At the same time, VC funds are getting larger and

tion of the infrastructure for much of the modern venture capital industry.”); Darian M. Ibrahim, *Financing the Next Silicon Valley*, 87 WASH. U. L. REV. 717, 740-741 (2010).

7. PETER K. EISINGER, *THE RISE OF THE ENTREPRENEURIAL STATE: STATE AND LOCAL ECONOMIC DEVELOPMENT POLICY IN THE UNITED STATES* 249-60 (1988).

8. For example, Section 203(l) of the Investment Advisers Act (enacted as part of the Dodd-Frank Act) exempts VC funds from federal investment adviser registration requirements. See also Goodwin Procter LLP, *Massachusetts Adopts Changes to Investment Adviser Registration Exemptions*, FINANCIAL SERVICES ALERT (Feb. 21, 2012), http://www.goodwinprocter.com/Dodd-Frank/Publications/Newsletter%20Articles/Financial%20Services%20Articles/2012_02/21_03.aspx (discussing a state-level exemption).

9. E.g., NAT’L GOVERNORS ASS’N CTR. FOR BEST PRACTICES, *STATE STRATEGIES TO PROMOTE ANGEL INVESTMENT FOR ECONOMIC GROWTH* (2008), available at <http://www.angelcapitalassociation.org/data/Documents/Public%20Policy/State/NGA%20Issue%20Brief%20Angel%20Investment.pdf> (discussing tax credit programs); INCUBATOR & WORKPLACES, New York City Economic Development Corporation, available at <http://www.nycedc.com/service/incubators-workspaces> (last visited Aug. 14, 2012) (describing incubators and workspaces established by NYCEDC, an economic development agency of New York City).

10. Taylor Davidson, *Venture Capital Is Growing Up. What’s Next?*, <http://panelpicker.sxsw.com/ideas/view/13402> (login credentials required) (describing proposed and past panel discussions at the SXSW (South-by-Southwest) festival).

11. *The VC Model Is Broken*, ANGEL BLOG, http://www.angelblog.net/The_VC_Model_is_Broken.html (last visited Aug. 14, 2012).

12. PAUL KEDROSKY, *RIGHT-SIZING THE U.S. VENTURE CAPITAL INDUSTRY 1* (2009), <http://www.kauffman.org/uploadedfiles/usventcap061009r1.pdf>.

13. *Infra* text accompanying notes 176-89.

14. *Id.*

have incentives to invest more in each company.¹⁵ With these larger investments come correspondingly higher expectations for the companies in which they invest.¹⁶

These diverging trends in venture capital and entrepreneurship warrant reconsideration of a fundamental question: Is creating more candidates for VC financing the right economic development goal? To date, legal scholars have primarily analyzed state-sponsored venture capital from a financial-contracting perspective, which helpfully explains VC contracts and assesses governments' ability to "engineer" a VC market.¹⁷ But for the most part, the financial-contracting analysis does not focus on whether venture capital is the right vehicle for economic development in the first place.¹⁸ Answering that question requires looking closely at what subnational (state and local) governments are trying to achieve when they incorporate VDFs and other venture development policies into their economic development efforts.

The broader goals of VDFs go beyond potential investment returns, tax revenues, technologies, or jobs directly associated with any particular start-up company. VDFs and other venture development initiatives are part of a sea change in economic development strategy. Increasingly, legal scholars, voters, and subnational governments are skeptical of traditional "smokestack-chasing" subsidies that try to influence the location decision of a single firm or narrow industry by subsidizing the cost of local facilities.¹⁹ Instead, subnational governments are trying to create more sustainable demand for local investment by playing a supporting role in the emergence of market-driven "agglomeration economies."²⁰

Agglomeration economies arise when businesses gain competitive advantages by physically locating close to other businesses in related fields.²¹

15. *Infra* text accompanying notes 196–213.

16. *Id.*

17. See, e.g., Ibrahim *supra* note 6 (discussing angel investor groups and state-sponsored venture capital); Dominick DiSabatino, *State Venture Capital Funds*, ST. TAX NOTES, July 9, 2012, at 95 (noting both political and efficiency concerns). See generally, e.g., Ronald Gilson, *Engineering a Venture Capital Market: Lessons from the American Experience*, 55 STAN. L. REV. 1067 (2003) (discussing state-sponsored VC programs in Europe, Israel, and South America).

18. Darian Ibrahim is one scholar who has considered whether alternatives to venture capital have advantages in regions outside of Silicon Valley. In a valuable article appearing in this issue, Ibrahim considers whether gains from innovation could be more broadly distributed geographically if entrepreneurs declined VC financing. See generally, Darian M. Ibrahim, *Should Angel-backed Start-ups Decline Venture Capital?*, 2 MICH. J. PRIVATE EQUITY & VENTURE CAP. L. 251 (2013). While Professor Ibrahim's article discusses many of the same trends as this article—such as alternatives to venture capital and declining costs of entrepreneurship—it focuses primarily on specific contract-design challenges for start-ups, rather than theories of economic development.

19. *Infra* text accompanying notes 131–53.

20. See *infra* text accompanying notes 154–65.

21. See RICHARD FLORIDA, *THE RISE OF THE CREATIVE CLASS AND HOW IT'S TRANSFORMING WORK, LEISURE, COMMUNITY AND EVERYDAY LIFE* 219–234 (2002) (dis-

There is mounting empirical evidence confirming the long-held belief that geographic proximity of competitors, specialized workers in related industries, suppliers, and customers increases a company's and economic region's productivity and capacity to innovate.²² What is less clear is why productivity increases where the obvious reasons for co-location—reduced transportation costs, ease of communication, and proximity to natural endowments—are irrelevant or diminishing in importance.²³ For example, vineyards cluster in Napa Valley for obvious reasons: suitability of soil and weather for growing wine grapes. But why do wineries, barrel makers, wine-related publications, sellers of agricultural products, and related educational programs continue to locate near the grapes when there are less expensive locations, transportation costs are rapidly declining, and technology permits ubiquitous and instantaneous communication? Even more striking, why do the very technology firms that made the virtual workplace possible still cluster in pricey Silicon Valley? Prominent explanations of agglomeration emphasize the attractiveness of business clusters to talented workers, the cultural attributes and lifestyle amenities that attract workers and entrepreneurs to a cluster location, and the tendency for valuable information (such as technical expertise) to spread throughout a cluster.²⁴

What role do VDFs play in agglomeration-based economic development? Whatever the precise explanation for the super-charged economic performance of agglomeration economies, leading commentators agree that agglomeration effects are sufficiently complex and idiosyncratic that governments should avoid efforts to overtly engineer them by recruiting specific firms through traditional location incentives. These commentators worry that governments will make errors in such efforts and distort market-based agglomeration forces, to the detriment of the recruited firms and possibly the local economy.²⁵ Proponents of agglomeration-based economic development therefore recommend industry-neutral policies, such as providing goods and services that benefit broad segments of the local economy.²⁶ At first blush, VDFs may appear consistent with this principle of industry neutrality because they help establish investing practices and conventions that can be used widely. By dealing with VDFs, local entre-

cussing agglomeration effects and proposed causes); Michael E. Porter, *Location, Competition, and Economic Development: Local Clusters in a Global Economy*, 14 *ECON. DEV. Q.*, 15, 21-25 (2000), [hereinafter *Porter on Economic Development*] (discussing the role of industry clusters in producing agglomeration effects); Michael E. Porter, *Clusters and the New Economics of Competition*, 76 *HARV. BUS. REV.*, Nov.-Dec. 1998, at 77, 78 [hereinafter *Porter on New Economics*].

22. See *infra* text accompanying notes 121, 160, and 162 (discussing empirical studies of the effects of agglomeration).

23. See *infra* notes 98–99 (discussing the continuing clustering of economic activity despite lowering transportation and communication costs).

24. See *infra* text accompanying notes 104–25 (summarizing the human capital, creative capital, and cluster explanations of agglomeration effects).

25. See *infra* text accompanying notes 144–45.

26. See *infra* text accompanying notes 153–162.

preneurs, investors, accountants, and lawyers are exposed to standard investment terms, due diligence practices, and other expertise that facilitate later financing transactions with parties other than the VDF.²⁷ In other words, the best argument for VDFs, in light of their role in agglomeration efforts, is that they help establish broadly beneficial financial infrastructure that no private actor has adequate incentive to create on its own.

This article, however, critiques this apparent justification for VDFs. Because VDFs rely on a VC model, they may not establish the right financial infrastructure for most jurisdictions. In the current environment, financing methods geared towards more capital-efficient business models may provide broader-based and more reliable benefits to entrepreneurs, local investors, and employees. This argument proceeds in four parts.

Part I describes how VDFs differ from previous state-sponsored venture capital programs: they are generally more local in scope and provide funding earlier in a company's life cycle than traditional venture capital (though with the expectation that companies will later seek venture capital). Part I also explains why the most common rationales for subsidizing entrepreneurial finance—the jobs and innovative technologies historically produced by venture-backed companies—do not provide an economic justification for subsidies by subnational governments.

Because these conventional explanations for venture development fall short, Part II looks deeper into the role of VDFs in economic development efforts by subnational governments. It describes how many jurisdictions have turned to agglomeration-based development due to the difficulty of transitioning to a knowledge-based economy. It also describes efforts by agglomeration theorists to distance themselves from traditional location incentives by espousing the principle of industry neutrality. It concludes by laying out the apparent justification for VDFs described above: VDFs may produce broad positive spillover effects by establishing financial infrastructure.

Part III is this article's main contribution. It critiques the arguments in favor of VDFs identified in Part II by focusing on the diverging paths of venture capital and capital-efficient entrepreneurship described above.

Part III.A focuses on the "homerun mentality" of VC investing. VC funds invest in entrepreneurs who try to achieve an "exit" transaction through an initial public offering ("IPO") or acquisition by an established firm. This emphasis on exit is a key innovation of VC contracts because it helps mitigate the primary obstacles to financing the efforts of entrepreneurs: problems of uncertainty, information asymmetry, and agency costs. But when VC funds target particularly ambitious exit goals with correspondingly high risk and long time frames, economic development goals may be frustrated. Employees of failed companies may find it difficult to find new employment opportunities. Entrepreneurs who show signs of

27. See *infra* Part II D.

success may not have the ability to recycle their talents and capital through earlier and more modest exits.

Part III.B focuses on venture capital's narrow industry focus and its effects on agglomerative efficiency. There are reasons to worry that venture development policies benefit such a small slice of entrepreneurial activity that they will become the functional equivalent of firm- or industry-specific location subsidies. Although such traditional subsidies are not necessarily agglomeratively inefficient, proponents of agglomeration strategies express concerns that narrow subsidies increase the chances of error by government officials. This may result in wasted resources and crowding out of more agglomeratively-efficient economic activity.

Part IV considers financing methods that might be viable alternatives to venture capital. It then considers the program-design implications of those trends in light of this article's critiques of current VDFs. It concludes that program design can substantially mitigate concerns based on high-risk exits but is less likely to address concerns based on narrow industry focus. Finally, this article identifies additional theoretical questions for future research by legal scholars.

I. THE PUZZLE OF VDFs

A. *What Are VDFs?*

VDFs are a type of state-sponsored venture capital that has gained popularity in recent years. VDFs can be found in Cleveland,²⁸ New Orle-

28. Cleveland's JumpStart fund is a division of a 501(c)(3) organization established in 2003. See *Charitable Purposes*, JUMPSTART, INC., <http://www.jumpstartinc.org/AboutUs/charitablepurpose.aspx> (last visited Aug. 14, 2012) (discussing 501(c)(3) status). In addition to other fundraising sources, it has received over \$16 million from a state economic development agency for the purpose of job growth within identified counties in the Cleveland area. *Our Community Commitment*, JUMPSTART, INC., <http://www.jumpstartinc.org/aboutus/community.aspx>; (discussing funding sources). It seeks to make investments in companies headquartered in the region that have a unique idea, a \$1 billion or larger potential market, and management that is committed to growth and an exit by IPO or merger. *Our Funds*, JUMPSTART, INC., <http://www.jumpstartinc.org/entrepreneursupport/funds/ourfunds.aspx> (discussing desired attributes of portfolio companies).

ans,²⁹ New York City,³⁰ Pittsburgh,³¹ and Portland, Oregon.³² The primary features of a VDF are best illustrated by a recent example.

In 2010, the mayor of Portland announced a \$500,000 contribution to the Portland Seed Fund.³³ The fund ultimately raised a total of \$2 million (including contributions from neighboring cities, state government entities, and private investors) in its first year for investments in local start-up companies.³⁴ Paid managers—including a former VC manager and a local business consultant—select which companies receive funding, coaching, and business advice from the fund.³⁵ Although there are very few explicit

29. The New Orleans Startup Fund is a 501(c)(3) organization that began with total capital of \$3.9 million from a state economic development authority, a federal grant, and private donations. It seeks companies that are headquartered in and committed to creating jobs in the New Orleans area, have ideas capable of attracting traditional VC financing, and have a “clear vision” to grow the company’s business to \$20 million within five years. See *About*, NEW ORLEANS STARTUP FUND, <http://www.neworleansstartupfund.com/about/> (last visited Aug. 14, 2012) (discussing 501(c)(3) status and desired attributes of companies); See also, Jennifer Larino, *Startup Fund Aims to Promote Growth, Attract New Business to NOLA*, NEW ORLEANS CITY BUS. (Dec. 7, 2010), <http://neworleanscitybusiness.com/blog/2010/12/07/startup-fund-aims-to-promote-growth-attract-new-business-to-nola/> (discussing source of funding).

30. The NYC Entrepreneurs Fund started with \$3 million in public funds and \$19 million of private capital raised by the professional investment firm hired to manage the fund. Joseph De Avila, *New York City Launches Investment Fund for Tech Startups*, WALL ST. J., May 26, 2010, available at <http://online.wsj.com/article/SB10001424052748703341904575266843435961622.html>.

31. Pittsburgh’s Innovation Works was established in 1999 through collaboration between Ben Franklin Technology Partners, a state economic development agency, and private foundations. In recent years it has invested approximately \$5 million per year in local companies. INNOVATION WORKS, <http://www.innovationworks.org/AboutUs/FAQs/tabid/92/Default.aspx> (last visited Aug. 14, 2012). Innovation Works targets companies with fewer than 50 employees with a proprietary technology that “addresses high-potential emerging and growing markets.” Funding for Entrepreneurs, INNOVATION WORKS, <http://www.innovationworks.org/SeedFund/tabid/99/Default.aspx> (last visited Aug. 14, 2012).

32. PORTLAND SEED FUND, <http://www.portlandseedfund.com/> (last visited April 12, 2013).

33. Mike Rogoway, *Portland Mayor Promises \$500k for Small Bizs & Startups*, OR. LIVE BLOG (Feb. 5, 2011), http://blog.oregonlive.com/siliconforest/2010/02/portland_mayor_promises_500k_f.html.

34. Mike Rogoway, *Portland Seed Fund Tops 100 Applicants as Tonight’s Deadline Nears*, OR. LIVE BLOG (June 6, 2011, 4:21 PM), http://blog.oregonlive.com/siliconforest/2011/06/portland_seed_fund_tops_100_ap.html.

35. Mike Rogoway, *Portland Seed Fund Names Managers*, OR. LIVE BLOG (Aug. 19, 2010, 6:37 AM), http://blog.oregonlive.com/siliconforest/2010/08/portland_seed_fund_names_manag.html. Although VDFs use public money, VDFs are not typically managed by public officials. Jumpstart, for example, is managed by an executive director with investment management experience. *About Us*, JUMPSTART, INC., <http://www.jumpstartinc.org/en/AboutUs/whoware/seniorleadership/rayleach.aspx> (last visited Aug. 14, 2012). The New Orleans Startup Fund is managed by a full-time management team and a board consisting of private business people and one public official. *About*, NEW ORLEANS STARTUP FUND, <http://www.neworleansstartupfund.com/about/> (last visited Aug. 14, 2012). The NYC Entrepreneurship Fund is managed by a private investment firm. *Supra* note 30.

eligibility requirements, it is clear the fund targets entrepreneurs who dream big. Nail salons and taxicab operators need not apply. In start-up company jargon, the fund seeks “scalable” businesses that are suitable for follow-on investment by VC firms.³⁶

Ideally, one of these companies will have a successful exit in the form of an IPO or acquisition by a larger firm. But it will be tough going for the fund to make money. Startups fail at high rates.³⁷ Although Oregon companies attract moderate levels of VC investment, the region is a far cry from entrepreneurial hubs like Silicon Valley, Boston, or Seattle.³⁸ It has been over seven years since an Oregon technology start-up went public.³⁹

The goal of the fund, however, is not to provide direct investment returns to the city. Rather, the fund is part of a larger effort to create jobs and strengthen the local software industry.⁴⁰ In fact, officials believe the city is legally prohibited from receiving a direct return on its investment in the fund.⁴¹ State constitutional provisions, enacted long ago in response to imprudent public investments in railroads, prohibit Oregon cities from holding stock in private corporations.⁴² Accordingly, the city structured its contribution to the fund as a grant, with any investment returns being recycled into the program rather than returning to the public fisc.⁴³

36. On its website, the fund expresses a preference for “highly scalable companies with high-growth potential.” Our Strategy, PORTLAND SEED FUND, <http://portlandseedfund.com/about-us/> (last visited April 12, 2013). The fund expressly contemplates that these companies may require later investment by venture capital or traditional angel investors. FAQs, PORTLAND SEED FUND, <http://portlandseedfund.com/faqs/> (last visited April 12, 2013) (“We will have reserve capital for follow on financing in those companies who make good progress, but in most cases not more than about \$100,000 from us over the life of the company. Most companies who need additional capital will need to raise money from other angels or VCs.”).

