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'Nothing ventured, nothing gained': Venture Capital's Impact on American Economic Growth and the Industry's Institutional Determinants, 1975-1995

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1. Introduction

'*Did venture capital (VC) impact American economic growth between 1975-1995 and was the efficiency of this relationship contingent on certain institutional factors?*'.[1] This research question forms the basis of this dissertation which assesses the literature on the history of VC, evaluates its validity, and presents avenues for future research. In doing so it not only contributes to the literature on the industry origins of economic growth and the institutional determinants of industries but provides a critical insight for policy makers wishing to stimulate VC-activity.

Brown et al. established that shifts in the supply of equity-finance used for innovation are important drivers of economic growth and that more attention was needed in this field.[2] Moreover, a large literature review by Levine established a connection between financial development and economic growth suggesting an important channel through which finance mattered for growth may be the financing of innovation.[3] VC is a form of private-equity finance that has historically overcome all obstacles to financing innovation for both financier and entrepreneur.[4] Motivated by connecting the broad literature on the role of finance in economic growth with the regional historiography on the economic

[1] Venture capital is here defined as professionally managed pools of capital that are 'invested in equity-linked securities of private ventures at various stages in their development' and does not include private equity or management buy-outs: Sahlman, W.A., 'The structure and governance of venture-capital organizations', *Journal of Financial Economics* 27:2 (1990), p. 473.
[2] Brown, J., Steven Fazzari and Bruce Petersen, 'Financing Innovation and Growth: Cash Flow, External Equity,
and the 1990s R&D Boom', *Journal of Finance* 64:1 (2009), p. 153.
[3] Levine, Ross, 'Finance and growth: Theory and evidence', in P. Aghion and S. Durlauf, (eds.), *Handbook of
Economic Growth* (Amsterdam, 2005), pp. 921-922.
[4] Gerben Bakker, 'Money for Nothing: How Firms Have Financed R&D-Projects since the Industrial Revolution,' *Research Policy* 42 (2013), p. 1811.

history of VC in America, this study investigates the specific channels through which VC affected economic growth between 1975-1995 and in doing so questions the theoretical assumptions in the literature regarding causation.

This dissertation also extends research on the institutional determinants of industries. New-institutional-economics argues that institutions, defined as 'the humanly devised constraints that shape human interaction', are a fundamental driver of industry creation.[5] Institutions can be either formal (economic, political, and legal rules enforced by political-structures and regulatory-groups) or informal (social-norms and codes of behaviour embedded within cultural heritage that shape society).[6] Brown et al. and Levine discovered that the institutional structures of financial markets are important factors in driving equity-financing's role in economic growth, and that more research was needed on the determinants of financial-industry development.[7]

By encouraging and restricting certain behaviour, institutions can affect the evolution of VC-markets.[8] Recent studies have emphasised the inconclusive evidence regarding, and need for more, cross-discipline-research on the institutional factors that effected the development of the VC-industry.[9] If VC is important to economic growth, understanding the institutional factors that helped it to flourish are important research areas.[10] Most studies hitherto remain geographically broad and look solely at formal *or* informal institutions impact on VC with only two studies exploring their mutual relationship.[11] This

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[5] Douglass North, *Institutions, Institutional Change and Economic Performance* (Cambridge, 1990), p. 3.
[6] Douglass North, 'Economic Performance Through Time', *The American Economic Review* 84:3 (1994), p. 360.
[7] Brown, Fazzari, and Petersen, 'Financing Innovation and Growth', p. 180; Levine, 'Finance and Growth'.
[8] R.J. Gilson, 'Engineering a venture capital market: Lessons from the American experience', *Stanford Law Review* 55 (2003), pp. 1067-1103.
[9] Luca Grilli, Gresa Latifi, Boris Mrkajic, 'Institutional Determinants of Venture Capital Activity: An Empirically Driven Literature Review and A Research Agenda', *Journal of Economic Surveys* 33:4 (2019), p. 1095.
[10] Josh Lerner, *Boulevard of Broken Dreams: Why Public Efforts to Boost Entrepreneurship and Venture Capital Have Failed--and What to Do about It* (Princeton, 2009), p. 17.
[11] Lerner, *Boulevard of Broken Dreams*, pp. 1094-1122. For the joint contribution of formal and informal institutions see Y. Li, S.A. Zahra, 'Formal institutions, culture, and venture capital

study provides insight by being one of the first to assess how formal- and informal-institutions jointly shaped VC-market-creation in a singular geography and period. Given policy makers aiming to stimulate economic growth may attempt to expand VC-industries, this literature review is further motivated by collecting evidence and offering policy implications for the debate surrounding VC-market-creation.

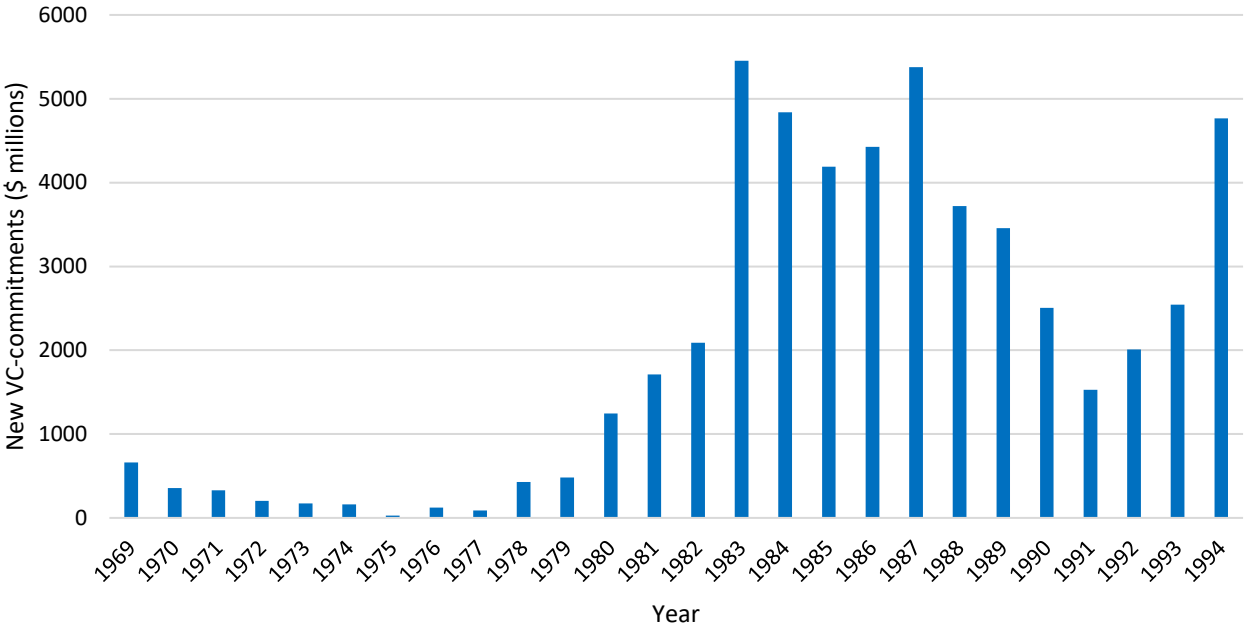
America is appropriate for a study on VC's economic impact and its institutional determinants for several reasons. The modern VC-industry first emerged in America after 1945 and today remains a US-centric industry with America accounting for 54% of global VC-activity in 2017.[12] It is also the geography most prevalent in the literature whilst also having the most wide-ranging and accessible VC-industry data. The starting year of the study was chosen because of the lack of appropriate data before 1975 and because VC was a 'cottage industry' before this period.[13] It was also during the 1980s that VC as an asset class became attractive to institutional investors and new VC-commitments witnessed large increases (see Figure 1). The end date was chosen to control for and mitigate the effects of the large growth the VC-industry witnessed after becoming intertwined in the internet industry and the 1997-2000 'dot-com' bubble. Where literature is included that falls outside America or this period, the justification for its inclusion is given in the footnotes.

activity: A cross-country analysis', Journal of Business Venturing, 27 (2012), pp. 95-111; and L. Grilli, B. Mrkajic, G. Latifi, 'Venture capital in Europe: Social capital, formal institutions and mediation effects', Small Business Economics, 51 (2018), pp. 393-410.

[12] Tom Nicholas, *VC: an American History* (Cambridge, 2019), pp. 11-39: National Venture Capital Association, *2017 Yearbook*, (Washington, 2017), pp. 1–64.

[13] Gompers, Paul A., 'The Rise and Fall of Venture Capital', *Business and Economic History* 23:2 (1994), p. 10.

Figure 1: New Commitments to Venture Capital Funds, 1969-1994



Source: Data from Gompers and Lerner (1999).

The first chapter of this study argues that VC had a positive impact on American economic growth between 1975-1995 at the micro-level by encouraging innovation and new-firm creation whilst simultaneously shaping young-firm development, and at the macro-level by creating large and successful companies with influential positions in the economy that impacted aggregate employment and research and development (R&D) spending. The second chapter examines how formal financial, political, and legal institutions ensured VC operated efficiently in America before further analysing how informal attitudes towards entrepreneurship and social networks of experienced investors shaped the supply and demand of VC.[14]

Exhaustive attempts by the author to find an original dataset to include in the evaluation were unsuccessful due to a lack of access – an issue that has proved a

[14] Supply of venture capital refers to the desire of investors to place capital into venture capital funds whereas demand refers to the desire of entrepreneurs to attract venture capital investment in their company.

major barrier to research for decades due to VC-confidentiality concerns.[15] The author also notes that there have been three major periods of historical discussion in the literature. As VC-commitments reached record-highs across the 1990s, academics looked to first identify potential relationships between VC and economic growth in the late-1990s and early-2000s. Second, following the 2008 Economic Recession, calls for governments to reignite economic growth led academics to further scrutinize initial findings on VC and innovation. Finally, the slowdown in developed-world productivity-growth during the 2020 Covid-19 pandemic renewed policy and academic interest in VC-market-creation and its impact on innovation.

2. Venture Capital and Economic Growth

2.1 Venture Capital and Innovation

Since the mid-1950s, economists have accepted that innovation is crucial to economic growth. Seminal papers by Abramovitz and Solow demonstrated that increasing the efficiency of inputs in a production process would lead to greater output and economic activity.[16] Further studies emphasise how improved economic growth arose from innovations that increased the efficiency of inputs.[17] By funding the activity of innovative start-ups that would otherwise not exist, an active VC-industry encouraged repeated waves of technological innovation that led to economic growth.[18] By 1988, Florida and Kenney stated that VC had transformed the process of innovation in the US by accelerating the process of technological change and performing a 'technological gatekeeping function'.[19]

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[15] Gompers, P. and Lerner, J., 'The Venture Capital Revolution', *Journal of Economic Perspectives* 15:2 (2001), p. 166.