37. See *infra* note 202 (discussing the failure rates of companies that have already achieved angel or VC financing). The failure rates discussed in note 202 do not include the presumably significant number of companies that never obtain VC or angel funding.

38. *Infra* note 54 (discussing the amount of VC investment in Oregon in 2011).

39. Mike Rogoway, *Oregon’s Startup Community by The Numbers: Tiny, But Strong*, OR. LIVE BLOG (July 7, 2012, 10:52 PM), http://www.oregonlive.com/silicon-forest/index.ssf/2012/07/oregons_startup_community_by_t.html.

40. See Mike Rogoway, *Startups Play Waiting Game While Portland Seed Fund Evaluates Flood of Applicants*, OR. LIVE BLOG (June 12, 2011, 4:53 PM), http://www.oregonlive.com/business/index.ssf/2011/06/startups_play_waiting_game_whi.html (“The seed fund is the centerpiece of Portland’s effort to nurture a regional software economy, one of four key industry clusters targeted for growth (the others are athletic and outdoor apparel, clean tech and advanced manufacturing.”)).

41. Mike Rogoway, *Portland Picks Team to Oversee \$500,000 for The City’s Startups*, OR. LIVE BLOG (June 4, 2010, 9:37 AM), http://blog.oregonlive.com/siliconforest/2010/06/portland_picks_team_to_oversee.html.

42. OR. CONST. art. XI, § 9 (“No county, city, town or other municipal corporation, by vote of its citizens, or otherwise, shall become a stockholder in any . . . corporation . . .”).

43. Rogoway, *supra* note 41.

B. What is Unique About VDFs?

Two core characteristics distinguish VDFs from other forms of state-sponsored venture capital: (1) they are established by subnational governments to benefit specific metropolitan areas, and (2) individual investments are structured as relatively small angel investments, which then serve as stepping stones for subsequent VC financing.

Local Focus

VDFs are sponsored by collections of municipal governments, state economic development agencies (special-purpose divisions of state government), nonprofit organizations, and other private parties.⁴⁴ While there is a long history of state-sponsored venture capital at the subnational level, VDFs are narrower in focus than many prior subnational programs that had a state-wide focus or sought to disperse funds to economically distressed regions of a state.⁴⁵ VDFs typically target economic development in specified metropolitan areas such as Northeast Ohio (roughly, the Cleveland metropolitan area) or Southwest Pennsylvania (roughly, the Pittsburgh metropolitan area).

State-sponsored venture capital has not always been primarily a function of subnational governments. Historically, state-sponsored venture capital was largely conducted by the federal government through the SBIC program described in the introduction to this article. Although that program still operates today, it was an awkward fit for high-growth start-up companies. The program provided funds to SBICs through debentures that required SBICs to repay the Small Business Administration (“SBA”) on a fixed schedule, while start-up companies do not produce investment returns until an exit event, the timing of which is difficult to predict. Some VC pioneers made do with this less-than-ideal debenture funding.⁴⁶ However, the VC industry eventually matured, rules governing the investing activities of pension managers and other fiduciaries changed, and significant private sources of funds became available to VC managers from institutional investors.⁴⁷ In 1992, the SBA developed a “participating preferred” program that better met the needs of high growth start-ups, but the program was discontinued in 2004 due to substantial losses in the investment portfolio.⁴⁸ The principal design flaw of the participating preferred program was that it capped the SBA’s returns for each successful

44. *Supra* notes 28–32 (discussing examples of VDFs).

45. EISINGER, *supra* note 7, at 241–56 (discussing a variety of early state-sponsored VC programs with either a state-wide focus or a preference for investing in economically distressed portions of a state).

46. Ibrahim, *supra* note 6, at 740–41.

47. EISINGER, *supra* note 7, at 256 (discussing changes in the prudent man rule).

48. Staebler, *supra* note 5, at 2–3.

SBIC at modest levels but exposed the SBA to the full extent of losses from failed SBICs.⁴⁹

Today, there is no substantial federal program in the United States for providing VC or angel-style financing to start-up companies. The SBA recently announced a new SBIC program aimed at high growth start-ups, but this program continues to use debenture financing that may not be compatible with high growth start-ups.⁵⁰ As a result, current federal support of start-up companies comes mostly in the form of grants targeted at specific research and development projects, not general financing for working capital.⁵¹

Pre-Venture Capital

Many state-sponsored venture capital programs attempt to provide financing at the same point in a company's lifecycle as venture capital. For example, as early as the 1980s, states with historically low VC activity began placing public employee pension funds in privately managed VC funds that promised to invest within the state.⁵² Similarly, governments in nations without established VC markets often turn to state-sponsored venture capital in the hope of catalyzing a domestic VC market.⁵³

VDFs, in contrast, recognize that established VC firms headquartered in Silicon Valley, Boston, or other VC hubs are willing to invest outside of their immediate vicinity,⁵⁴ and so VDFs do not try to be a local substitute for venture capital. Instead, they typically provide angel financing, which

49. *Private Equity for Small Firms: The Importance of the Participating Securities Program: Hearing Before the H. Comm. on Small Bus.* 109th Cong. 37, 33–36 (2005) [hereinafter *Participating Securities Hearings*] (Statement of Hector V. Baretto, Adm'r, U.S. Small Bus. Admin.).

50. See Russ Garland, *An Older, Wiser SBA Makes New Run at Early Stage VC*, WALL ST. J. BLOG (June 11, 2012), <http://blogs.wsj.com/venturecapital/2012/06/11/an-older-wiser-sba-makes-new-run-at-early-stage-vc/>; Robb Mandelbaum, *SBA Readying Program to Invest in Startups*, N.Y. TIMES BLOG (Jan. 23, 2012), <http://boss.blogs.nytimes.com/2012/01/23/s-b-a-readying-program-to-invest-in-startups/> (describing the program as “a debt structure underneath an equity fund” and therefore “an inherent mismatch, since interest and debt payments are predictable while an equity investment is anything but.”).

51. For example, the Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs require federal agencies with substantial research and development budgets to award a small percentage of grants to small businesses. *Frequently Asked Questions*, SBIR, SMALL BUS. INNOVATION RESEARCH, <http://www.sbir.gov/faq/sbir> (last visited Aug. 14, 2012) (discussing the SBIR program); *Frequently Asked Questions*, STTR, SMALL BUS. INNOVATION RESEARCH, <http://www.sbir.gov/faq/str> (last visited Aug. 2012) (discussing the STTR program).

52. EISINGER, *supra* note 7, at 255–60.

53. For example, state-sponsored venture capital is often credited with facilitating the substantial private VC market in Israel. LERNER, *supra* note 6, at 155–57.

54. For example, in 2011 VC firms invested a total of \$240 million in companies headquartered in Oregon. Only \$8.4 million of that amount came from funds located in Oregon. NAT'L VENTURE CAPITAL ASS'N, NVCA Y.B. 2012 [hereinafter “NVCA YEARBOOK 2012”], available at http://www.nvca.org/index.php?option=com_content&view=article&id=257&Itemid=103.

is normally a precursor to venture capital. The typical angel investor is a wealthy individual, such as a previously successful entrepreneur, who invests his or her personal funds in local start-ups.⁵⁵ Like these individuals, VDFs provide funding below the minimum investment amounts of most VC funds. The Portland Seed Fund makes investments as small as \$25,000 and the New Orleans Startup Fund makes investments as small as \$50,000.⁵⁶ Other VDFs make investments ranging from \$250,000 to \$750,000.⁵⁷ VC funds, in contrast, rarely invest less than \$5 million in a single company.⁵⁸

By providing these smaller investment amounts, VDFs fall squarely in the so-called “funding gap.” According to many commentators, entrepreneurs often fail because there is a dearth of financing options between the amount of personal funds typically available to an entrepreneur and the minimum amounts VC funds are willing to invest.⁵⁹ This implies that many of these companies could ultimately succeed with relatively small amounts of seed financing that would tide them over while the business grew to justify a \$5 million or larger VC investment. Economists disagree on the extent, causes, and even the existence of this funding gap,⁶⁰ but it has been a fixture in policy debates for decades.⁶¹ While several sources of financing have been identified as potentially filling the funding gap, including angel investor groups,⁶² super angels,⁶³ and corporate investors

55. Abraham J.B. Cable, *Fending for Themselves: Why Securities Regulations Should Encourage Angel Groups*, 13 U. PA. J. BUS. L. 107, 116 (2010).

56. Our Strategy, PORTLAND SEED FUND, <http://portlandseedfund.com/about-us/> (last visited April 12, 2013); About, NEW ORLEANS STARTUP FUND, <http://www.neworleansstartupfund.com/about/> (last visited April 12, 2013) (follow “faq” hyperlink).

57. *Supra* note 29.

58. *Participating Securities Hearings*, *supra* note 49, at 54.

59. *See generally* Cable, *supra* note 55 (citing commentators identifying a funding gap).

60. Gordon Murray et al., *Government Co-Financed ‘Hybrid’ Venture Capital Programmes: Generalizing Developed Economy Experience and Its Relevance to Emerging Nations*, (Kauffman International Research and Policy Roundtable, Liverpool, March 11-12, 2012) available at <http://sites.kauffman.org/irpr/resources/Murray,%20Gordon%20-%20Government%20co-financed%20eHybridi%20Venture%20Capital%20programmes.pdf> (“Although the evidence in the literature on the existence of financing gaps as well as on the effect of venture capital on economic growth is still developing, there has been nevertheless a significant growth across several developed countries in government supported structures targeted at facilitating risk capital investments to new, high potential enterprises.”).

61. EISINGER, *supra* note 7, at 248 (discussing the lack of investment by VC funds below then-current minimum investment amounts of \$500,000).

62. Ibrahim, *supra* note 6, at 721.

63. Pui-Wing Tam & Spencer Ante, *Super Angels Alight: No Longer Flying Solo, Big Investors Attract Others to Juice Start-Ups*, WALL ST. J. (Aug. 16, 2010), <http://online.wsj.com/article/SB10001424052748703321004575427840232755162.html> (defining super angels as involved investors who form small funds (generally less than \$50 million) to make seed investments in start-ups).

looking for strategic benefits,⁶⁴ none of these alternatives has yet developed into a reliable bridge to venture capital.

VDFs, then, are closely linked to venture capital, even if the funding they provide comes at an earlier stage in a company's life. Advocates for VDFs often explicitly state that their goal is to produce companies ready for venture capital,⁶⁵ and these advocates often cite the amount of follow-on investment by VC funds as a measure of the program's effectiveness.⁶⁶

C. Why Common Venture Development Rationales Fall Flat

Because VC success stories are widely admired in the United States and abroad,⁶⁷ it is easy to gloss over the complexity of the relationship between private entrepreneurial finance markets and broader economic development goals. Growing use of the term "venture development" suggests an obvious connection between venture capital (a specialized form of corporate finance typically carried out through private contracts) and economic development goals (efforts to improve economies in ways that produce broad-based benefits to a particular community).⁶⁸

But what public purpose justifies using public resources to favor VC funds and their portfolio companies over other economic actors? Part II associates VDFs with broader economic development strategies aimed at easing the difficulty many subnational regions face in transitioning to a knowledge-based economy. Before turning to that more elaborate justification of VDFs, however, it is helpful to consider why the more straightforward purported virtues of venture capital, frequently extolled by the industry, likely fall short in justifying subsidization.

64. Joseph A. McCahery & Erik P.M. Vermeulen, *Venture Capital Beyond the Financial Crisis: How Corporate Venturing Boosts New Entrepreneurial Clusters (and Assists Governments in Their Innovation Efforts)* (Tilburg Univ. Legal Studies, Working Paper No. 011/2010, 2010).

65. See *supra* note 29 and accompanying text (discussing the goals of the New Orleans Startup Fund); see also *supra* note 3 (discussing the goals of JumpStart).

66. *Supra* note 3 (discussing JumpStart's use of follow-on funding as a metric for evaluating the fund's performance); INNOVATION WORKS, <http://www.innovationworks.org/AboutUs/FAQs/tabid/92/Default.aspx> (last visited Aug. 14, 2012) ("Nearly three of four venture deals in the region go to companies that have previously received IW seed funding. These figures are a reflection not only of the growing maturity of IW's portfolio, but also the quality of investments and the increasing ability of IW to connect portfolio companies with the right investors.").

67. See Gilson, *supra* note 17 (discussing efforts to emulate the U.S. VC system in Europe, Israel, and South America); Darian M. Ibrahim & D. Gordon Smith, *Entrepreneurs on Horseback: Reflections on the Organization of Law*, 50 ARIZ. L. REV. 71, 81 (2008) (describing the "mythological" importance of entrepreneurship).

68. EISINGER, *supra* note 7, at 3–4 ("Economic development policy refers to those efforts by government to encourage new business investment in particular locales in the hopes of directly creating or retaining jobs, setting into motion the secondary employment multiplier, and enhancing and diversifying the tax base.").

Jobs

Job creation is the most common justification for favoring venture capital and VC-backed companies.⁶⁹ The VC industry claims that VC-backed companies account for a disproportionate amount of job growth in the United States.⁷⁰ Although it is difficult to measure the precise impact of venture capital on employment,⁷¹ the industry's list of success stories (Apple, Microsoft, Google)⁷² makes it difficult to deny the importance of venture capital to United States labor markets.

While the employment opportunities generated by start-up companies may be impressive, they do not really answer the question of whether *subsidization* or other preferential treatment of venture capital is appropriate. Although many political-economic systems choose to subsidize or favor specific firms or industries to gain a competitive advantage in international trade, such "industrial policy" has been more controversial in the United States (and the United Kingdom).⁷³

Economists identify a long list of drawbacks to firm- and industry-specific subsidies. Public officials may lack adequate expertise or incentives to select subsidy recipients and administer programs.⁷⁴ Subsidies may weaken competitive pressures that would otherwise spur innovations or other measures that enhance productivity.⁷⁵ A subsidized firm or industry may inhibit the emergence of (i.e., "crowd out") non-subsidized competitors by giving subsidy recipients an advantage in competition for customers or resources.⁷⁶ Instead of increasing productivity, potential subsidy

69. *Id.* at 241–43, 245.

70. Cable, *supra* note 55, at 107.

71. Michael Horrell & Robert Litan, *After Inception: How Enduring Is Job Creation by Startups?* (2010), <http://www.kauffman.org/uploadedfiles/firm-formation-inception-8-2-10.pdf> (discussing the extent to which jobs created by start-up companies are lost upon company failures).

72. NVCA YEARBOOK 2012, *supra* note 54 at 2.

73. See, e.g., Michael Boskin, *Industrial Policy Returns From the Grave*, PROJECT SYNDICATE, (Nov. 24, 2009), <http://www.project-syndicate.org/commentary/industrial-policy-returns-from-the-grave> ("One of the worst responses by officials to the financial crisis and deep recession has been to revive 'industrial policy.' Once again, governments are using subsidies, mandates, regulation, and capital investment to pick industrial winners and losers, rather than using a broad, even-handed approach. The new round of industrial policy is occurring in advanced economies such as the United States and the United Kingdom, which long resisted its worst excesses, France, which long promoted national 'champions', and emerging economies such as Brazil and China.").

74. *Leviathan, Inc.: Governments Seem to Have Forgotten That Picking Industrial Winners Nearly Always Fails*, ECONOMIST, Aug. 5, 2010.

75. Michael E. Porter, *Clusters and Economic Policy: Aligning Public Policy with the New Economics of Competition*, HARVARD BUSINESS SCHOOL, at 6 [hereinafter, *Porter on Aligning Public Policy*] (discussing anti-competitive effects of industrial policy).

76. Boskin, *supra* note 73 ("Governments should not be in the game of using subsidies, taxes, regulation, mandates, loans, and investments to pick particular winners. It simply doesn't work, and, worse still, it crowds out or stifles potentially valuable competing technologies."); *Brazil's Development Bank, Nest Egg or Serpent's Egg? Ahead of Presidential Elec-*

recipients may turn their efforts towards influencing politicians to preserve or expand the subsidy program.⁷⁷ In light of these indirect costs of firm- and industry-specific subsidy programs, U.S. economists and policy makers generally reserve public subsidies for goods and services that markets produce at inadequate levels due to an identifiable market failure.⁷⁸ In this light, the outsized success of VC-backed companies may in fact be an argument against assistance through venture development policies, because it suggests a well-functioning (not a failed) market.