[16] Moses Abramovitz, 'Resource and Output Trends in the United States Since 1870', *American Economic Review* 46 (1956), pp. 5-23; Robert M. Solow, 'A Contribution to the Theory of Economic Growth', *The Quarterly Journal of Economics* 70:1 (1956), pp. 65-94.

[17] Lerner, *Boulevard of Broken Dreams*, p. 43; Nathan Rosenberg, *Innovation and Economic Growth* (Stanford, 2004).

[18] Venture capital-backed firms played important roles in the semiconductor and mainframe computing revolution of the 1960s, the advent of the personal computer and the biotechnology revolution in the 1980s, and the introduction of the internet and e-commerce in the 1990s.

[19] Florida, R., M. Kenney, **'**Venture capital-financed innovation and technological change in the USA**'**, *Research Policy* 17:3 (1988), p. 120.

Timmons and Bygrave were first to present evidence that VC-investing impacted the innovative process by highlighting an increase in VC-investment in 1979 coincided with a surge in highly technological ventures.[20] Yet any relationship between VC and growth assumes that VC-backed firms would not have been created without VC, and hence that innovation would have occurred regardless. For example, VCs may have simply financed companies that were positioned to succeed despite VC involvement. Being first to scrutinize the relationship between VC and innovation, Kortum and Lerner addressed these causality concerns by focusing on VC-funds raised after 1978 when the U.S. Department of Labour refined the Employee Retirement Income Security Act to allow pension funds to invest in VC.[21] Investigating the impact of VC on patented inventions (a proxy for innovation) across twenty American industries Kortum and Lerner found that a dollar of VC appeared to be three times more powerful at initiating patenting than a dollar of traditional corporate-R&D between 1979-1992.[22]

Despite this, the precise transmission channels through which VC impacted American innovation remained unexplained until Keuschnigg modelled the real effects of VC as a determinant of innovation-led growth. He indicated how certain structural parameters determined the quality of VC-funding and subsequently impacted innovation: increased investor sophistication improved the quality of VC-funding translating into an improved rate of innovation.[23] However, the quantitative impact of VC on American innovation in the period was not developed further until Bernstein et al. demonstrated that VC-involvement determined the quantity of innovation as measured by patent count and citations per patent.[24] By exploiting an exogenous source of disparity in VC-

[20] Fewer than 5% of VC-firms in the study accounted for 25% of highly innovative technological venture investment: Timmons, J. and Bygrave, W., 'Venture capital's role in financing innovation for economic growth', *Journal of Business Venturing* 1:2 (1986), pp. 161-176.
[21] Such an exogenous change is unlikely to be related to any increased technological opportunities.
[22] Kortum, S., and J. Lerner., 'Assessing the Contribution of Venture Capital to Innovation', *Rand Journal of Economics* 31 (2000), p. 675.
[23] Christian Keuschnigg, 'Venture Capital Backed Growth', *Journal of Economic Growth* 9 (2004), p. 240.
[24] Bernstein, Shai, Xavier Giroud, and Richard R. Townsend, 'The Impact of Venture Capital Monitoring', *Journal*

involvement to rule out selection effects they studied companies that received VC-finance between 1977-2006.[25] They found that new airline routes led to a 3.1% increase in the number of patents produced and a 5.8% increase in citations per patent received.[26]

This first stipulated how the involvement of VC didn't just increase the quantity of innovation, but also its quality. Howell et al. further investigated the volume and quality of VC-backed innovation during recessions and compared it to innovation in the broader economy. They revealed that patents filed by VC-funded start-ups from 1976-2017 were of a higher quality and economic importance than the average patent being two-to-four times more likely to have patents filed in the top percentiles of influence.[27] Increased VC-monitoring of portfolio companies in the period increased innovation contributing to innovation-led American growth.

Although much of the literature emphasises a supply-leading hypothesis (VC-investment leads to innovation and economic growth) the direction of this relationship remains intangible. There is the possibility that VC-investment responded positively to innovation and economic growth, subsequently increasing its supply. Studying both directions of causality between VC-investment and innovation across the US-manufacturing-industry between 1958-1996, Ueda and Hirukawa speculated a demand-leading hypothesis where innovations spurred the VC-market by stimulating new start-ups.[28] Specifically, they indicate that causality varies depending on the measures of VC-investment (1 and 2-year lagged investment) and innovation (total-factor-productivity

of Finance 71:4 (2016), pp. 1591–1622.

[25] The exogenous source of disparity in VC involvement was the introduction of new airline routes that diminished VCs travel times to monitor existing portfolio investments.

[26] Bernstein, Giroud, and Townsend, 'The Impact of Venture Capital Monitoring', p. 1592.

[27] 29.4% of VC-backed patents were in the top 10% of most-cited patents whilst VC-funded firms were more likely to have more original, general, and fundamentals-science related patents: Howell ST, Lerner J, Nanda R, Townsend R., 'How resilient is venture-backed innovation? Evidence from four decades of U.S. patenting', *NBER Working Paper 27150* (Cambridge, 2020), p. 2.

[28] Ueda, M., and Masayuki Hirukawa, 'Venture Capital and Innovation: Which is First?', *Pacific Economic Review* 16:4 (2009), p. 423.

growth and patents).[29] Rather than a simple direction of causality, VC and innovation may work in a 'virtuous-cycle'. Certainly, recent evidence from Hausman et al. indicates that across the 1980s VC was drawn to, and invested in, regions in response to the positive shock to innovative activity caused by the Bayh Dole Act of 1980. This gave universities a strong incentive to participate in patenting and licensing activity.[30]

It appears the relationship between VC and innovation-led growth is complicated by a 'virtuous-cycle' which I name the feedback-hypothesis. Even if the demand-leading or feedback-hypotheses are accepted, it remains that an important part of the 'virtuous-cycle' is that VC-investment encouraged innovation-led growth and hence it remains an important channel through which VC impacted American economic growth in our period. However, further research is needed into both hypotheses to establish the causal mechanisms at play.