Innovative Products

The innovative products many VC-backed companies develop might present a stronger economic justification for subsidizing venture capital. The start-up companies that VC firms target form a special breed of small business. They are distinguished from livelihood businesses that primarily generate income for individuals working in the business, such as local restaurants, small construction firms, and professional services firms.⁷⁹ VC firms target start-up companies that strive to achieve big returns for investors by being the first to exploit a sizable market for new products or business plans.⁸⁰ While start-up companies are not the only places innovation occurs—large technology, bioscience, and manufacturing companies conduct significant research and development—there is a growing body of theory and empirical research suggesting that start-up companies have superior capacity to innovate.⁸¹

tions, *BNDES Comes Under Scrutiny*, *ECONOMIST*, Aug. 5, 2010 (claiming that a subsidized development bank in Brazil is crowding out other private financing sources).

77. See LERNER, *supra* note 6, at 80-85 (discussing capture of state-sponsored VC funds).

78. See BRETT M. FRISCHMANN, *INFRASTRUCTURE: THE SOCIAL VALUE OF SHARED RESOURCES* 77 (2012) (describing the conventional case for subsidy of public goods); Wallace E. Oates, *Towards a Second-Generation Theory of Fiscal Federalism*, 12 *INT'L TAX AND PUB. FIN.* 349, 350 (2005) (“What I will call the ‘mainline’ theory of fiscal federalism was solidly embedded in the view of public finance that prevailed in the 1950’s and 1960’s. . . . Where the private market system ‘failed’ because of various sorts of public-goods problems, the government should (and presumably *would*) step in and introduce appropriate policy measures to correct the failures.”); Tyler Cowen, *Public Goods and Externalities*, *THE CONCISE ENCYCLOPEDIA OF ECON.*, <http://www.econlib.org/library/Enc1/PublicGoodsandExternalities.html> (“Most economic arguments for government intervention are based on the idea that the marketplace cannot provide public goods or handle externalities. Public health and welfare programs, education, roads, research and development, national and domestic security, and a clean environment all have been labeled public goods.”) (last visited Feb. 2, 2013).

79. Cable, *supra* note 55, at 111–112.

80. Venture capital is often associated with technological advances such as semi-conductors. But in some cases, a high-growth start-up is innovative because it delivers products in a new way or identifies (or creates) previously unrecognized consumer demand. Examples of non-technical start-ups include Starbucks Corporation, eBay Inc., and Whole Foods Market, Inc., *NVCA YEARBOOK* 2012, *supra* note 54, at 7–8.

81. LERNER, *supra* note 6, at 45–63.

There are reasons to think markets undersupply innovative products. One problem is that new technologies are non-rival in use. Once a product is developed, subsequent use has negligible cost so there is great incentive for competitors to use technology that others have gone to the expense to develop. An innovator could try to prevent others from making unauthorized use of the product, but it is often challenging or costly to exclude others from the innovations underlying products (to the extent that intellectual property rights do not provide adequate protection).⁸² One challenge is that the use of the product often necessitates disclosure of the innovation. When private parties cannot capture the benefits of these positive “spillover effects” or “externalities,” they produce fewer new technologies than would be optimal from society’s point of view.⁸³ This is the type of market failure that may justify a subsidy under mainstream economic theory.⁸⁴

Even this more plausible economic argument falls flat when considering venture development efforts by subnational governments. While there may be a case for indirectly subsidizing start-up companies that develop new medical devices broadly benefiting society, for example, it is less clear that it is in a particular city’s best interest to bear that cost. The device may provide national (even international) benefits. Ideally, the costs of goods or services that produce positive spillover effects should be borne

82. For example, intellectual property law may not provide adequate incentives for innovation because obtaining and enforcing intellectual property rights takes too long or is expensive. Moreover, encouraging innovation through intellectual property rights requires extremely delicate balancing of maintaining competition and providing incentives to innovate. Overly broad rights granted other entrepreneurs might actually discourage innovation. See Nat’l Research Council, *A Patent System for the 21st Century* 46-51, 65-70, 104 (Stephen A. Merrill, et al. eds. 2004) (discussing costs of obtaining and enforcing patents, backlogs in the patent-approval process, and degradations in the quality of patents). Finally, intellectual property protections may not correct certain market failures because the relevant externalities are social goods that do not generate appropriable value in a consumer market. FRISCHMANN, *supra* note 78, at 109-110.

83. NAT’L RESEARCH COUNCIL, *FUNDING A REVOLUTION: GOV’T SUPPORT FOR COMPUTING RESEARCH* 40-51 (1999), available at http://www.nap.edu/openbook.php?record_id=6323&page=R2. In economic terms, a product or service that is truly non-rival and non-excludable is a “public good.” These attributes may exist in varying degrees, and there are debates about how non-rival and non-excludable a good or service needs to be to meet the technical definition. See David Mangum, UNIV. OF COLO. LAW SCH., *Bringing Angel Investors Out of The Shadows* (2012), available at <http://www.silicon-flatirons.org/documents/publications/report/AngelReport2012.pdf> (expressing doubt that angel investing meets the technical definition of a public good). For this article’s analysis, though, what matters most is not whether a technology is a pure public good or not, but rather whether it creates positive externalities and is therefore undersupplied by the market and arguably a basis for subsidization. NOLAN H. MILLER, *NOTES ON MICROECONOMIC THEORY* 212 (Aug. 2006 ed.), available at <http://www.hks.harvard.edu/nhm/notes2006/notes8.pdf> (“Examples of externalities and public goods tend to overlap. It is hard to say what is an externality and what is a public good. This is as you would expect, since the two categories are really just different ways of talking about goods with non-private aspects.”).

84. Cowen, *supra* note 78.

by jurisdictions covering the entire geographic area that benefits from the spillovers.⁸⁵

II. VENTURE DEVELOPMENT IN CONTEXT: AGGLOMERATION ECONOMIES

Evaluating the effectiveness of VDFs requires understanding their goals. Part I explained that subnational governments do not invest in VDFs for financial returns,⁸⁶ that the jobs created by VC-backed companies may indicate a well-functioning market rather than a need for subsidy,⁸⁷ and that the benefits associated with innovative products likely spillover too broadly to be captured by a subnational government.⁸⁸ This part considers how VDFs instead function as part of a broader trend in economic development: seeking to support market-driven agglomeration economies (“agglomeration development”).

A. *The Development Challenge: Economic Transformation and Regional Sorting*

VDFs are located in places undergoing or desiring economic transformation.⁸⁹ The desired transformation typically relates to the growing importance of the “knowledge-based” economy relative to more traditional industries, particularly those emphasizing natural resource extraction and manufacturing.

The transition to a knowledge-based economy is a “shift from an economy based on production of commodities to one dominated by the design, marketing, and delivery of goods, services, and ideas”⁹⁰ In a traditional manufacturing economy, firms compete largely by reducing the costs of factors of production such as labor, transportation, and capital. In a knowledge-based economy, firms compete more on the basis of innova-

85. This concept, for example, has been applied to argue that redistributive policies be carried out at the federal level. When carried out by local jurisdictions, such policies may generate externalities (such as outmigration of high tax payers to other jurisdictions). Oates, *supra* note 78, at 351 (discussing concepts of fiscal federalism). Of course, “perfect mapping” of costs and benefits is not always possible with technologies that provide global benefits. However, subsidization at the federal, rather than state or local, level would still be closer to the ideal.

86. *See supra* Part I.A.

87. *See supra* text accompanying notes 69–72.

88. *See supra* text accompanying notes 80–85.

89. The oldest and best-established VDFs are found Cleveland and Pittsburgh—Rust Belt cities desiring greater participation in the knowledge-based economy. *See supra* notes 3, 27 (discussing Jumpstart in Cleveland); *supra* note 30 (discussing Innovation Works in Pittsburgh). A more surprising VDF location is New York City. Despite the city’s success as a financial center, an economic development authority established the NYC Entrepreneurial Fund to diversify the economy away from financial services and to improve the city’s profile as a destination for technology companies. *See De Avila, supra* note 29.

90. RICHARD M. MCGAHEY & JENNIFER S. VEY, *RETOOLING FOR GROWTH: BUILDING A 21ST CENTURY ECONOMY IN AMERICA’S OLDER INDUSTRIAL AREAS* 43 (2008).

tion by producing disruptive new technologies or identifying new markets for products.⁹¹ Many individual businesses have characteristics of both traditional and knowledge-based economic activity (e.g., car manufacturers dedicate significant resources to developing technologies),⁹² but the overall shift towards a knowledge-based economy in the United States is widely perceived and evidenced by significant increases since 1950 in research and development spending, patents, and the number of scientists and engineers.⁹³

The transition towards a knowledge-based U.S. economy resulted from global economic trends such as reduced transportation costs and technological advancement that facilitates outsourcing manufacturing to cheaper locations.⁹⁴ But its effects feel local, varying greatly from location to location. According to economist Edward Glaeser: “The age of the industrial city is over, at least in the West, and it will never return. Some erstwhile manufacturing towns have managed to evolve from making goods to making ideas, but most continue their slow, inexorable declines.”⁹⁵ Statistical evidence supports the well-established perception of Rust Belt decline. A high percentage of employment in manufacturing is correlated with poor economic performance (measured by employment, earnings, and gross metropolitan product) in the 1990s.⁹⁶ According to one study, a majority of “economically distressed” cities are located in eight states in the Midwest and Northeast: Connecticut, Indiana, Massachusetts, Michigan, New Jersey, New York, Ohio, and Pennsylvania.⁹⁷ In contrast, high-tech hubs like Silicon Valley enjoy healthy economic growth.⁹⁸

B. Theoretical Foundations: Agglomeration Effects

Agglomeration economies explain why economic activity—and the knowledge-based economy in particular—continues to concentrate geographically despite lowering transportation costs and improved communi-

91. In a knowledge-based economy: “The basic economic resources—the ‘means of production,’ to use the economist’s term is no longer capital, nor natural resources . . . nor ‘labor.’ It is and will be knowledge.” FLORIDA, *supra* note 21, at 44. The idea (or “knowledge”) may relate to either high technology or new business models. NVCA YEARBOOK 2012, *supra* note 54, 7–8.

92. For example, General Motors dedicates significant resources to research and development. See General Motors Co., Annual Report (Form 10-K), at 84 (Feb. 14, 2013) (disclosing that the company spent \$7.368 billion on research and development).

93. FLORIDA, *supra* note 21, at 44–47.

94. See MCGAHEY, *supra* note 90, at 35–36.

95. EDWARD GLAESER, TRIUMPH OF THE CITY 49 (2011).

96. See MCGAHEY, *supra* note 90, at 159–160.

97. *Id.* at 153.

98. FLORIDA, *supra* note 21, at 219 (“Not only do people remain highly concentrated, but the economy itself—the high-tech, knowledge-based, and creative-content industries that drive so much of economic growth—continues to concentrate in specific places from Austin and Silicon Valley to New York City and Hollywood, just as the automotive industry once concentrated in Detroit.”).

cations technologies, both of which would seem to undercut the traditional economic rationales for the formation of cities.⁹⁹ According to this emerging perspective, firms and entrepreneurs benefit from geographic proximity to competitors, related firms, and other entrepreneurs.¹⁰⁰ Geographic concentration of economic activity results in increased firm productivity and increased innovation.¹⁰¹ In other words, Google would not be as productive if it were headquartered in Cleveland, and other companies in Silicon Valley (even Google's competitors) would be less productive without Google being located right down the street. While agglomeration effects are viewed as extremely influential, they are also very localized, dissipating quickly over geographic space.¹⁰² Thus, while high-profile technology companies in Silicon Valley certainly have international reach, agglomeration theory looks to very localized positive spillover effects to explain their successes.

The proposition that spatial proximity of economic activity increases productivity is not new or particularly controversial. Economists observed agglomeration effects as early as the nineteenth century.¹⁰³ Over fifty years ago, Jane Jacobs included an influential description of agglomeration effects in her seminal work: *The Death and Life of a Great American City*.¹⁰⁴

There are several different explanations, however, for how agglomeration efficiencies are generated. These explanations can range from complex models (including Paul Krugman's Nobel-Prize-winning work)¹⁰⁵ to entertaining best-selling books.¹⁰⁶ Summarized below are three accounts of agglomeration effects that have gained traction with politicians, economic development professionals, and nontechnical audiences.

Human Capital Explanation

One explanation of agglomeration focuses on human capital—the talented workers who concentrate in business clusters. The “thick” labor

99. *Id.* at 219–22 (explaining why “end of geography” predictions have proven false); David Schleicher, *The City as a Law and Economic Subject*, 2010 U. ILL. L. REV. 1507, 1515–29 (2010) (“If we postulate only the usual list of economic forces, cities should fall apart. . . . A city is simply a collection of factors of production—capital, people and land—and land is almost always far cheaper outside cities than inside.”) (quoting Robert E. Lucas, Jr.).

100. See articles cited *supra* note 21.

101. See *infra* text accompanying notes 109, 116, and 121 (discussing empirical studies of the effects of agglomeration).

102. Schleicher, *supra* note 99 (citing studies that show patent applications rely on prior works originating in close geographic proximity).

103. *Id.* at 1516 (discussing Alfred Marshall).

104. GLAESER, *supra* note 9, at 20.

105. Justin Lahart, *Paul Krugman Is Awarded Nobel in Economics*, WALL ST. J., (Oct. 14, 2008), <http://online.wsj.com/article/SB122389602110728309.html>

106. For example, Richard Florida's *The Rise of the Creative Class* and his *Who's Your City* were national bestsellers.

markets that characterize agglomeration economies facilitate agglomeration effects in a number of ways. Firms concentrate to gain access to pools of talented workers. This creates a virtuous cycle because the abundance of potential employers attracts workers (and thereby increases the size of the labor pool) by reducing risk of sustained unemployment and providing opportunities for increased productivity through specialization.¹⁰⁷ Workers also facilitate the sharing of new knowledge among employers. As workers change jobs or have other encounters in the community, they may spread best practices or introduce new skills or knowledge. In other words, they become a vehicle for spreading information spillovers.¹⁰⁸ Glaeser, a primary proponent of the human capital view, found empirical support for the proposition that workers in fact become more productive (increase their human capital) by moving to denser urban areas.¹⁰⁹

Creative Capital Explanation

Sociologist Richard Florida has put a new spin on the human capital explanation. He explains agglomeration effects by focusing on a particular segment of society—the “creative class.” This class includes a “super-creative core” of workers in high-tech, artistic, and entertainment occupations together with supporting “creative professionals.”¹¹⁰ Florida believes that members of the creative class are responsible for a disproportionate share of innovation and regional economic growth and that the creative class concentrates in areas with certain cultural attributes.¹¹¹

Florida supports his theory with statistical analyses.¹¹² He found that the creative class clustered significantly in regions with certain attributes.¹¹³ For example, Florida found that policies evidencing tolerance of diversity were correlated with a high concentration of technology workers.¹¹⁴ Florida produced indexes that measure hallmarks of the creative class and found that these indexes were highly correlated with regional

107. GLAESER, *supra* note 95, at 32 (claiming that concentration of economic activity in cities “create[s] a virtuous cycle in which employers are attracted by the large pool of potential employees and workers are drawn by the abundance of potential employers”).

108. Schleicher, *supra* note 99, at 1527.

109. *Id.* at 1527-28. Glaeser found that higher wages in urban areas appear to reflect increased productivity. When workers move to an urban area, they enjoy increased real wages, but on a delayed basis (consistent with the idea that they acquire the human capital in the new location). When they leave the urban area, their wages remain elevated (suggesting they have retained the increased productivity).

110. FLORIDA, *supra* note 21, at 328.

111. *Id.* at 223 (“Essentially, my theory says that regional economic growth is driven by the location choices of creative people—the holders of creative capital—who prefer places that are diverse, tolerant, and open to new ideas.”).

112. *Id.* at 250-66.

113. *Id.* at 235-48.

114. Florida ranks cities according to a “Gay Index,” which his research shows to be highly correlated with high-tech activity. *Id.* at 255-58.

population and employment growth.¹¹⁵ Finally, Florida cites studies by a third party who found his creative class theory to be more predictive of regional economic growth than competing theories.¹¹⁶

Critics dispute that Florida has convincingly established a causal relationship between cultural amenities and economic growth.¹¹⁷ But his work is influential in economic development circles.¹¹⁸

Cluster Explanation

Michael Porter of Harvard Business School is particularly active in the economic development community.¹¹⁹ Porter explains agglomeration effects by analyzing interactions between and among firms within clusters of economic activity. Porter defines clusters as “geographic concentrations of interconnected companies, specialized suppliers, service providers, firms in related industries, and associated institutions (e.g., universities, standards agencies, trade associations) in a particular field that compete but also cooperate.”¹²⁰ Where clusters have been identified, they are correlated with employment growth, increasing wages, and innovation as measured by patents.¹²¹

Clusters are broader than most traditional industry classifications because they include multiple linked industries. For example, Porter identifies a “fishing and fishing products” cluster in Alaska that includes types of businesses that would, under most classification systems, be considered three separate industries: fish products, fishing and hunting, and processed seafood. As this example illustrates, the cluster concept does not only exist in the knowledge-based economy. Clusters can relate to traditional manufacturing or natural resource extraction. Moreover, clus-

115. *Id.* at 263.