2.2 Venture Capital and New Firm Creation

VC further contributed to US economic growth through nurturing innovative start-ups that eventually became large and successful companies with long-run competitive advantages to overall American economic performance.[31] VCs don't only provide finance and monitoring activities to their firms, but also impart valuable support and governance.[32] This could be anything from formulating and executing growth and sales strategies to providing industry analysis and projections. In doing so, VC played an invaluable role in moulding companies that grew faster than non-VC-backed companies making significant contributions to American growth. Questions remain regarding whether such differences arose because VC-firms selected companies with more potential or

[29] Ibid., p. 462.
[30] Hausman N, Fehder D, Hochberg YV., 'The virtuous cycle of innovation and capital flows', *SSRN Working Paper No.3714727* (2020), pp. 1-22.
[31] The six venture capital-backed companies of Alphabet, Apple, Amazon, Facebook, Tesla, and Microsoft contributed $7 trillion to the US stock market between 2005-2015 and accounted for more than a quarter of stock market growth over that period: Gornall, Will and Ilya A. Strebulaev., 'The economic impact of venture capital: Evidence from public companies', *Stanford Graduate School of Business Working Paper 3362* (2015), p. 2.
[32] Gorman, M. and Sahlman, W., 'What do venture capitalists do?', *Journal of Business Venturing* 4:4 (1989), pp. 231-248.

whether VC played a causal role in enhancing performance. Identifying causality here is tough and hence most research has been descriptive.

First, VC encouraged faster growth rates through an 'acceleration effect' that compressed the time taken for new companies and their technologies to be brought to market and hence to become commercially and socially useful. Specifically, VCs allowed companies to go public through an Initial Public Offering (IPO) earlier than would otherwise be feasible. Studying IPOs of VC-backed companies between 1978-1987, Barry et al. demonstrated that VCs played a key role in shaping and governing new enterprises and brought companies public earlier than otherwise possible.[33] Alongside faster creation of public companies, VC also contributed to firm growth by reducing the time taken for a start-up to bring a product to market, thereby shortening the time an innovative product could potentially impact economic growth. As the first and only study thus far to specifically investigate this effect, Hellman and Puri looked at VC- and non-VC-backed companies up to 1997. In a duration model with time-varying covariates they found that the involvement of VC was associated with a significantly faster time to bring a product to market.[34]

Not only did the presence of VC affect the timing of IPO, but more importantly, the probability of going public at all. Sorensen demonstrated that the influence of an experienced VC firm increased the probability of going public by 57.3% between 1982-1995.[35] This was driven by an *influence* effect (experienced VCs add more value through monitoring) and a *sorting* effect (more experienced VCs invest in 'better' companies). Although VC added value through the influence effect, the extent to which they played a role in the professionalization of start-ups wasn't empirically examined until Hellman and Puri observed the aspects of the internal organization of VC-backed versus non-VC-backed firms. They found

[33] Barry, C., Muscarella, C., Peavy, J. and Vetsuypens, M., 'The role of venture capital in the creation of public companies', *Journal of Financial Economics* 27:2 (1990), pp. 447-471.
[34] Hellman, Thomas, and Manju Puri, 'The Interaction between Product Market and Financing Strategy: The Role of Venture Capital', *Review of Financial Studies* 13:4 (2000), p. 976.
[35] Sorensen, M., 'How Smart Is Smart Money? An Empirical Two-sided Matching Model of Venture Capital', *Journal of Finance* 62 (2007), p. 2750.

that VC increased the professionalization of firms over a shorter timeframe than non-VC-backed firms by hiring professional managers (CEOs and marketing executives), homogenizing human resource policies, and adopting stock option plans.[36] Their study was the first to address what role VC as a financial intermediary played in company construction and demonstrated that closely involved financial intermediaries played an important role above that of simple financier and impacted company development and growth across our period.

Several studies also examine empirically the relationship between VC-financing and firm-performance. Here, the consensus is that VC-backed firms witnessed superior performance across all stages of growth and post-IPO. The quantitative and comparable effect VC played in explaining variable performance remained undocumented until Fitza et al. They measured the effect of VC on the variability in performance of VC-backed companies between 1980-2005 by comparing them to other variables that could influence firm performance such as industry, financing-round, and year effects.[37] The variable performance of VC-backed companies was first attributable to effects specific to the company, but after this, VC effects accounted for the next-highest percentage of variance in firm performance (11%).[38]

These studies established that VC enhanced firm performance, yet empirical evidence on the value created by VC remained scarce until Chemmanur et al. evaluated how, through the influence effect, VCs were able to make VC-backed firms operate more efficiently. By inspecting private and public US-manufacturing-firms between 1972-2000 they address the role of VC in initiating productivity improvements.[39] The empirical analysis demonstrated for the first time that VC-backed companies witnessed greater total-factor-productivity

[36] Hellman, Thomas, and Manju Puri, 'Venture Capital and the Professionalization of Start-Up Firms: Empirical Evidence', *Journal of Finance* 57:1 (2002), pp. 176-182.
[37] Fitza, M., Matusik, S. and Mosakowski, E., 'Do VCs matter? the importance of owners on performance variance in start-up firms', *Strategic Management Journal* 30:4 (2009), p. 390.
[38] Ibid., p. 400.
[39] Chemmanur, Thomas J., Karthik Krishnan, and Debarshi K. Nandy., 'How Does Venture Capital Financing Improve Efficiency in Private Firms? A Look beneath the Surface', *The Review of Financial Studies* 24:12 (2011), pp. 4037–4090.