116. FLORIDA, *supra* note 21, at 273 (citing studies by Robert Cushing correlating a region’s population growth and indicators of a region’s human capital, social capital, and creative capital).

117. Adam Ozimek, *Richard Florida Is Wrong About Creative Cities*, FORBES.COM (May 23, 2012), <http://www.forbes.com/sites/modeledbehavior/2012/05/23/richard-florida-is-wrong-about-creative-cities/> (discussing Enrico Meoretti’s assertion that Florida “essentially gets the causation backwards”).

118. MCGAHEY, *supra* note 90, at 7.

119. *Clusters: Sexy but Mysterious and Elusive*, 8 JOURNAL OF APPLIED RESEARCH IN ECON. DEV. 1, 1 (2011) [hereinafter *JARED*] (“It is my perception that cluster-based economic development is one of the very hottest, sexy concepts found in current local economic development. It certainly has been embraced by well-connected research institutes and think tanks and even a cursory review of academic research reveals literally a hundred different articles, books and studies on some facet of clustering.”).

120. *Porter on Economic Development*, *supra* note 20, at 15.

121. MERCEDES DELGADO ET AL., CLUSTERS, CONVERGENCE, AND ECONOMIC PERFORMANCE 1, 1 (2011) (“Industries participating in a strong cluster register higher employment growth as well as higher growth of wages, number of establishments, and patenting”).

ters may be local (catering to local residents) or “traded” (catering to markets outside the cluster’s geographic base).¹²²

Porter believes that clusters give participants a competitive advantage by, among other things, driving innovation and stimulating entrepreneurial activity related to the cluster.¹²³ While Porter acknowledges the role of human capital in producing agglomeration effects within clusters,¹²⁴ he also emphasizes other “linkages” between firms. For example, he believes that related industries benefit from knowledge spillovers when they interact with specialized suppliers within the cluster and try to meet the demands of sophisticated customers within the cluster.¹²⁵ Participants in clusters also benefit from information spillovers through encounters at local supporting institutions (e.g., educational institutions and trade associations).¹²⁶ Finally, strong local competition for the cluster’s customers and other resources motivates cluster participants to increase productivity, even while simultaneously cooperating with local competitors in establishing supporting institutions.¹²⁷

While it is possible for some of the activities credited with producing agglomeration effects to occur through remote communication, it appears that geographic proximity is key to agglomeration. With respect to information spillovers, for example, studies indicate that patent applications disproportionately cite prior works originating near the location of the patent applicant.¹²⁸ One theory for why location matters is that remote communication functions more effectively when it supplements, rather than replaces, face-to-face relationships.¹²⁹

122. Porter has made substantial efforts to identify or “map” clusters. Porter identifies clusters by looking for industries that tend to have high concentrations of employment in the same geographic regions, leading to an inference of linkages between industries. See *Cluster Mapping - A Primer*,” U.S. CLUSTER MAPPING PROJECT, <http://www.clustermapping.us/help-overview/cluster-mapping—a-primer/> (last visited Mar. 24, 2013). Porter also considers linkages evidenced by input-output tables compiled by the Bureau of Economic Analysis. Michael E. Porter 37 REGIONAL STUD. 504, 563 (2003), available at http://www.camaramed.org.co:81/mcc/sites/default/files/doc_digital/anexos/2010/Sep/Economic_Performance_%20Regions_PORTER.pdf. Detailed information about the results and methodology of Porter’s efforts to identify or “map” clusters can be found on the website www.clustermapping.us, which is maintained by the U.S. Economic Development Agency (“USDA”).

123. *Porter on New Economics*, *supra* note 21, at 78, 84.

124. *Porter on Aligning Public Policy*, *supra* note 75, at 2.

125. MCGAHEY, *supra* note 90, at 7.

126. *Porter on Aligning Public Policy*, *supra* note 75, at 2.

127. See DELGADO, ET AL., *supra* note 121, at 9 (“A strong cluster will enable greater agglomeration economies, including larger pools of skilled employees, specialized suppliers, related industries, sophisticated buyers, and intense local competition”) (emphasis added).

128. See Schleicher, *supra* note 102.

129. GLAESER, *supra* note 95, at 43 (citing studies regarding the effectiveness of remote communication).

C. Agglomeration Theory in Practice: Agglomeration Development

Agglomeration theory is contributing to significant changes in economic development practices. While some of these changes were underway prior to the literatures on human capital, creative capital, and clusters described above, the popularity and accessibility of those literatures accelerated change in economic development practices. In one recent survey, for example, over half of responding economic development organizations had studied or engaged in cluster development.¹³⁰ This Part II.C describes the growing dissatisfaction with traditional economic development practices, the emergence of new practices embracing agglomeration, and the role of VDFs in this changing landscape.

Out with the Old: The Problem with Smokestack Chasing and Industrial Policy

Long before the rise of state-sponsored venture capital, subnational governments tried to attract or retain businesses by offering a wide variety of financial incentives. These traditional location incentives, which continue today, are geared toward reducing a firm's costs of production—a primary basis for competition in a traditional manufacturing or natural resource economy. These programs offer public bond financing, tax credits, favorable loans, and a wide variety of other incentives for firms to build local facilities and create local jobs.¹³¹ They can be tailored to a specific firm known to be contemplating relocation or to firms within a particular industry that economic development officials have identified as attractive. The amount subnational governments spend on these expenditures is substantial, though not easily determined—one commentator estimated that these incentives totaled at least \$50 billion in 1996.¹³²

Traditional location subsidies have lost favor in economic development circles and, to some extent, in public opinion. Efforts to recruit specific firms are referred to pejoratively as “smokestack chasing,” and efforts targeted at narrow industries are disfavored as industrial policy.¹³³

There is a vast literature criticizing interlocal competition for economic activity. These criticisms employ various race-to-the-bottom argu-

130. See MCGAHEY, *supra* note 90, at 10, 18 (discussing development efforts based on the works of Porter and Florida).

131. Michael H. LaFave, *Taking Back the Giveaways: Minnesota's Corporate Welfare Legislation and the Search of Accountability*, 80 MINN. L. REV. 1579, 1584 (1996).

132. MCGAHEY, *supra* note 90, at 5.

133. See *id.* (discussing the term “smokestack chasing”); Porter on *Aligning Public Policy*, *supra* note 72, at 1 (“Industrial policy, which focuses on supporting individual industries, is distortive and interventionist. Picking winners, and attempting to nurture them through subsidies and protection, rarely succeeds.”). There is still significant academic debate, however, regarding whether tax competition is harmful or beneficial. See generally John Douglas Wilson & David E. Wildasin, *Capital Tax Competition: Bane or Boon?*, JOURNAL OF PUBLIC ECONOMICS 88 (2004) 1065-1091 (reviewing “both the good and the bad aspects of tax competition”).

ments.¹³⁴ Some commentators focus on the interjurisdictional effects of local competition. These commentators suggest that subsidies, while potentially providing net benefits for the subsidizing jurisdiction, result in inefficient aggregate local taxation across all jurisdictions.¹³⁵ By this account, there is an optimal level of tax burden—required to provide an appropriate level of public services—that, in the absence of collective action problems among local governments, businesses would be asked to bear. Because of collective action problems, however, individual jurisdictions may offer tax breaks or subsidies that, while producing a net gain to the subsidizing jurisdiction, result in suboptimal taxation in the aggregate.¹³⁶ The resulting policy prescription is to limit the ability of subnational governments to offer location incentives through some type of federal intervention.¹³⁷ Other commentators focus on intrajurisdictional effects, suggesting that subsidies produce no net benefit for the subsidizing jurisdiction.¹³⁸ Competition for business is thought to create pressure on subnational governments that exacerbate typical hazards of subsidy programs, such incompetent administration or susceptibility to interest group pressure.¹³⁹ Following high-profile examples of seemingly overwhelmed local officials badly miscalculating costs and benefits of generous subsidies, voters in several states enacted laws that claw back benefits if expected jobs do not materialize.¹⁴⁰

For the most part, the existing literature on location incentives and interlocal competition does not focus on agglomeration effects.¹⁴¹ One can imagine how the existence of agglomeration effects might actually validate location incentives. If clusters of related industries increase productivity,

134. See Peter D. Enrich, *Saving the States from Themselves: Commerce Clause Constraints on State Tax Incentives for Business*, 110 HARV. L. REV. 377, 397–405 (1996); Clayton P. Gillette, *Symposium: The Law and Economics of Federalism: Business Incentives, Interstate Competition, and the Commerce Clause*, 82 MINN. L. REV. 447, 451 (1997); Richard C. Schragger, *Mobile Capital, Local Economic Regulation, and the Democratic City*, 123 HARV. L. REV. 482, 491–98 (2009).

135. Gillette, *supra* note 130, at 451.

136. *Id.*

137. *Id.*

138. *Id.*

139. *Id.*

140. LaFave, *supra* note 131, at 1595 (discussing a Minnesota statute).

141. Clayton Gillette and David Schelicher come closest. Schleicher discusses agglomeration effects extensively in a recent article, but his primary focus is not business incentives but rather how policies resulting in sprawl and metropolitan fragmentation (such as the scope of local zoning powers) may impede agglomeration effects by reducing urban density. See discussion *infra* Part III.C.1. . Gillette references the agglomeration literature in postulating that local redistributive policies might be tolerated by mobile citizens because they increase local diversity and the potential for beneficial knowledge spillovers. Clayton Gillette, *Local Redistribution, Living Wage Ordinances, and Judicial Intervention*, 101 NW. U.L. REV. 1057, 1077–80 (2007). Gillette has also suggested, without directly referencing the agglomeration literature, that business incentives may reveal nonobvious location advantages. See discussion *infra* Part IV.C.1.

then perhaps subnational governments could have a role in engineering agglomeration economies by recruiting firms to construct clusters. For example, the city of Austin's rise as an entrepreneurial center coincided with successful recruitment of related companies through traditional incentives.¹⁴²

In fact, proponents of agglomeration development take a very dim view of industrial policy and smokestack chasing. Even if one focuses only on potential effects on the sponsoring jurisdiction (putting aside the interjurisdictional effects on other locations),¹⁴³ a number of potential objections to industrial policy and smokestack chasing have been identified.

The knowledge-based companies that drive agglomeration effects may simply not respond to traditional subsidies because companies increasingly compete on the basis of innovation rather than cost. Florida argues that traditional subsidies focused on reducing production costs (through building new roads, for example) or tax burdens (through tax breaks) are losing effectiveness because "these cost-related factors are no longer the key to success."¹⁴⁴

More importantly, proponents of agglomeration development may worry that subsidies will successfully attract businesses, but in ways that undermine agglomeration effects. Because agglomeration economies develop in seemingly idiosyncratic ways that are hard to reproduce, it may simply be beyond the capacity of government to accurately predict the direction of agglomeration market forces.¹⁴⁵ Porter poses a rhetorical question highlighting the risk of trying to engineer a cluster:

Clusters emerge spontaneously based on market forces, and the process of cluster formation will occur naturally as new firms form, suppliers develop, infrastructure investments respond to local needs, specialized institutions grow, and established firms elsewhere locate operations in growing cluster

142. FLORIDA, *supra* note 21, at 298–300.

143. For a discussion of interjurisdictional considerations, see *supra* text accompanying notes 286–89.

144. FLORIDA, *supra* note 21, at 221.

145. According to a Kauffman Foundation report prepared by Edward Glaeser and other commentators:

In retrospect, the launch of the semiconductor industry first by Fairchild and later refined by Intel that jump-started Silicon Valley essentially was accidental. Even Stanford University's celebrated role has been questioned, although both Stanford and its Bay Area rival, the University of California at Berkeley, since have hosted many faculty and students who have gone on to create new enterprises. (Indeed, the reverse may be the key point: Both Bay Area universities have benefited from the emergence and growth of many high-tech firms in the region). California's good weather also probably played a role in attracting some of the original talent who made the Valley into what it later became. But good weather is not always required. The auto industry's development in and around Detroit in the early decades of the last century also was serendipitous.

Zoltan J. Acs et al., *Entrepreneurship and Urban Success: Toward a Policy Consensus*, 3 (2008) (citations omitted), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1092493.

concentrations. Given such spontaneous economic processes responding to market signals, should clusters just be left alone to develop naturally?¹⁴⁶

Backing the wrong company for cluster participation can have several negative consequences. First, it may result in failure of the subsidized or favored company. If agglomeration effects are in fact decisive in a company's success, and if expected linkages between companies fail to materialize, the subsidy recipient may underperform competitors in locations with a better agglomerative fit.

Favoring a particular firm or industry may also adversely affect other firms in the jurisdiction by making it difficult for them to compete for labor, private investment, and other resources due to the advantages enjoyed by the subsidy recipients.¹⁴⁷ This crowding out of potential competitors might reduce the pace of innovation within the cluster. Porter, in particular, believes that competition among cluster participants (combined with simultaneous cooperation through trade associations or other support institutions) is a key driver of productivity-enhancing innovations.¹⁴⁸ In addition, the eliminated competitors might have been a better fit for the cluster than the subsidized firm due to stronger linkages with cluster participants. Finally, the eliminated competitors could have added to the economic diversity of the region, and such diversity is thought to increase potential spillovers and aid agglomeration effects.¹⁴⁹

Accordingly, proponents of agglomeration development distance their policy prescriptions from conventional subsidies. Florida, for example, emphasizes the *breadth* of his proposals to distinguish them from narrowly targeted subsidies. In discussing the role of subnational governments, he advocates for "investing in our stock of creativity in *all* of its forms, across the board," including the arts and other cultural institutions.¹⁵⁰ In explaining the emergence of Austin as a high-tech center, for example, he goes to great lengths to argue that the city's successful recruitment of specific firms through traditional location incentives was not the driving force.¹⁵¹

Porter also distances himself from smokestack chasing or narrowly-focused industrial policy. He explains:

Cluster-based policies, unlike sectoral or industrial policies, should be *neutral* with regard to industry or type of economic activity. In cluster theory, all clus-

146. Porter on *Aligning Public Policy*, *supra* note 75, at 6.

147. *C.f. supra* note 76 (discussing the possibility that subsidies crowd out competing firms). Crowding out is mitigated if the non-subsidized company can rely on labor, capital, or other resources from different jurisdictions. But companies may find it difficult, for example, to raise capital from non-local sources. *See infra* notes 167–70.

148. DELGADO ET AL., *supra* note 127.

149. Gillette, *supra* note 141, at 1077–80.

150. FLORIDA, *supra* note 21, at 260.

151. *Id.* at 298–300 (emphasizing instead research activities at the University of Texas and investments in music venues and other lifestyle amenities Florida associates with creative workers).

ters are good. Enhancing cluster externalities and spillovers will increase productivity and prosperity in *any* cluster. Hence government should not choose among clusters but create policies that support upgrading in every cluster present in a location. Cluster policy is thus fundamentally different from sectoral or industrial policy, whose fatal flaw is their focus on favoring particular types of economic activity, picking winners, and attempting to artificially bias competition in favor of a particular country or region.¹⁵²

In with the New: Agglomeration Development

Although conventional location subsidies persist,¹⁵³ a new paradigm of economic development has emerged. This new paradigm is sometimes referred to as “demand-side” economic development.¹⁵⁴ The goal of these new strategies is not to buy jobs by absorbing some of the cost of production. Instead, the goal is to promote and upgrade features of a local economic environment that are conducive to the knowledge-based economy (thereby creating *demand* for local investment).¹⁵⁵ The trend has been underway for decades, and its most prominent form focuses on identifying and cultivating nascent agglomeration economies.¹⁵⁶

Proponents of agglomeration development identify the following functions as appropriate for government in encouraging agglomeration effects:

- Collecting information about industry clusters;¹⁵⁷
- Convening potential participants in clusters for planning exercises and ongoing trade associations;¹⁵⁸
- Workforce training and education;¹⁵⁹
- Pursuing policies and providing amenities that the creative class will find desirable;¹⁶⁰
- Counteracting regulatory hurdles;¹⁶¹ and
- Curing local market failures by providing public goods with broad spillover effects.¹⁶²

152. *Porter on Aligning Policy*, *supra* note 75, at 6.

153. *See* MCGAHEY, *supra* note 90, at 5.

154. EISINGER, *supra* note 7, at 230–40 (describing demand-side economic development efforts).

155. *Id.*

156. *Supra* text accompanying note 141.

157. *Porter on Aligning Policy*, *supra* note 75, at 5.

158. *Id.*

159. *See* MCGAHEY, *supra* note 90, at 14–19.

160. FLORIDA, *supra* note 21, at 249–66, 283–314. Examples of such policies include downtown revitalization projects, *id.* at 289, anti-sprawl initiatives, *id.* at 290, investments in universities, *id.* at 292, creating bike lanes and other transportation infrastructure, *id.* at 294, and support for nightlife and cultural activities that interest a diverse population, *id.* at 296.