growth (the residual growth in a firm's output) than non-VC-backed companies.[40] Furthermore, the empirical results indicate that overall efficiency gains arose primarily from increased sales and lower increases in production costs.[41]

Through the influence effect of VC in shaping management teams and boards, networking, and adding credibility one might expect VC-backed companies to sustain successful performance long after issuing an IPO. Jain and Kini examine this, looking at the post-IPO operating performance relative to the pre-IPO performance of VC-backed IPO firms compared to closely matched non-VC-backed IPO firms between 1976-1988.[42] When operating performance is measured by return on assets (ROA), although ROA decline for both groups relative to pre-IPO levels, the decline is substantially larger for non-VC-backed IPOs. When measured by operating-cash-flow deflated by total assets (OCF), VC-backed firms witnessed significantly superior performance.[43] In addition, VC-backed companies saw markedly higher sales relative to the pre-IPO year.[44] Such positive post-IPO long-run performance was similarly examined by Brav and Gompers for VC-backed and non-VC-backed firms between 1972-1992. They too found that VC-backed firms outperformed non-VC-backed firms post-IPO by a wide margin over a five-year period earning on average 22.1% more.[45]

As part of their monitoring role, VCs draw on a network of service providers (head-hunters, patent lawyers, and investment bankers) to facilitate contact, resource, and information sharing.[46] These networks helped VC-funded companies to witness superior performance whilst also reducing their risk of

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[40] Ibid., p. 4041.
[41] Ibid., p. 4042.
[42] Jain, B. and Kini, O., 'Venture capitalist participation and the post-issue operating performance of IPO firms', *Managerial and Decision Economics* 16:6 (1995), pp. 593-606.
[43] Ibid., p. 600.
[44] Ibid. For example, the increase in sales three years post-IPO for VC-backed companies was 219.95% compared to 141.48% for non-VC-backed firms.
[45] Brav, A. and Gompers, P., 'Myth or Reality? The Long-Run Underperformance of Initial Public Offerings: Evidence from Venture and Non-venture Capital-Backed Companies', *The Journal of Finance* 52:5 (1997), p. 1800.
[46] Gorman and Sahlman, 'What do venture capitalists do'; William A. Sahlman, 'The structure and governance of venture-capital organizations', *Journal of Financial Economics* 27:2 (1990), pp. 473-521.

failure. Studying whether such networks can explain the comparable cross-sectional investment performance of VC-backed versus non-VC-backed firms between 1980-1999, Hochberg et al. found that VC-involvement was key. Specifically, a VC's network had a positive and significant effect on the probability that a VC-funded company survived to subsequent funding rounds and exited successfully.[47] Investigating whether cumulative failure rates of VC-backed firms were lower, particularly in the initial years of funding, Puri and Zarutskie further question the role of VC in new firms between 1981-2005. They too find that after the length of a normal VC-investment, non-VC-backed firms were 39.2% more likely to fail compared to their counterparts.[48]

Yet recent literature has questioned the post-IPO performance of VC-backed companies in the period suggesting they exhibit underperformance compared to non-VC-backed alternatives.[49] This could have been driven by the hot markets of the 1980s that meant low-quality start-ups prematurely took advantage of investor sentiment and conducted IPOs supported by junior VC-firms wanting to enhance their reputation. Surveying US IPOs from 1970-2007 and using ROA to measure operating performance, Chen and Liang found that VC-backed firms witnessed inferior performance to their non-VC-backed counterparts.[50] Alongside their suggestion that VC-backed firms may suffer from inefficient investment that impaired firm performance post-IPO, the post-IPO operating performance of VC-backed companies appears to need further research to clarify the long-run effects of VC.

[47] The probability that the firm survived to the second funding round increased from 66.8 to 72.4%: Hochberg, Yael, Alexander Ljungqvist, and Yang Lu, 'Whom you know matters: Venture capital networks and investment performance', *Journal of Finance* 62 (2007), pp. 252-253.
[48] VC-backed firms were also 32.46% more likely to be acquired and 15.9% more likely to go public: Puri, Manju, and Rebecca Zarutskie, 'On the Lifecycle Dynamics of Venture-Capital- and Non-Venture-Capital-Financed Firms', *Journal of Finance* 67:6 (2012), p. 2249.
[49] Hung-Kun Chen, Woan-lih Liang, 'Do venture capitalists improve the operating performance of IPOs?', *International Review of Economics & Finance* 44 (2016), pp. 291-304.
[50] Ibid., p. 292.

2.3 Venture Capital and Macroeconomic Performance

VC has been attributed as a key reason for the economic growth of certain regions as well as America overall.[51] Yet, limited attempts have been made to investigate VC's impact on aggregate employment and macroeconomic performance. Wasmer and Weil econometrically tested the interaction between VC-investment and unemployment for sixteen countries including the US between 1986-1995.[52] They found that an increase in the GDP share of VC by 0.075 percentage points reduced the short-run unemployment rate by 0.25 percentage-points and the long-run rate by 0.9-2.5 percentage-points.[53] Puri and Zarutskie similarly focus on employment and measure the level of employment generated by VC-backed firms. They indicate that VC-backed firms accounted for 2.8% of US employment between 1981-1985.[54] For a single industry this is a significant contribution and indicates how the VC-industry made a comparatively sizeable contribution to American economic performance.