161. *Porter on Economic Development*, *supra* note 21, at 26, 28.

162. *Porter on Aligning Policy*, *supra* note 75, at 6, 16, 27. While Porter uses the term “public goods,” he appears most focused on broad-based externalities rather than the technical definition of a public good. *See supra* text accompanying note 82 (discussing the defini-

In theory, these functions accelerate or reveal underlying features of a local economy that are already showing potential for agglomeration effects. Instead of trying to create agglomeration economies from scratch, these policies try to speed their formation. As will be discussed in Part III below, however, the distinction proves easier to maintain in theory than practice.

D. *The Proponents' Likely Case for VDFs: Spillover Effects of Financial Technology*

Before Part III critiques VDFs and other forms of venture development, it is first helpful to acknowledge the theoretical case for including VDFs in agglomeration development efforts.¹⁶³ The apparent justification for VDFs is that they establish financial “technology” or “infrastructure” that may assist in cluster formation beyond the direct recipients of VDF funding.¹⁶⁴ In other words, financing methods have attributes of a public good with positive spillover effects¹⁶⁵ and therefore may be appropriate

tion of a public good). For example, he suggests governments can provide communication and transportation systems, which may generate network externalities but are more likely excludable “club goods” than true public goods. See Porter on *Economic Development*, *supra* note 21 (providing examples of governmental roles); John A. Weinberg, *Network Externalities and Public Goods in Payment Systems*, FEDERAL RESERVE BANK OF RICHMOND (Nov. 1996), available at http://www.minneapolisfed.org/research/events/1996_12-03/Weinberg_PaymentSystems.pdf. Porter explains: “Since clusters involve powerful externalities across firms in a location, and associated public goods, there is a strong rationale for public policy. In the presence of positive externalities, market failure will lead to underinvestment in specialized skills, scientific knowledge, and specialized infrastructure that benefits the entire cluster while also increasing competition through lowering the barriers to entry of new firms. Public policy that provides rules, mechanisms, and incentives for capturing external economies will improve productivity and, with it, job, wage, and innovation growth.” Porter on *Aligning Policy*, *supra* note 75, at 5.

163. JARED, *supra* note 119, at 4 (listing as a component of a cluster-based initiative: “venture capital and startup/small business counseling/financing for new company formation”). See also MICHAEL E. PORTER, CLUSTERS OF INNOVATION INITIATIVE: PITTSBURGH (2002) (identifying a Pittsburgh-area VDF as a component of a cluster-based economic development effort); Rogoway, *supra* note 39 (indicating that The Portland Seed Fund is an effort to bolster a software cluster in Portland).

164. Brett Frischmann defines infrastructure as a resource that is substantially non-rival in use and that is used as an input in production of a wide variety of private goods, public goods, societal goods, or combinations thereof. Infrastructure can be distinguished from a public good. A public good may be primarily a consumption item itself (for example, a fireworks show that is broadly viewable) rather than an input in the downstream production of other goods. FRISCHMANN, *supra* note 78, at xiv.

165. It is not crucial for this analysis that VDFs are a pure public good, only that they have the broad positive spillover effects that Porter references when discussing public goods. *Supra* note 162 and accompanying text (citing Porter’s discussion of public goods); *supra* text accompanying note 83 (discussing the technical definition of a public good).

for governments to provide under general economic theory and theories of agglomeration development.¹⁶⁶

To understand how financing methods may create positive spillovers, it is first necessary to understand the primary challenges of financing start-up companies. Financing of entrepreneurial efforts is characterized by extreme uncertainty, information asymmetry, and agency costs.¹⁶⁷ These obstacles to entrepreneurial finance make it difficult for start-ups to access traditional sources of capital. For example, an entrepreneur who has invented a new medical device will have trouble accessing most forms of financing because her idea is novel and the course of its development is unclear (uncertainty). She has knowledge about the quality of her idea and her abilities that are difficult to communicate credibly to financing sources (information asymmetry). Also, commercializing the idea would require leaving decisions regarding the course of the business in her hands because she is more technologically knowledgeable than the financing source (potential agency costs).

VC managers have been innovators in financing methods that overcome these traditional obstacles to financing entrepreneurship.¹⁶⁸ But innovators of financial technologies, like creators of other knowledge-based products, may have difficulty capturing the full benefit of their efforts. They create positive spillover effects by paving the way for future entrepreneurs and investors, who can adopt the innovation at low cost.¹⁶⁹ For example, lawyers, accountants, and consultants who work on a successful VC financing acquire specialized expertise they can use with other clients. Successful VC financings also produce contracting conventions (such as preferred stock and equity compensation terms) that streamline future negotiations in the entrepreneurial community. Although it is initially costly to develop and educate counterparties about VC investing practices, these early efforts greatly facilitate future transactions. In describing these positive spillover effects, Josh Lerner explains:

The first rationale for government intervention lies in the fact that there is a ‘virtuous cycle’ in entrepreneurship and venture capital. Activities by pioneering entrepreneurs and venture capitalists pave the way for subsequent generations: in a given city, it is far easier to recruit the staff for the one-

166. *Supra* text accompanying notes 83–85 (discussing how innovative technologies may be appropriate targets of subsidies under traditional economic theory); *supra* note 158 and accompanying text (discussing public goods in connection with agglomeration development).

167. George G. Triantis, *Financial Contract Design in the World of Venture Capital*, 68 U. CHI. L. REV. 305, 307-19 (2001) (“Financial economists regard much of security design as the task of minimizing the cost of information. Financial intermediaries play important roles in bridging information asymmetries and monitoring entrepreneurs on behalf of their investors.”); Cable, *supra* note 55, at 121–22 (citing the literature discussing uncertainty, information asymmetry, and agency costs in the context of VC investing).

168. Triantis, *supra* note 167.

169. LERNER, *supra* note 6, at 66.

hundredth start-up, or to find a lawyer to structure the one-hundredth financing, than the first.¹⁷⁰

Of course, the private VC market is now well-established and national in reach.¹⁷¹ But local *angel investing* markets are not well developed in many locations. In Silicon Valley and other entrepreneurial hubs, successful entrepreneurs act as angel investors and provide start-ups with capital below minimum VC investment amounts of \$5 million. But in areas without a significant history of successful start-up companies, these angel investors may not exist—resulting in a “geographic funding gap.”¹⁷² Unlike professional venture capital, which may invest outside of its immediate vicinity, angel investment markets tend to be extremely localized.¹⁷³ It is possible that some information regarding early-stage finance methods could spillover from other locations (through use of lawyers from other jurisdictions, for example), but information spillovers appear to be enhanced by physical proximity.¹⁷⁴ In other words, each location needs to develop its own angel-investing infrastructure, and this infrastructure tends to be under-produced by markets because of positive spillover effects.

VDFs can be understood as an effort to catalyze a local angel investment market by creating a critical mass of entrepreneurs, lawyers, accountants, and investors with expertise in angel-style investing. The hope is that this expertise—including valuation techniques, business plan writing, due diligence practices, and financial contracting terms—will facilitate subsequent transactions without subsidization, allowing potential industry clusters to emerge.

As will be discussed below, however, the public goods nature of angel investing does not entirely answer whether VDFs are a suitable tool for agglomeration development. Answering that question requires an appreciation of where entrepreneurship and venture capital are heading.

III. WHY EFFECTIVE VDFs MAY BE INEFFECTIVE ECONOMIC DEVELOPMENT

This part raises concerns about VDFs, notwithstanding the arguments in their favor described above. Unlike previous analyses of state-sponsored venture capital in the financial contract literature, this article does not criticize subsidy programs on the basis that they will fail to catalyze a

170. *Id.*

171. See NVCA YEARBOOK 2012, *supra* note 54 at 28 (showing VC investment in nearly every state in 2011).

172. Participating Securities Hearings, *supra* note 6, at 54 (statement of Susan L. Preston, Director of Attorney Training and Professional Development, Davis Wright Tremaine).

173. See Brent D. Goldfarb, et al., *Does Angel Participation Matter? An Analysis of Early Venture Financing* 11 (Robert H. Smith School Research Paper No. RHS 06-072, 2012), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1024186.

174. See *supra* text accompanying note 126–129.

traditional angel and VC market. That analysis has been carried out elsewhere.¹⁷⁵

Instead, this article assumes that VDFs may be successful in producing more VC-ready companies. The question this article addresses is whether VDFs, or other local venture development programs, that are successful in achieving that short-term goal will also succeed in achieving broader economic development goals. This part begins by describing changes in technology and business processes that may diminish the role of venture capital for some entrepreneurial activity. It then presents two specific critiques of VDFs as agglomeration development: one based on venture capital's appetite for high-risk and high-reward exits and another based on venture capital's narrow industry focus.

A. *The Diverging Paths of Venture Capital and Start-ups*

The universe of entrepreneurship has always been larger than the universe of companies eligible for VC financing. Paul Kedrosky notes that even among companies on *Inc.* magazine's list of fastest-growing start-ups, only 16 percent received VC financing.¹⁷⁶ The amount of entrepreneurship activity that is excluded from VC financing may only be getting larger due to changes in technology, business practices, and markets that affect start-up companies and the VC industry. These changes underlie this article's critiques of venture development policies because they cast doubt on whether a highly specialized form of financing that operates well in established high tech centers is exportable or scalable to less established entrepreneurial markets.

Lean Start-ups

Today's start-ups benefit from advances in technology that can drastically reduce operating costs.¹⁷⁷ For example, the wide availability of cloud computing services from large vendors like Amazon can eliminate the need to obtain and maintain expensive equipment; open source software can reduce development costs; and accessible sales, marketing, and distribution channels like Google's Adwords and Apple's App Store can significantly reduce sales and marketing budgets.¹⁷⁸

175. See generally LERNER *supra* note 6; Ibrahim, *supra* note 6; Gilson, *supra* note 17.

176. Kedrosky, *supra* note 12, at 2.

177. *Id.* at 5 (“[M]ost information technology entrepreneurs say today that it costs a fraction of what it did a decade ago to start a company. (Much of the technology is open source, and the cost of networking connection and bandwidth has plummeted, as has the cost of marketing and distribution over the Internet.)”); Ibrahim, *supra* note 18 at [manuscript page 107] (“In one important technology sector, software, the cost of innovation has come down dramatically over the past decade.”).

178. Google's AdWords allows a company to quickly develop advertising and to pay based on the number of visits generated by the ad. *Selling Products & Services Through Adwords*, SCHOOL FOR STARTUPS (July 29, 2011), <http://www.schoolforstartups.co.uk/selling-products-services-through-google-adwords/>.

Business processes are also evolving towards capital efficiency. In his 2011 book “The Lean Startup,” Eric Reis explained methods for rapidly shortening and reducing the expense of product development cycles.¹⁷⁹ The main thrust of these principles is to produce the “minimally viable product” that will generate customers, and then quickly adapt the product based on systematic evaluation of customer behaviors.¹⁸⁰ These principles are a significant departure from the long and expensive product development processes typical of the software industry, where new products and new versions of products take years to develop.¹⁸¹ They have generated a significant following in entrepreneurship circles.¹⁸²

The most notable lean-start-up successes are Internet-related companies.¹⁸³ But the principles are intended to be more generally applicable. Ries provides the example of a cleantech company that substantially reduced capital requirements through lean-start-up companies.¹⁸⁴

The effects of lean start-up principles are considered far-reaching. For one, they may reduce the risks to entrepreneurs of expensive failures.¹⁸⁵ Instead of making large up-front investments of capital in an environment of uncertainty, entrepreneurs and investors can assess the viability of the product early in the venture’s lifecycle.

The extent to which inexpensive entrepreneurship affects venture capital in particular is still unclear. Companies relying on lean start-up principles may still require VC investment, but potentially in smaller amounts or at a later point in a company’s lifecycle. For other companies, the reduced capital requirements may permit forgoing venture capital altogether by “bootstrapping” or relying on smaller angel investments.¹⁸⁶

The Kauffman Foundation report discussed in the introduction to this article speculated that declining costs of entrepreneurship are in part re-

179. ERIC RIES, *THE LEAN STARTUP: HOW TODAY’S ENTREPRENEURSHIP USE CONTINUOUS INNOVATION TO CREATE RADICALLY SUCCESSFUL BUSINESSES* (2011).

180. *See id.* at 8–11 (summarizing lean start-up principles).

181. *See The Rise of the Fleet-Footed Start-U*, N.Y. TIMES DEALBOOK (Apr. 26, 2010, 2:17 AM) [hereinafter *Dealbook*], <http://dealbook.nytimes.com/2010/04/26/the-rise-of-the-fleet-footed-start-up/>.

182. Ries’s book is a national best seller, and his principles have been adopted by a number of prominent start-ups, including DropBox. *See id.*

183. *See RIES, supra* note 179, at 3–8, 97–99 (discussing extensively IMVU, a social network company that he co-founded, and DropBox, a file-sharing company).

184. *Id.* at 202–04 (contrasting Alphabet Energy, which deployed a product that generated energy from waste heat with only \$1 million from investors, with other clean tech companies that received hundreds of millions in financing before obtaining a single customer).

185. *Dealbook, supra* note 181 (quoting Professor Thomas Eisenmann of the Harvard Business School: “If it works, it will reduce failure rates for entrepreneurial ventures and boost innovation. . . . That’s a big deal for the economy.”)

186. *Id.* (“[A]ccording to some Silicon Valley veterans, [adoption of lean start-up principles] means a shrinking role for venture capitalists in seeking and backing promising young entrepreneurs.”).

sponsible for disappointing performance by VC funds in recent years.¹⁸⁷ It suggested “right-sizing” the VC industry to account for a declining role in the technology sector.¹⁸⁸

Venture Capital Swells

At the same time that start-ups are able to make do with less and avoid some of the risk of capital-intensive product development, VC firms are heading in a somewhat opposite direction towards larger investments and potentially more ambitious exit goals.

The Role of Exit

VC funds target companies that appear headed towards an exit transaction (an acquisition by a publicly traded company or an IPO) within the lifetime of the fund, which is normally 10 years.¹⁸⁹ Exit is not necessarily bad for an entrepreneur. In fact, exit is an example of a contract term that is “braided” because it affects and meets the needs of the entrepreneur, the VC fund manager, and the institutional investors who provide capital.¹⁹⁰

For the entrepreneur and the VC fund, exit is a third-party verification (by the market) that the period of greatest uncertainty, agency costs, and information asymmetry has passed. In the case of an IPO, when the start-up company will continue as a publicly traded company, exit is the point at which the VC fund will return control of the company to the entrepreneur (though the entrepreneur will share control, to some extent, with public shareholders).¹⁹¹

Exit also plays a role in the limited partnership contract between the fund manager and institutional investors in the fund. Those investors also face uncertainty, agency costs, and information asymmetry with respect to their investment in the fund and their relationship with the fund manager. One way to mitigate these costs is to have fixed terms for the funds so that performance can be occasionally evaluated and proceeds from successful funds can be recycled into new funds established by those successful managers. Even though institutional investors may provide patient capital, in

187. See Kedrosky, *supra* note 12, at 5 (suggesting that the industry would be optimally sized if committed capital were at one half its current level).

188. *Id.*

189. Despite the stated 10-year term of a VC fund, VC managers may ask for extensions of the term and investors will often agree. Recently, the practice has resulted in so-called “zombie funds” that have little activity but still generate management fees. This practice is receiving attention from regulators and sophisticated institutional investors, and is a problem primarily when the VC managers do not intend to establish additional funds in the future and have less regard for their reputation among investors. Susan Pulliam & Jean Eaglesham, *Investor Hazard: ‘Zombie Funds,’* WALL ST. J., May 31, 2012, <http://online.wsj.com/article/SB10001424052702304444604577339843949806370.html> (paid subscription required).

190. See Gilson, *supra* note 17, at 1091.

191. *Id.* at 1084–85 (noting that control-related covenants expire upon an IPO).

that they do not demand a high degree of liquidity, periodic exits and fund liquidation allow for recycling, periodic evaluation, and asset reallocation.¹⁹²

Exit also helps fund managers apply their skills to the stage of company where they have the most expertise. VC funds provide significant managerial assistance to help guide entrepreneurs through a company's early stages. Once a company reaches a certain level of maturity, their contributions may be less valuable. Exit and fixed fund terms allow VC managers to recycle their talents into new ventures.¹⁹³

The incorporation of exit provisions into VC contracts, therefore, is a key innovation that has allowed VC to overcome the significant obstacles to investing in start-ups. In this light, exit is beneficial to entrepreneurs, or at least a palatable solution to the obstacles they face in raising capital.

Why Large Exit?

Where the interests of some entrepreneurs and fund managers may diverge is in the size and timing of the targeted exit.¹⁹⁴ Entrepreneurs may be satisfied with moderate success for the company that creates hundreds of jobs and doubles or triples investors' money, but VC funds have historically shown little interest in companies targeting this level of success.¹⁹⁵ VC funds seek not just exits, but especially large exits.¹⁹⁶ In this context, a "large exit" means an IPO or an acquisition of the company for a large total company value (typically hundreds of millions of dollars).

There are a number of reasons for this emphasis on large exits. For example, start-ups need to be scalable (capable of addressing large markets) to be attractive to one class of likely acquirers, publicly traded com-

192. *See id.* at 1091.

193. *Id.*

194. *See generally* Robert P. Bartlett III, *Venture Capital, Agency Costs, and the False Dichotomy of the Corporation*, 54 UCLA L. REV. 37 (2006) (discussing conflicts among different investors in connection with exit decisions).

195. Dileep Rao, *Why the Venture Capital Model Is Broken*, FORBES.COM (May 14, 2008), http://www.forbes.com/2008/05/14/venture-capital-financing-ent-fin-cx_dr_0514dileep-raobroken.html (discussing why venture capital does not invest in "mid-potential" ventures that could grow in to 10–500 employees).

196. A "homerun mentality" is a well-noted feature of VC investing. *See* Joseph Bankman, *The Structure of Silicon Valley Start-Ups*, 41 UCLA L. REV. 1737, 1764–65 (1994) ("Start-ups are in fact a high-risk, high-return investment. One would expect that those who invest in start-ups would be, while perhaps not risk-seeking, certainly less risk-averse than most.").

panies.¹⁹⁷ Similarly, a start-up must have substantial earnings growth potential to be attractive to the public equity markets.¹⁹⁸

The demands of institutional investors in VC funds may also drive fund managers to chase high-risk, high-reward exits. Basil Peters, an angel investor who is critical of the effect of venture capital on entrepreneurs and angel investors, laid out the following calculations. As a rule of thumb, institutional investors in VC funds expect an internal rate of return of 20% on their investment.¹⁹⁹ Funds are established with a ten-year term, though this term is often extended.²⁰⁰ Assuming the institutional investors' capital is tied up in the VC fund for 10 years,²⁰¹ those investors need to receive about six times their investment to achieve a 20% internal rate of return. If one assumes that that only 20% of the fund's portfolio companies produce a positive return,²⁰² those successful companies need to produce an

197. Large publicly traded companies are the most likely acquirer because they can buy a start-up in exchange for publicly traded (liquid) stock. *C.f.*, Victor Fleischer, *The Rational Exuberance of Structuring Venture Capital Startups*, 57 TAX L. REV. 137, 182-182 (2003)(citing tax-free mergers as a form of exit).

Private company (illiquid) stock would not be attractive to a VC fund, so private acquirers would be limited to cash acquisitions.

198. See *Going Public*, ENTREPRENEUR, <http://www.entrepreneur.com/article/52826> (last visited Nov. 28, 2012) (stating that in order to be an attractive IPO candidate, "minimum earnings growth potential is 20 percent per year, and the company should be able to achieve a valuation (total shares outstanding times their price) of at least \$100 million to be truly successful as a publicly held corporation").

199. BASIL PETERS, EARLY EXITS: EXIT STRATEGIES FOR ENTREPRENEURS AND ANGEL INVESTORS (BUT MAYBE NOT VENTURE CAPITALISTS) (2009). This number is referenced elsewhere. See *e.g.*, Rao, *supra* note 195 (referring to "20% hurdle rates demanded by investors to justify the risk").

200. Pulliam & Eaglesham, *supra* note 189. See also MARK J. ANSON, THE HANDBOOK OF ALTERNATIVE ASSETS 273 (2002) ("[Venture capital l]imited partnerships are generally formed with an expected life of 7 to 10 years with an option to extend the life another 1-5 years.").

201. Most exits occur within a shorter time frame. Currently, exits by merger typically occur within 6 years of initial equity funding and exits by IPO occur within 9 years of initial equity funding. Jose M. Mendoza & Erik P.M. Vermeulen, *The "New" Venture Capital Cycle (part 1): The Importance of Private Secondary Market Liquidity* 31 (Lex Research Topics in Law & Economics Working Paper No. 1/2011, 2011), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1829835. More realistic assumptions do not alter the basic point of Peters' illustration. *Infra* note 205.

202. Estimating that the bulk of investment returns are generated by 20% of portfolio companies appears reasonable though oversimplified. The number has appeared elsewhere. Rao, *supra* note 195 (estimating that 80% of venture-backed start-ups fail). Likely, a number greater than 20% achieves some type of positive exit, though some positive exits are modest. *Frequently Asked Questions About Venture Capital*, NAT'L VENTURE CAPITAL ASS'N, http://www.nvca.org/index.php?Itemid=147&id=119&option=com_content&view=article (last visited Aug. 15, 2012) ("It is estimated that 40 percent of venture backed companies fail; 40 percent return moderate amounts of capital; and only 20 percent or less produce high returns."). There is not, however, much research on performance of individual venture-backed companies (as opposed to evaluating a fund's performance in the aggregate). One study of exit transactions (*i.e.*, considering only those companies that have achieved an exit) indicates that 60% return less than the amount invested, less than 10% achieve an IRR of between 0

exit that will return to the fund 30 times the fund's investment in that company.

Under these assumptions, funds need to chase exits that are large in total company value. For example, if a fund invests \$10 million in a start-up, the fund is targeting a payoff of \$300 million for its individual investment (30 times its \$10 million investment). That likely requires an IPO or acquisition at a significantly higher total company value than \$300 million (perhaps twice that amount) because any single VC fund will likely own no more than half of the company.²⁰³

There are reasons to think Peters overstates the problem. In fact, VC funds make investments of varying size and at varying stages (some early in a company's life, and some later in a company's life). This practice may mitigate the effects described above by, for example, including later-stage investments (closer to a company's IPO) with less uncertainty and shorter holding periods (but likely lower rates of return).²⁰⁴ But even if one relaxes Peters' assumptions by assuming a shorter time to exit, additional modest exits, and staged investment, the fund in the example above must still target exits significantly in excess of \$200,000,000 in total value.²⁰⁵

and 24%, less than 10% achieve an IRR of between 25 and 49%, just over 10% achieve an IRR of between 50 and 100%, and just over 10% achieve an IRR in excess of 100%. Robert Wiltbank, *At the Individual Level: Outlining Angel Investing in the United States* 8 (Univ. of Ill. at Urbana-Champaign's Academy for Entrepreneurial Leadership Historical Research Reference in Entrepreneurship, 2005), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1509255 [hereinafter Wiltbank, *At the Individual Level*] (citing a 2002 study by Mason and Harrison). A study of angel and VC investments based on records of the now-defunct Brobeck law firm reported that approximately 40% of companies were confirmed failures, approximately 30% had not yet achieved exit, and approximately 30% exited at a positive value. Goldfarb, *supra* note 173, at 14. More realistic assumptions do not alter the basic point of Peters' illustration. See *infra* note 205.

203. It is reasonable to assume that no single VC fund will own in excess of 50% of the company's equity. Founders and other management personnel will likely retain at least 25% of the company's equity. See Stever Robbins, *Dividing Equity Between Investors and Founders*, ENTREPRENEUR, Oct. 13, 2003, <http://www.entrepreneur.com/article/65028>. The remaining 75% may be divided among angel investors, service providers (such as law firms) who received equity interests in lieu of fees, and multiple VC firms.

204. For example, a backlog in the IPO pipeline following the financial crisis resulted in a spate of late-stage investments by VC firms in recent years. In theory, these investments allowed funds to add shorter-term, lower-risk, and lower-reward investments to their portfolios. Given the mixed results achieved by funds using this strategy because of disappointing IPOs, there are reasons to doubt there will be a fundamental shift towards later stage investments. See Scott Thurm & Pui-Wing Tam, *Prominent Investors Miss Web IPO Payoff*, WALL ST. J., June 18, 2012, <http://http://online.wsj.com/article/SB10001424052702303836404577474422342954922.html>.

205. For example, assume that the two large exits will occur in only six years, two additional companies will exit at a modest (1.5x) value at the conclusion of the fund's initial term, and half of investments and capital calls are delayed until three years into the fund's term (i.e., they are staged). The large exits must return in excess of \$100,000,000 (10x the amount invested) to the fund in order to produce a 20 percent IRR. Because the fund will likely own no more than 50 percent of the company, the total exit value must be \$200,000,000.

In a sense, this emphasis on large exit is only an arithmetic byproduct of the targeted rate of return, high failure rates of start-up companies, and other factors discussed below. Theoretically, VC managers would be content investing in companies targeting smaller exits if the desired return could be achieved through, for example, lower company failure rates or exposure to a larger number of companies. But ultimately the factors that drive the focus on large exits appear unlikely to change without dramatically altering the VC model. These factors include:

- *High Failure Rate:* VC funds could target smaller exits if a portion of their portfolios exhibited lower failure rates. For example, VC funds may occasionally have opportunities to make late-stage investments, as many have in Facebook and other mature, but not yet public, companies.²⁰⁶ But ultimately, a VC manager's specialized skill set is in building companies (providing managerial assistance through the product development and growth phases).²⁰⁷ That means venture capital has the greatest competitive advantage over other sources of financing when investments are made relatively early in a company's life cycle. A relatively high failure rate may be unavoidable in this early-stage investing.
- *Long Investment Horizon:* A VC manager's company-building function also takes time to perform, so funds will invest in most portfolio companies for a relatively long time period (it must be patient capital). Proceeds of successful investments must be relatively large to generate the targeted rate of return in light of the long holding period.
- *Large Investment Amount:* Finally, the economics of fund management point towards large individual investments in start-up companies. Fund managers have developed significant expertise in fields that are historically capital-intensive, and managers would incur costs developing new expertise.²⁰⁸ Also, there are clear efficiencies in funds making fewer and larger investments. VC funds invest significant time in each investment, and some of this cost is "fixed" so that a smaller investment does not require proportionately less time than a larger investment.²⁰⁹ In order to achieve an acceptable return on these large investments, the total company value of an exit must be large.

206. Thurm & Tam, *supra* note 204.

207. See Gilson, *supra* note 17, at 1072, 1075–76.

208. See Kedrosky, *supra* note 12, at 7.

209. PETERS, *supra* note 199, at 37.

A Long-Term Trend?

Despite difficult market conditions following the burst of the Internet bubble and the recent financial crisis, the average VC fund size moved from approximately \$33 million in 1985 to approximately \$150 million in 2011.²¹⁰ A number of VC managers operate funds totaling more than \$1 billion in capital commitments (typically spread over multiple funds).²¹¹ As the size of funds increases, so do the incentives to make each investment in a start-up company larger. The average size of total investment by VC funds per portfolio company increased from approximately \$5 million 1996 to approximately \$25 million in 2005.²¹² As a result, there is a perception that venture capital's focus on large exits is only increasing.²¹³

B. A Critique Based on Large Exits

To some commentators, the diverging paths of venture capital and entrepreneurship suggest the VC model is "broken."²¹⁴ It may be, however, that the VC market continues to serve the needs of fund managers, institutional investors, and companies with capital-intensive business models. Top VC funds, for example, did well in several recent IPOs.²¹⁵ This article discusses these trends for a different reason: the push towards large exit may be undesirable from an economic development standpoint.

For Employees

One reason that entrepreneurship appeals to subnational governments as a framework for economic development is diversification of employment. A criticism of traditional location incentives is that they concentrate employment in a few (usually large) subsidy recipients. For example, in the 1970s, Pennsylvania recruited a Volkswagen facility with the expectation of 5,000 to 7,000 jobs.²¹⁶ When those jobs failed to materialize, the governor advised: "I think there is a hint of a lesson there about putting all

210. NVCA YEARBOOK 2012, *supra* note 54, at 18. There has been fluctuation in fund size over that period, and inflation accounts for some of the growth in size. But in general, the long-term trend appears to be towards large fund size. Scott Shane, *Venture Capital Funds Remain Large*, FORBES.COM (Jan. 11, 2012 12:52 PM), <http://www.forbes.com/sites/scottshane/2012/01/11/venture-capital-funds-remain-large/> (showing inflation-adjusted numbers and discussing the difficulty of interpreting the NVCA statistics on fund size because 10-year fund lives obscure recent trends).

211. NVCA YEARBOOK 2012, *supra* note 54, at 17.

212. PETERS, *supra* note 199, at 37 (citing National Venture Capital Association statistics).

213. See Miguel Helft, *Not the Best of Timing for the Industry's Obituary*, N.Y. TIMES, Oct. 27, 2006, <http://www.nytimes.com/2006/10/27/business/27venture.html> ("The venture business is becoming more like the movie business where a small number of hits are generating the majority of the return. . . .").

214. See *supra* text accompanying notes 10–12.

215. Thurm & Tam, *supra* note 204 (discussing profits earned by VC firms that invested early in Facebook and Zynga).

216. EISINGER, *supra* note 7, at 249.

of your eggs in one basket.” He explained that he would rather support 50 companies with 100 employees than one company with 5,000 employees.²¹⁷ Peter Eisinger argues that this sentiment motivated early efforts to subsidize entrepreneurial finance.²¹⁸ The goal, according to Eisinger, was to encourage more businesses to start and then to help them through “the dangerous period of infancy when business mortality rates are exceptionally high.”²¹⁹

The VC model, with its objective of large exits and correspondingly high failure rates, may not achieve this goal. Even among the small number of start-ups that are actually successful in obtaining venture capital, most fail.²²⁰ There are no accurate statistics on how many companies seek but never obtain venture capital, but it is likely the vast majority of start-ups seeking venture capital never get that far. When a start-up fails in Silicon Valley and other entrepreneurial hubs, labor markets may be thick enough to mitigate the harm to employees. One reason people are attracted to Silicon Valley and similar agglomeration economies is the ability to more easily find new employment opportunities. Thick labor markets function like insurance by allowing workers to pool risk.²²¹

But for areas that do not have these thick labor markets, the VC model may produce unstable employment, much like conventional location subsidies. This may be only a transitional problem—once a virtuous cycle of entrepreneurship is established, labor markets may come to resemble Silicon Valley. But there also may be a fundamental question of Silicon Valley’s “scalability.” We simply do not know where the breaking point is for establishing adequate agglomeration effects to make employment by volatile start-ups attractive. The concept of a “Silicon Valley lite” may be fundamentally flawed in this respect.²²²

For Entrepreneurs and Angel Investors

Venture capital’s need for large exit carries with it additional risk for entrepreneurs and local angel investors. There may be situations, for example, when a start-up can achieve a modest exit that provides a significant return to the entrepreneur and early investors. If that company has also accepted venture capital, however, the VC fund is likely to block that

217. *Id.* at 242 (internal quotation marks omitted).

218. *Id.* at 242-43.

219. *Id.* at 242.

220. Wiltbank, *At the Individual Level*, *supra* note 202, at 8 (showing investment outcomes for both VC and angel investments, and noting that over 60% result in a loss to investors).

221. GLAESER, *supra* note 95, at 33.

222. Ibrahim, *supra* note 6, at 719-20 (using the term “Silicon Valley lite” to describe economic development efforts geared at replicating Silicon Valley’s entrepreneurial environment).

beneficial exit because it is insufficient from the fund's perspective.²²³ The fund would instead prefer to risk a larger future exit event. Indeed, research on returns to angel investors suggests that subsequent VC investment increases risk to angel investors.²²⁴

In addition to increasing risk, the need for large exit may delay valuable "recycling" of local capital and talent. Entrepreneurs provide the most value at the very start of a venture. They conceive of innovations, articulate business plans, and produce prototypes or early versions of products to prove the concept is viable. Although some entrepreneurs retain a leading or significant role in the company after VC funds invest, this is often not the case. As the company matures to the growth phase, entrepreneurs are often replaced by more experienced managers with different skill sets (for example, in marketing, distribution, and operations).²²⁵

Angel investors, who are often successful entrepreneurs themselves, also provide the most value early. They often provide mentoring to entrepreneurs in early stages. They also leverage local networks of personal and business contacts to identify high quality entrepreneurs at a time when the prospects of a venture are most uncertain.²²⁶

Large exits may take the entire life of the fund to achieve. By targeting exits that require long holding periods, the current VC model potentially delays recycling of angel investor capital and entrepreneurial talent into new ventures, where the specialized skills of angel investors and entrepreneurs are most effectively applied.²²⁷

C. A Critique Based on Narrow Industry Focus

Another potential problem with VDFs and venture development more generally is that, despite their potential for positive spillover effects, they support a VC model that has a very narrow industry focus. Venture development policies try to solve a ubiquitous market failure (the difficulty of funding new ventures and the underproduction of finance technology to solve this problem) with a highly specialized solution that benefits only a narrow band of industries and only a small portion of companies within

223. See *supra* text accompanying notes 194–96; Ibrahim *supra* note 18, at 260–61 (citing Peters and describing this possibility as "investor lock-in").

224. Robert Wiltbank and Warren Boeker compared the returns to a data set of angel investments that were followed by VC investment to a data set of angel investments that were not followed by VC investment. They found that the two data sets achieved similar overall rates of return, but the angel investors experienced more failures, fewer moderate exits, and more large exits when VC subsequently invested. Robert Wiltbank & Warren Boeker, *Returns to Angel Investors in Groups*, Ewing Marion Kaufman Foundation, Nov. 2007, available at http://www.kauffman.org/uploadedFiles/angel_groups_111207.pdf; see also PETERS *supra* note 199, at 54 (citing Wiltbank and providing anecdotal evidence).