A thriving VC industry also indirectly contributed to macroeconomic performance by encouraging American entrepreneurship in the period. If entrepreneurs in need of capital incorporated the availability of VC into decisions to start their firms, VC-backed companies likely inspired future entrepreneurs to engage in innovation and establish start-ups. This new firm-creation had macroeconomic effects. Hasan and Wang preliminarily found positive correlations between regional VC activity, firm creation, and GDP growth, yet didn't empirically test the causal relationship further.[55] In determining whether the presence of VC stimulated new-firm formation, and

[51] VC-backed publicly traded firms accounted for half of American revenue and three quarters of market capitalization and R&D in 2019: Lerner, J., and Ramana Nanda, 'Venture Capital's Role in Financing Innovation: What We Know and How Much We Still Need to Learn', *Journal of Economic Perspectives* 34:3 (2020), pp. 237-261.

[52] Although the results include other countries, the high concentration of VC in America in the sample compared to the other fifteen countries means the results are worth including in this review.

[53] Wasmer, Etienne, and Philippe Weil, 'The Macroeconomics of Labour and Credit Market Imperfections', *IZA Discussion Paper No. 179* (2000), pp. 33-35.

[54] Puri and Zarutskie, 'Lifecycle Dynamics of Venture-Capital-Financed Firms', p. 2248.

[55] Hasan, Iftekhar, and Haizhi Wang, 'The role of Venture Capital on Innovation, New Business Formation, and Economic Growth', presented at the 2006 FMA annual meeting (2006).

hence positively contributed to economic growth through employment and aggregate income, Samila and Sorenson made a seminal contribution by inspecting the supply of VC (number of companies funded, investments made, and aggregate dollars invested) across America between 1993-2002.[56] Their results indicate that a doubling of VC-funded firms in a region stimulated 0.48-2.21% more start-ups, resulted in a 0.22-1.24% growth in the number of jobs, and a 0.48-3.78% expansion in aggregate income.[57] Importantly, the finding that an expansion of VC-supply raised employment and aggregate income demonstrates how VC likely contributed to and stimulated American economic development in our period.

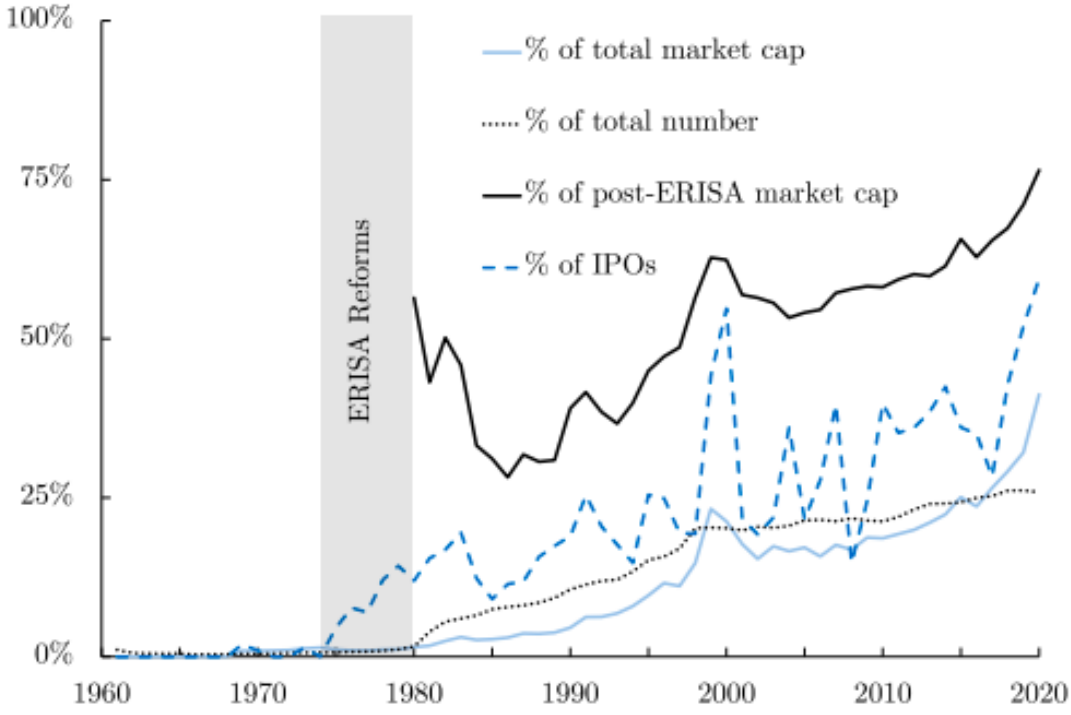
However, the literature hitherto still underestimates VC's total economic value and societal impact. Despite the contribution VC makes to firm creation, development, and performance, it remains difficult to quantify how important such companies were to US economic growth. Measuring their 'true' impact faces the challenge of quantifying the positive spill overs these firms created and how this fed into macroeconomic performance.[58] Because of this and despite attempts, the full positive and normative impact VC-backed firms have on macroeconomic growth remains unaccounted for.