225. PETERS, *supra* note 199, at 68; Ibrahim, *supra* note 18, at 260–61 (focusing on the non-financial benefits entrepreneurs and angel investors receive from recycling their efforts into new projects).

226. Cable, *supra* note 55, at 131 (describing angel investing practices).

227. PETERS, *supra* note 199, at 68 (discussing entrepreneurial recycling).

those industries. From this perspective, it becomes more difficult to distinguish VDFs from traditional location incentives.

A New Question of Agglomerative Efficiency

At first blush, the fact that VDFs have attributes of public goods and create positive spillover effects may appear to resolve the question of their economic efficiency. Economists often agree that government has a role in providing goods and services that would otherwise be undersupplied by the market.²²⁸

Recent scholarship suggests, however, that agglomeration effects may require an additional analysis beyond traditional measures of efficiency. For example, local government law scholar David Schleicher recently demonstrated how agglomerative efficiency might at times be at odds with other measures of evaluating efficiency of government policy. In local government law, a primary economic framework for evaluating allocations of power between cities and larger jurisdictions has been the “Tiebout model,” which suggests that cities compete for residents based on levels of taxation and public services.²²⁹ Policies are considered efficient under this framework when they provide maximum opportunities for people to best satisfy their individual preferences for levels of taxation and public services.²³⁰ Schleicher refers to strong competition based on government policies as “Tiebout sorting.”²³¹ Schleicher notes that Tiebout sorting may enhance one kind of efficiency by satisfying preferences for tax policy and levels of public services, but it may reduce *agglomerative efficiency* by distorting location decisions that would otherwise be made based on factors such as proximity to thick labor markets and related industries.²³² For example, an entrepreneur may move from an urban center to a distant suburb in order to send her children to a particular school. That move may be efficient in satisfying her residential preferences, but it may contribute to metropolitan sprawl that impedes agglomeration by spreading people out.²³³

Similarly, supporting VDFs may be considered an efficiency-enhancing policy because VDFs solve a market failure—the underproduction of financing technology with positive spillover effects. But this externality-based analysis does not necessarily answer the question of whether these policies encourage the emergence of agglomeration economies or instead frustrate agglomeration effects like traditional location incentives.²³⁴

228. Oates, *supra* note 78.

229. Schleicher, *supra* note 100, at 1508–09.

230. *Id.*

231. *Id.* at 1529–34.

232. *Id.* at 1535–45.

233. *Id.*

234. This section will consider whether VDFs are agglomeratively efficient from the sponsoring jurisdiction’s perspective. The additional question of interjurisdictional agglomerative efficiency is briefly discussed *infra* Part IV.C.

Narrow Solution to a Broad Problem

With the goal of agglomerative efficiency specifically in mind, one problem is that VDFs (and venture development policies more generally) risk violating the principles of industry neutrality that proponents of agglomeration development have articulated to distinguish their policies from traditional location incentives.²³⁵ As a result, venture development policies at the subnational level risk creating the agglomerative distortions attributed to traditional location incentives. This problem results from addressing very common obstacles to financial contracting through a mechanism available to a very narrow band of entrepreneurial activity.

Ubiquitous Market Failure

The obstacles to start-up finance—uncertainty, agency costs, and information asymmetry—are present in most financing arrangements, at least to a degree.²³⁶ These are challenges that venture capital has proven to be adept at meeting, but they are not unique to the types of companies in which venture capital invests. For example, they are present in a classic livelihood business: a restaurant. A first-time restaurant owner may have no established credit history and a novel concept (uncertainty), the restaurant owner may have knowledge of the local market and of his or her own abilities that are hard to communicate to financing sources (informational asymmetry), and the restaurant's success will ultimately depend on the efforts of the owner, which are difficult for financing sources to monitor (agency costs).

Claims of market failures in credit markets are common.²³⁷ The SBA, for example, guarantees loans to a wide variety of small businesses based on a perception that banks lend at suboptimal levels to smaller enterprises.²³⁸

As will be explained below, however, venture capital addresses these ubiquitous obstacles for a very select set of industries and only for a select number of businesses within those industries. This raises the question of whether VDFs, and venture development more generally, are consistent with the concept of agglomerative efficiency or instead operate like a traditional, narrowly targeted location incentive.

235. See *supra* text accompanying notes 144–48.

236. Triantis, *supra* note 167, at 307–19 (“Financial economists regard much of security design as the task of minimizing the cost of information. Financial intermediaries play important roles in bridging information asymmetries and monitoring entrepreneurs on behalf of their investors.”).

237. Murray, *supra* note 60, at 3–9 (describing claims of funding gaps in credit markets generally).

238. Ben R. Craig, William E. Jackson III, and James B. Thomson, *Public Policy in Support of Small Business: The American Experience 1*, (Federal Reserve of Cleveland Working Paper 11-16) (explaining that there may be a failure in small business credit markets due to information asymmetries).

Industry Concentration

At times, venture capital can appear adaptable to a wide variety of businesses. It has accommodated products as diverse as semiconductors (Intel), coffee (Starbucks), Internet search (Google), and air travel (Jet Blue).²³⁹

On the other hand, National Venture Capital Association statistics reveal a consistently high level of concentration in a small number of business types. In 2011, nearly 80 percent of VC investment was made in six industry sectors: software (24 percent), biotechnology (17 percent), industrial/energy (12 percent), medical devices and equipment (10 percent), media and entertainment (8 percent), and IT services (8 percent).²⁴⁰ Those numbers were similar two decades ago,²⁴¹ except that within those sectors both Internet-related companies and the cleantech industry have emerged as significant recipients of VC financing.²⁴²

Some of this industry concentration is explained by the attributes of those industries. They are characterized by high capital requirements during the development phase.²⁴³ This makes those companies suitable for the larger investment sizes now typical of the VC industry. Some have also argued that VC firms continue their historical industry focus because of path dependency—they have expended significant resources acquiring industry-specific knowledge that they use to select, monitor, and provide managerial assistance to their portfolio companies.²⁴⁴

Whatever the explanation, this industry concentration means that choosing venture capital as a vehicle for economic development favors a small number of industries. In economic regions with activity in only one or a small number of those industries, venture development entails the same risk of error in predicting the path of agglomeration effects as traditional location incentives. If policy makers have chosen to support the wrong potential clusters, proponents of agglomeration development would predict that resources would be wasted. Even worse, more beneficial agglomeration economies might be crowded out or neglected.²⁴⁵

It may be that these VC-backed industries share some unique advantage in terms of economic development. Growing any of these industries in a region certainly would move towards the goal of a more knowledge-based economy. But these specific industries are not necessary to produce

239. See NVCA YEARBOOK 2012, *supra* note 55, at 7.

240. *Id.* at 12.

241. The percentages were as follows: software (22 percent), biotechnology (12 percent), industrial/energy (7 percent), medical devices and equipment (11 percent), media and entertainment (3 percent), and IT services (2 percent). *Id.* at 33.

242. *Id.* at 25 (“Clean technology was the U.S. venture capital’s most visible emerging sector with a record \$4.5 billion invested in 2011, up 15% from the 2010 total.”); *id.* at 39 (showing 416 Internet-related investments in 1995 versus 1,894 in 2011).

243. See Kedrosky, *supra* note 12, at 6.

244. *Id.* at 7.

245. See *supra* text accompanying notes 146-150.

significant agglomeration effects. Porter, for example, has cautioned that all clusters within a region should be “upgraded.”²⁴⁶ While Porter does recognize that certain “traded” clusters have more significant economic impact, many traded clusters appear to have little relation to the VC industry.²⁴⁷ In other words, Porter does not necessarily elevate technology companies or other VC-backed industries above other clusters.²⁴⁸

Under espoused principles of agglomeration development, then, the ideal entrepreneurial finance program would be adaptable to the full range of industries that could plausibly emerge in a given location. Perhaps no finance subsidy can fully realize this ideal; in a world of increasingly capital-efficient entrepreneurship, venture capital appears to fall well short.

IV. IMPLICATIONS

If the trajectory of entrepreneurship points away from venture capital (outside of established tech centers, at least), what might emerge in its place? Part IV.A below considers market trends that encourage, or are aided by, capital-efficient entrepreneurship and reduce or eliminate the need for venture capital. While these trends are still nascent, they demonstrate that venture capital and entrepreneurship need not be conflated.

These market trends may be a basis for some subnational governments to forego entrepreneurial finance subsidies. Subsidies may be unnecessary or may even risk crowding out helpful market trends. Jurisdictions may choose to spend scarce resources on services that fall more squarely within their existing areas of competence, such as education, basic physical infrastructure, or cultural amenities. Or jurisdictions might eschew agglomeration development altogether for an alternative strategy, like a more *laissez-faire* approach emphasizing low tax rates and less restrictive regulations.

It is unlikely, however, that entrepreneurial finance subsidies will disappear based on the critiques in this article. After all, these programs have been part of the economic development landscape for over half a century despite skepticism from many observers.²⁴⁹ Some jurisdictions may be persuaded to adopt subsidy programs based on perceived success stories in other jurisdictions.²⁵⁰ Other jurisdictions may acknowledge that subsidy programs carry with them a high risk of error or capture by special

246. *Supra* note 75, at 7.

247. *Supra* text accompanying note 120–30 (discussing Porter’s cluster theory).

248. It could also be said that the case for viewing the VC model as “infrastructure” has weakened as it becomes suitable as an input for a narrowing range of economic activity. FRISCHMANN, *supra* note 78, at 79 (describing how a resource can lose its status as infrastructure over time).

249. *See supra* text accompanying notes 5–7 (discussing the history of state-sponsored venture capital).

250. *See* LERNER, *supra* note 6 and accompanying text (discussing the perceived success of the SBIC program and discussing the perceived success of state-sponsored venture capital).

interests but may nonetheless feel compelled, in the current economic environment, to take the risk.²⁵¹

Part IV.B therefore considers how this article's critique, and the market trends described below, might affect the design of entrepreneurial finance programs. This exercise serves at least two purposes. First, the exercise may produce practical design suggestions that mitigate some aspects of this article's critique. Second, the exercise may reveal weaknesses in current theories of agglomeration development to the extent some aspects of the critique are more or less intractable.

A. *Market Trends*

Early Exits

The early-exit trend builds on opportunities for capital efficiency described in Part III above, and then advocates for smaller, quicker exits prior to the need for venture capital. Dr. Basil Peters, discussed above, is the most vocal proponent of this strategy.

Peters cited data indicating that the market for acquisitions under \$30 million is currently robust, and was so even during the financial crisis.²⁵² For example, many companies currently have large cash balances due to presumably temporary market conditions.²⁵³ Peters also claimed that there is a longer-term trend towards buying innovation through acquisitions rather than internal research and development, in part because companies recognize the strengths of new firms in creating innovations.²⁵⁴ Part III above explains why this level of exit may be attractive to entrepreneurs and angel investors but may not be feasible for venture capital.²⁵⁵

Peters outlined how start-ups can intentionally steer towards earlier (though smaller) exits. For example, he believes entrepreneurs can incorporate this goal into a start-up's "DNA" through terms of an equity compensation plan.²⁵⁶

Most importantly, however, Peters warned that accepting VC investment can frustrate the goal of early exit. He believes entrepreneurs will

in Israel); *c.f.* FLORIDA, *supra* note 21, at 298-300 (discussing Austin's emergence as a high-tech center).

251. Venture development policies have enjoyed increased popularity as a result of the financial crisis. *See* Cable, *supra* note 56, at 107 (citing support for venture development in the popular press); SBIR, SMALL BUS. INNOVATION RESEARCH, *supra* note 52 (discussing proposed expansion of the SBIC program); DiSabatino, *supra* note 17, at 102 ("In the wake of the recession, political demands on states to drive job growth have spurred numerous policy responses, including focus on targeted incentives and emerging industries.").

252. PETERS, *supra* note 199, at 27-31.

253. *Id.*

254. *Id.*

255. *Id.*

256. Peters suggests that a significant portion of employee equity grants should vest only if there is an exit transaction, and that the vesting period for remaining options should be calibrated to the expected time for an early exit (two to three years). *Id.* at 88.

increasingly be able to forego venture capital and instead rely on smaller angel investments because of the long-term trend towards capital efficiency described above.²⁵⁷ Peters explained the diminished role of venture capital as follows:

Everyone has been looking for the ‘big score,’ the billion-dollar payout—the moon shot that would vault them into the ranks of big money. That era is over. Sober thinking is now the rule of the day. The turmoil and this new way of thinking presents a new, and possibly even more exciting, opportunity for entrepreneurs and angel investors. The news may not be as good for traditional venture capitalists or the companies in which they invest. . . . A different financing landscape for entrepreneurs has been emerging over the past few years and will continue to evolve in this new financial climate. This new reality favors investment in promising young companies by angel investors, who will often achieve an exit within a few years instead of following the riskier, and much longer funding patterns of the traditional venture capital industry.²⁵⁸

The early-exit strategy appears to be gaining traction with several high-profile “super angels”—formerly successful entrepreneurs who raise small funds to invest at levels within the funding gap. Dave McClure, a former PayPal executive and current super-angel, explained that his investment fund has “a whole different set of exit criteria” than VC funds.²⁵⁹

While it is possible that some VC managers will adapt their investment strategies to accommodate early exit, there are reasons to doubt a significant shift by venture capital in this direction. Most importantly, early exits typically involve a smaller amount invested in each company than traditional venture capital, and managers of today’s increasingly large funds are unlikely to find the prospect of monitoring a greater number of smaller investments attractive.²⁶⁰

Revenue Loans (Royalty Funds)

Entrepreneurs are making increasing use of revenue loans. A typical revenue loan requires the borrower to pay a fixed percentage of its revenues (e.g., 2%) up to a stated multiple of the loan amount (e.g., three times the amount borrowed).²⁶¹ It therefore has attributes of both debt

257. *See id.* at 16–17; *see also* Ibrahim, *supra* note 18, at 107 (describing increased possibilities for financing a startup entirely through angel investors)

258. *See* PETERS, *supra* note 199, at 16-17

259. Tam, *supra* note 63 (“Super-angel Mr. McClure says he tends to make dozens of small start-up bets and can comfortably make money if just a few of the start-ups are bought by larger acquirers for less than \$100 million. In contrast, big venture funds—often sized at several hundred million dollars and up—need bigger paydays to turn a profit on their huge funds.”).

260. *Supra* text accompanying notes 208-09 (discussing the economics of fund management); *supra* note 240 (discussing possible path dependence of VC managers towards capital-intensive industries).

261. Scott Austin, *An Alternative Financing Option for Startups*, WALL ST. J., Dec. 2, 2010, <http://online.wsj.com/article/SB10001424052748704679204575646940403312602.html>.

(in that it imposes ongoing payment obligations that are capped at a fixed amount) and equity (in that it shares to an extent in the upside of the business and is contingent on the business's success).²⁶²

In recent years, different types of investors have offered revenue loans to start-ups as an alternative to conventional equity investments. Examples include:

- ProFounder, a “crowdfunding” website that helps an entrepreneur arrange revenue sharing loans with family, friends, and other sources identified through the site.²⁶³
- Light Capital (formerly “Revenue Loans”), an investment fund established by a veteran angel investor.²⁶⁴
- Vision+, a \$30 million fund established by a former Nokia executive to finance the development of apps for mobile devices.²⁶⁵

Revenue loans fund a mix of livelihood businesses and high-growth start-ups.²⁶⁶ The usefulness of revenue loans as a funding source depends on the nature of the business. For companies that can generate revenues quickly because of the capital efficiencies described above, revenue loans may be an attractive funding source because they do not dilute the entrepreneur's long-term equity stake in the company or require traditional investor control rights. But for companies with business plans that require them to spend heavily—such as to refine product development and build brand recognition—revenue loans may not be suitable because they divert needed cash.²⁶⁷

Capital Efficiency as Investment Criteria

Some investors simply use lean start-up principles, or capital efficiency more generally, as criteria for selecting investments. For example, the National Science Foundation (“NSF”) recently announced a series of \$50,000

262. *Id.*

263. ProFounder shut down in 2012 because of uncertainty regarding its status as a regulated securities intermediary. Angus Loten, *Crowd Funding Brings Unease*, WALL ST. J., Nov. 17, 2011, available at <http://online.wsj.com/article/SB10001424052970203611404577042333598282986.html>.

264. Courtney Rubin, *4 Start-ups Help Entrepreneurs Get Cash*, INC., Sept. 21, 2011, <http://www.inc.com/news/articles/201109/new-ways-to-get-cash.html>.

265. Om Malik, *Why Apps Need a Different Kind of Financing*, GIGAOM (Mar. 2, 2012, 10:00 AM), <http://gigaom.com/2012/03/05/why-apps-needs-a-different-kind-of-vc-funding/>.

266. Austin, *supra* note 261 (describing a web-based start-up, BigDoor Media, Inc., funded by a mix of revenue loans, angel investments, and eventually venture capital); Rubin, *supra* note 263 (describing TomatoBattle, a livelihood business that stages local events where “people pay \$50 apiece for a gigantic tomato fight”).