Moreover, the economic effects of VC-backed companies are often lagged.[59] Gornall and Strebulaev's study is the only in the literature thus far to consider such lagged effects as they measure the long-term impact of VC from 1968-2015. Importantly, they demonstrate that VC-backed companies founded after 1968 and going public after 1978 accounted for around 75% of total US market

[56] Despite being just outside this study's time period, their contribution is an important signal as to the effects of VC on aggregate economic performance and signals the need for further research in this area across different time periods: Samila and Sorenson, 'Venture Capital, Entrepreneurship, and Economic Growth', pp. 338-349.
[57] Samila and Sorenson, 'Venture Capital, Entrepreneurship, and Economic Growth', pp. 341-347.
[58] For example, the value that Google contributes stems from the productivity improvements that it gives to users globally through cheaper, faster, and more efficient search yet how does one quantify and include such societal impacts?
[59] Apple and Microsoft were founded in the mid-1970s, yet it is only in the past decades that their contribution to American economic growth has become significant.

capitalization, 92% of R&D spending and 93% of patent value.[60] They conclude that VC was 'an integral part of the growth-engine of the US economy' across our period as reflected by Figure 2 and played a causal role in the rise of innovative companies.[61] Further research of the design pursued by Samila, Sorenson, Gornall and Strebulaev across greater time-periods and geographies, and which attempt to include VC's positive external societal contribution, would be an invaluable addition to the literature. Until research takes this into consideration, the true impact of VC will continue to be understated.

Figure 2: Percentage of Public Companies with VC-backing by year, 1960-2020[62]



Source: Gornall and Strebulaev, 'The economic impact of venture capital', p. 15.

[60] Gornall and Strebulaev., 'The economic impact of venture capital', p. 3.
[61] Ibid., p. 5.
[62] The ERISA Reforms in 1974 and 1979 relaxed restrictions on pension fund investment allowing pension funds to allocate more capital to riskier investments such as venture capital.

3. The Institutional Determinants of Venture Capital

3.1 Financial Market Development

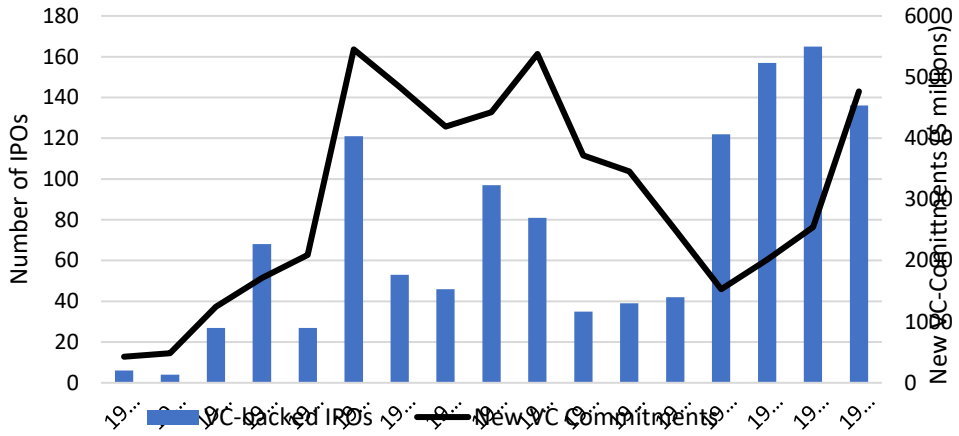
A considerable level of financial market development was needed for VC to impact American economic growth. Stock market development is paramount for the VC-industry as it provides an exit option for VC-firms from their investment in the form of an IPO. Although there are other ways to exit a VC-investment, the literature demonstrates that the most attractive option is the IPO.[63] An exit through an IPO allows the VC-company to realize returns, recycle VC-investors' capital and reinvest into new portfolio company's development. Exit also provides accountability to VC-managers as it gives VC-investors a quantifiable measure of the VC's skills, allowing them to withdraw capital from less-skilled VC companies. Finally, an IPO-exit incentivises entrepreneurs who will receive considerable financial rewards upon going public.

Studying VC-backed IPOs and new VC-fund commitments between 1978-1996, the seminal paper by Black and Gilson argued that the well-developed US stock market that allowed VC to exit through an IPO '[was] critical to the existence of a vibrant VC-market'.[64] What was key here was the opening of the NASDAQ stock-exchange in 1971 that had lower listing requirements allowing ventures to be floated earlier on the stock market. Figure 3 demonstrates how the availability to exit through an IPO subsequently led to new VC-fund commitments. The positive correlation suggested visually was confirmed by a simple regression by Black and Gilson who found that the number of IPOs correlated strongly with new capital contributions in the following year.[65] However, their regressions only confirmed the visual correlation and didn't fully capture the factors affecting new commitments to VC-funds. Importantly, Black and Gilson explained how the prospect of an IPO allowed VCs to enter implicit

[63] For example, of 544 VC-backed firms between 1970-1982 in which 35% exited through an IPO and 22% through an acquisition, only 59% of acquisitions yielded positive returns for the VC-company compared to the 96% of IPOs: Barry, Peavy, and Vetsuypens, 'The role of venture capital in the creation of public companies', p. 450.
[64] Black, B. and R. Gilson, 'Venture Capital and the Structure of Capital Markets: Banks versus Stock Markets', *Journal of Financial Economics* 47 (1998), p. 245.
[65] Ibid., p. 248.

contracts with entrepreneurs regarding future control as the VC agreed to transfer command back to the entrepreneur post-IPO.[66] Without the chance to IPO, the entrepreneur wouldn't have the incentive of a call option on control in the instance of start-up-success and the VC-industry would remain underdeveloped.