267. Interestingly, the idea of a state-sponsored royalty fund is not new. In the 1970s, Connecticut established a program that offered product development financing in exchange for a royalty stream. The program was considered at least a moderate success. EISINGER, *supra* note 7, at 253–55.

grants to be awarded across the country to entrepreneurs planning ventures based on lean start-up principles.²⁶⁸ This approach acknowledges that in many areas, entrepreneurs have to do more with less because a robust angel and VC market does not exist. An NSF spokesperson explained: “We can’t replicate Silicon Valley elsewhere. But we need to figure out a way to take some of the best practices in Silicon Valley and deploy them elsewhere.”²⁶⁹

The Moderate-Growth Question

The success of the financing strategies described in this part depends in part on whether the dichotomy between small livelihood businesses and high-growth start-ups is outdated or incomplete. In other words, these financing sources are significant if there is in fact a moderate growth path that is not as high-risk and high-reward as typically demanded by venture capital, but that still produces companies that meaningfully affect a region’s economy through employment or building and recycling of local risk capital. Peter’s examples of exits in the range of \$30 million suggest there is such a middle ground.²⁷⁰ At least one other commentator suggests there are a significant number of “mid-potential ventures” with ability employ 10 to 500 people, and that these companies are underserved by current financing sources.²⁷¹ If, on the other hand, these are simply new ways to finance livelihood businesses, their impact may be modest.

B. Program Design Implications

The trends described above illustrate that start-up company finance is not synonymous with venture capital. It may be possible to fund innovative efforts by entrepreneurs without steering companies toward high-risk, high-reward business plans or favoring the relatively narrow set of industries suitable for venture capital. Jurisdictions that decide to pursue an entrepreneurial finance program could try to incorporate these market trends into a subsidy program. This Part IV.B sketches out what such “lean finance” fund might look like and then evaluates how effectively it addresses this article’s critiques.

Investment Terms With Broad Industry Appeal

A funding program could offer a mix of financial instruments, including traditional angel investment terms and revenue loans. In industries that can take advantage of lean start-up principles and other capital efficiencies, revenue loans may be attractive to entrepreneurs and may

268. Steve Lohr, *With a Leaner Model, Startups Reach Further Afield*, N.Y. TIMES, Dec. 5, 2011, available at <http://www.nytimes.com/2011/12/06/science/lean-start-ups-reach-beyond-silicon-valleys-turf.html?pagewanted=all>.

269. *Id.*

270. Rubin, *supra* text accompanying note at 263.

271. Rao, *supra* note 195.

quickly begin providing returns to the funding program. Revenue loans and other debt instruments may also be useful to businesses that support start-up companies, such as design firms, consultancies, and other service businesses.

It is possible that a single type of financial instrument will prove versatile enough to avoid an overly-narrow industry focus. Revenue loans, for example, appear to fund a wide variety of businesses.²⁷² Moreover, it is logical to think that lean finance methods will meet the needs of a larger number of industries than VC-oriented finance methods, if it is the case that capital requirements are decreasing in most industries. But until the market for revenue loans and other alternative financing mechanisms are better established (and understood), it would be preferable to offer entrepreneurs a variety of financing options to ensure suitability for diverse industries.

Investment Criteria That Reduce Risk

Whether or not a program expands beyond traditional angel investment instruments, it could still consider capital efficiency as a factor in investment selection, like the NSF program discussed above. Similarly, it could state a preference for companies that demonstrate a commitment to being acquired in three years or less (an early exit). This commitment could, for example, be demonstrated through the structure of the company's equity compensation program.²⁷³

By selecting companies that can earn revenues and achieve exit quickly, the program would potentially reduce risk to entrepreneurs and angel investors²⁷⁴ and accelerate opportunities for them to recycle their talents and capital.²⁷⁵ For employees, targeting quick exits may not achieve stable employment in the conventional sense of long-term employment with a single company because an acquirer may terminate or relocate existing employees. But personnel compensated with equity will profit from more frequent positive exits. And ultimately employment markets should benefit from high levels of successful entrepreneurial activity and resulting agglomeration economies.

Governance

To be consistent with agglomeration development principles, the goal of a subsidy program should be to establish new entrepreneurial finance technology that is suitable to the existing and emerging strengths of the local business environment. Accordingly, there is benefit to leaving opera-

272. *Supra* note 265.

273. *Supra* note 256 (discussing Peters' suggestions for targeting early exit).

274. *Supra* text accompanying note 258 (asserting that VC financing imposes additional risk on angel investors and entrepreneurs); *supra* text accompanying note 224 (citing empirical evidence of increased risk to angel investors as a result of subsequent VC investment); *supra* note 185 (asserting that lean start-up principles reduce risk to entrepreneurs).

275. *See supra* text accompanying notes 225–27 (discussing entrepreneurial recycling).

tion of the programs and design details to private managers who are in the best position to discern local demand. The role of economic development officials would be to solicit proposals from potential fund managers. Local business leaders and organizations could be involved in evaluating and selecting these proposals for design and management of the fund. Hopefully, the selected private managers would use the subsidized programs as blueprints for subsequent and sustained private investment. To that end, the program could require that public funds be matched with private investor funds.²⁷⁶

One potential benefit of the lean finance approach outlined above is that it facilitates compensation of program managers through a share of investment returns. The manager of a program that emphasizes early exits or uses revenue loans can receive a percentage of royalties or early-exit proceeds. Payouts could commence relatively early in the life of the fund (as soon as companies start generating any revenues or achieve an early exit). In contrast, compensating managers of venture-capital-oriented VDFs through a share of investment returns is problematic.²⁷⁷ VC-style investments take a long time to produce returns and have high failure rates, resulting in delayed and highly contingent payouts. Professional managers of large VC funds—who are compensated largely through a share of investment returns—mitigate these risks somewhat by exposure to a large volume of investments. But this strategy may not be available to managers of modestly-sized VDFs limited to investing in VC-ready companies in one economically underperforming region.

A Template

The Portland Seed Fund employs, or contemplates, several of the features described above. It was established under the guidance of a committee of local business leaders and is operated by private managers receiving incentive-based compensation.²⁷⁸ It expressly includes capital efficiency among its investment criteria.²⁷⁹ The fund initially contemplated investing through revenue loans, though it appears to have abandoned that plan.²⁸⁰ Currently, it invests through convertible notes, which are typical of VDFs and ordinarily contemplate subsequent venture capital (or traditional angel) investment.²⁸¹ Despite this divergence from the above recommenda-

276. LERNER, *supra* note 6, at 183 (recommending private matching funds).

277. See DiSabatino *supra* note 17, at 99 (“[S]tate-run venture capital funds run the risk of performing poorly because of an inability to provide competitive compensation packages to attract top talent. .”).

278. Rogoway, *supra* note 35.

279. *FAQs*, *supra* note 36.

280. Mike Rogoway, Portland Seed Fund Pledges Tough Love for Entrepreneurs, OR. LIVE BLOG, October 2, 2010, http://www.oregonlive.com/business/index.ssf/2010/10/portland_seed_fund_pledges_tou.html (discussing use of revenue loans); *FAQs*, *supra* note 36 (discussing use of convertible notes).

281. Scott Edward Walker, *Everything You Ever Wanted to Know About Convertible Note Seed Financings But Were Afraid to Ask*, TECHCRUNCH (Apr. 7, 2012), <http://tech>

tions, the Portland Seed Fund's future performance may be instructive because of its emphasis on capital efficiency.

Are Design Modifications Enough?

How likely is it that the design suggestions above will address this article's critiques based on large exit and lack of industry neutrality? These design modifications could substantially mitigate problems related to high-risk exit strategies. The market trends discussed above are at least anecdotal evidence that a lean-finance approach could reduce risk and still provide sufficient incentives to entrepreneurs and local angel investors to invest time and money in innovative products and business plans.

It is less clear, however, that design modifications will meaningfully address concerns about industry neutrality. It is possible that lean finance options will prove adaptable to a wider range of industries than venture capital.²⁸² But finance methods often specialize to meet the needs of specific industries.²⁸³ Subsidized lean finance methods might prove especially useful to app designers but not clean energy companies. While a sponsoring jurisdiction can design a program to be initially open-ended and responsive to emerging local demand,²⁸⁴ in a world of scarcity a sponsoring jurisdiction necessarily makes choices about a program's scope that affect which industries benefit. In fact, the same can be said of most suggested roles for government in agglomeration development efforts.²⁸⁵

Perhaps proponents of agglomeration development have more work to do in distinguishing their strategies from conventional location subsidies. Presently, it appears difficult for economic development officials to determine which policies respect and which policies violate the principle of industry neutrality. It is not enough, for example, to limit the role of government to providing public goods or goods that produce externalities.²⁸⁶ As discussed above, VDFs may technically have attributes of public goods and may produce positive externalities, but in context they may not be industry-neutral.

crunch.com/2012/04/07/convertible-note-seed-financings/ ("A convertible note is short-term debt that converts into equity. In the context of a seed financing, the debt typically automatically converts into shares of preferred stock upon the closing of a Series A round of financing.").

282. *See supra*, text accompanying note 8 (discussing anecdotal evidence of lean finance's broad industry appeal).

283. Austin, *supra* note 261 (discussing how revenue loans were initially developed for the mining, film production, and drug industries).

284. *Infra* text accompanying note 284 (discussing design features intended to respond to local demand).

285. For example, a sponsoring jurisdiction could focus on convening stakeholders, providing local economic information, and supporting educational institutions. *See supra* text accompanying notes 160–66. But that jurisdiction must still decide which stakeholders to convene, what information to provide, and which educational institutions to support.

286. *See* note 162 (discussing Porter's suggestion that governments focus on externality-producing goods and services).

C. Future Analysis

Before concluding, this section identifies issues that this article could not fully analyze (while keeping its scope manageable) but that may be the subject of future analysis by legal scholars.

Interjurisdictional Welfare

This article considers VDFs from the perspective of the sponsoring jurisdiction, not from a national or international perspective. In other words, this article adopts an *intra*jurisdictional perspective rather than an *inter*jurisdictional perspective. It is possible, however, that VDFs and other subnational agglomeration development efforts benefit the sponsoring jurisdiction (the *intra*jurisdictional perspective) but are agglomeratively inefficient to society as a whole (the *inter*jurisdictional perspective), by drawing economic activity and resources away from a superior cluster in an alternate jurisdiction.²⁸⁷ For example, had Boston retained Facebook, it might have created a net benefit for Boston but also impeded the growth of Facebook and Silicon Valley to an even greater extent. Alternatively, agglomeration development may in fact be agglomeratively efficient on an *inter*jurisdictional basis by revealing nonobvious agglomerative advantages in a particular region.²⁸⁸ Finally, considerations of geographic equity (a desire that no region be “left behind” in the transition to a knowledge-based economy) may warrant agglomeration development despite any inefficiency.²⁸⁹

The *inter*jurisdictional perspective turns on questions that are currently unresolved on a theoretical and empirical basis. Evaluating *inter*jurisdictional efficiency would require knowing whether returns to developing nascent clusters exceed returns to further growth of mature clusters.²⁹⁰

Interjurisdictional Cooperation

In fact, referring to a single “sponsoring jurisdiction” of an agglomeration development effort is an oversimplification. Agglomeration effects occur within regions that span multiple local governments.²⁹¹ This creates

287. *C.f.* Enrich, *supra* note 134, at 423 (“[Tax] incentives subvert the allocative functions of the market and divert business activity from its economically most efficient location.”).

288. Gillette, *supra* note 134, at 486–87.

289. *C.f.* Edward L. Glaeser & Joshua D. Gottlieb, *The Economics of Place-Making Policies* 5 (Nat’l Bureau of Econ. Research, Working Paper No. 14373, 2008), available at <http://www.economics.harvard.edu/faculty/glaeser/files/bpeatype2b.pdf>, (“Of course, any tendency to artificially subsidize those areas with high human capital would seem inequitable.”).

290. *Id.* at 5 (“There is little clear evidence that human capital spillovers or industrial spillovers differ between smaller or larger, or more or less dense, cities.”).

291. JARED, *supra* note 119, at 3 (“Clusters basically never really conform to a political jurisdiction such as a single county municipality, city, town etc. Indeed, a cluster may overlap several states and a cluster region can be quite large composed of many counties. Given that most [economic development organizations] are derived from jurisdictions, the existence of a cluster creates some obvious awkward complexities . . .”).

legal and practical impediments to crafting unified agglomeration development policies, implicating the difficulty of interlocal cooperation in fragmented metropolitan areas.²⁹²

Accountability Measures

Besides advocating for incentive-based compensation for VDF managers, this article does not address how a sponsoring jurisdiction may try to mitigate problems of incompetency and capture typically associated with subsidy programs.²⁹³ In the context of traditional conventional subsidies, a variety of accountability measures have been employed, including constitutional limitations on investing in private companies,²⁹⁴ judicial oversight through the “public use” doctrine,²⁹⁵ and claw-back statutes requiring repayment of subsidies that fail to produce expected jobs.²⁹⁶ It will be challenging to craft similar accountability measures in the context of VDFs and agglomeration development more generally. For example, a claw-back statute would encounter functional problems in the context of start-ups because of high failure rates. Entrepreneurs are likely unwilling to promise job-creation outcomes, and failed start-ups would be unable to pay back funds.

More broadly, it is difficult to evaluate a program’s success. It is methodologically difficult to determine whether a state-sponsored venture capital program can in fact claim credit for creating specific jobs at a portfolio company or whether those same jobs would have been created without program’s investment.²⁹⁷ It is even more difficult to ascertain whether a program satisfies a more attenuated, but arguably more crucial, goal of creating new financing infrastructure to support agglomeration effects. Over time, it may be possible to find correlation between positive economic data and agglomeration development policies, but it will likely remain difficult to establish causation between particular policies and economic outcomes.

292. For a discussion of this difficulty, see generally, GERALD E. FRUG, *CITY MAKING: BUILDING COMMUNITIES WITHOUT BUILDING WALLS* 132-38 (1999).

293. *Supra* text accompanying notes 75-77 (discussing typical objections to subsidy programs).

294. *Supra* note 40 (discussing state constitutional provisions that affected the design of the Portland Seed Fund); David E. Pinsky, *State Constitutional Limitations on Public Industrial Financing: An Historical and Economic Approach*, 111 U. PA. L. REV. 265, 277-82 (1962-1963) (discussing typical state constitutional provisions affecting subsidy programs).

295. Richard Briffault, *The Disfavored Constitution: State Fiscal Limits and State Constitutional Law*, 34 RUTGERS L. J. 907, 910-15 (2003).

296. LaFave, *supra* note 131 (discussing claw-back statutes).

297. LERNER, *supra* note 6, at 142-61 (discussing the difficulties of evaluating state-sponsored VC programs).

Distributional Concerns

Agglomeration development has been criticized for benefitting highly educated high-tech workers and wealthy investors.²⁹⁸ This may make agglomeration development undesirable or politically untenable. Perhaps the lower-cost forms of entrepreneurship discussed in this article are more accessible and therefore more palatable than traditional agglomeration development.

CONCLUSION

This article argues that entrepreneurial-finance policy is at a crossroads. State-sponsored venture capital was an initial effort to shift economic development away from particularly capital-intensive manufacturing businesses towards relatively more nimble and innovative start-up companies.²⁹⁹ Now that the trend toward capital efficiency is accelerating and venture capital is maturing, it may be time to revisit the role of venture capital in public policy. Particularly in those places that least resemble Silicon Valley—in other words, the places most likely to engage in significant economic development efforts along these lines—there is a need for new financing technology that takes advantage of entrepreneurs' ability to do more with less. This article considers what that technology might look like, and provides initial thoughts on whether government can play a helpful role in establishing it.

More broadly, this article underscores an important feature of the burgeoning field of law and entrepreneurship scholarship.³⁰⁰ Policies that harness private entrepreneurial efforts to achieve public economic development goals lie at the intersection of diverse areas of legal expertise, such as tax, intellectual property, and public finance. In particular, evaluating VDFs requires bridging two normally distant corners of the law review literature: financial contract design and local government law. The financial contract literature is helpful in understanding why VC contracts may fail to adapt to a changing environment for entrepreneurship. But fully evaluating VDFs also requires examining them specifically as creatures of state and local government law. Determining whether other entrepreneurship policies meet their public goals likely requires a similar synthesis of more cabined analyses in specialized fields.

298. See McGAHEY, *supra* note 90, at 9–10.

299. EISINGER, *supra* note 7, at 241 (“[S]mall businesses . . . seemed well-suited to structural changes occurring in the patterns of economic activity. The declining importance of economies of scale in the less capital-intensive industries dependent on advanced technology, the growing tendency to contract out the manufacture of component parts to independent suppliers, and the need for more flexible production and management systems to respond to the competitive challenges of rapid product innovation all suggested not only a role but also the necessity of a strong small business sector and a public policy matrix to support it.”).

300. For a valuable discussion of law and entrepreneurship, see *supra* note 67.