Figure 3: Venture Capital-Backed IPOs and New Venture Capital Commitments, 1978-1994



***Sources*:** Data from Gompers (1994) and Gompers and Lerner (1999).

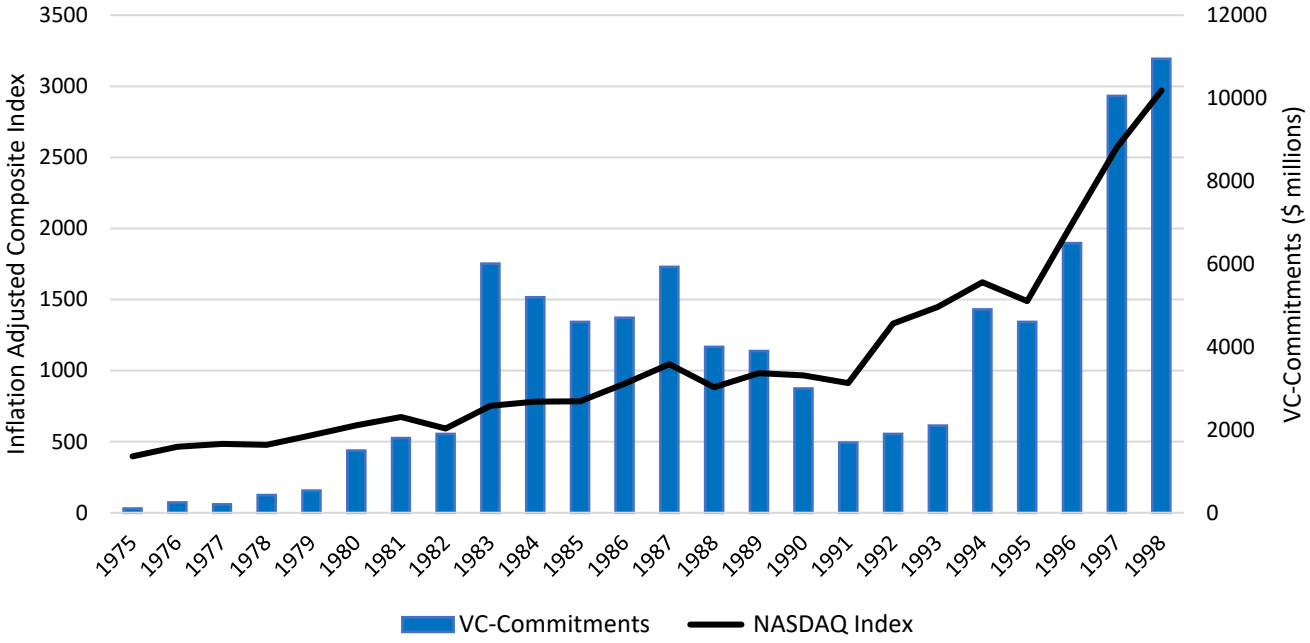
Extending Black and Gilson's work, Jeng and Well's cross-country regression study confirmed that IPOs were the most important determinant of not only VC-investing and its cyclical swings, but of late-stage VC-investments between 1986-1995.[67] A similar cross-country panel regression study between 1980-1995 conducted by Beck and Levine demonstrated that industries that rely on external finance such as VC grew faster in economies with greater financial development.[68] Although not specific to our geography or period, these studies emphasise that financial development is crucial for VC-industry growth and capital allocation efficiency.

[66] Ibid., pp. 257-261.
[67] Jeng, L. and P. Wells., 'The Determinants of Venture Capital Funding: Evidence across Countries', *Journal of Corporate Finance* 6 (2000), p. 242.
[68] Beck, Thorsten, and Ross Levine, 'Industry growth and capital allocation: Does having a market- or bank-based system matter?', *Journal of Financial Economics* 64 (2002), p. 151.

Concerned that previous literature's results were affected by serial correlation in the error terms, Carvell et al. were motivated to investigate the relationship between US VC-commitments and real and capital market factors between 1960-2010 within a vector auto-regressive model. Specifically, they looked to determine whether VC-commitments were related to financial performance such as equity-capital market returns and risk-capital raising activities such as IPOs. Measured by the S&P 500 return over the previous year, stock market performance positively and strongly determined VC-flows.[69] Their evidence indicates how strong financial market development with positive equity-market performance was necessary for the American VC-market to function (Figure 4 demonstrates how VC-commitments roughly follow the NASDAQ index). Thus, well-developed, and vibrant stock markets boosted VC's impact on American innovation and growth as they provided the opportunity to exit and recycle investment, allowed VCs and entrepreneurs to enter into contracts, and hence for new-firms to receive VC-financing and grow.

[69] A. Carvell, J.Y. Kim, Q. Ma, A.D. Ukhov, 'Economic and capital market antecedents of venture capital commitments (1960–2010)', International Enterprise Management Journal 9:2 (2013), p. 174.

Figure 4: Venture Capital-Commitments and the NASDAQ Index, 1975-1998



Sources: Data from Gompers and Lerner (2001) and Macrotrends (2022).

3.2 Political Institutions

The presence of political institutions and certain government-policies were further necessary to the evolution of the American VC-industry. Foremost was capital-gains- and wage-tax, which the literature argues were theoretically linked to VC in two ways. First, low taxes increased the supply of VC by improving the post-tax returns and lowering the required expected rate-of-return for investors as well as by increasing the funds agents could invest with. Second, reduced taxes increased demand for VC by encouraging more entrepreneurs to found start-ups and access VC-financing. Poterba first examined the link between capital-gains-tax and VC-activity in the US between 1969-1987 and notes that VC-funding increased significantly after each tax reform.[70] Importantly, Poterba suggested VC and capital-gains-tax rates could be linked through incentive effects on entrepreneurs. Developing a model of the decisions to become an entrepreneur, Poterba argued that a lower capital-gains-tax made

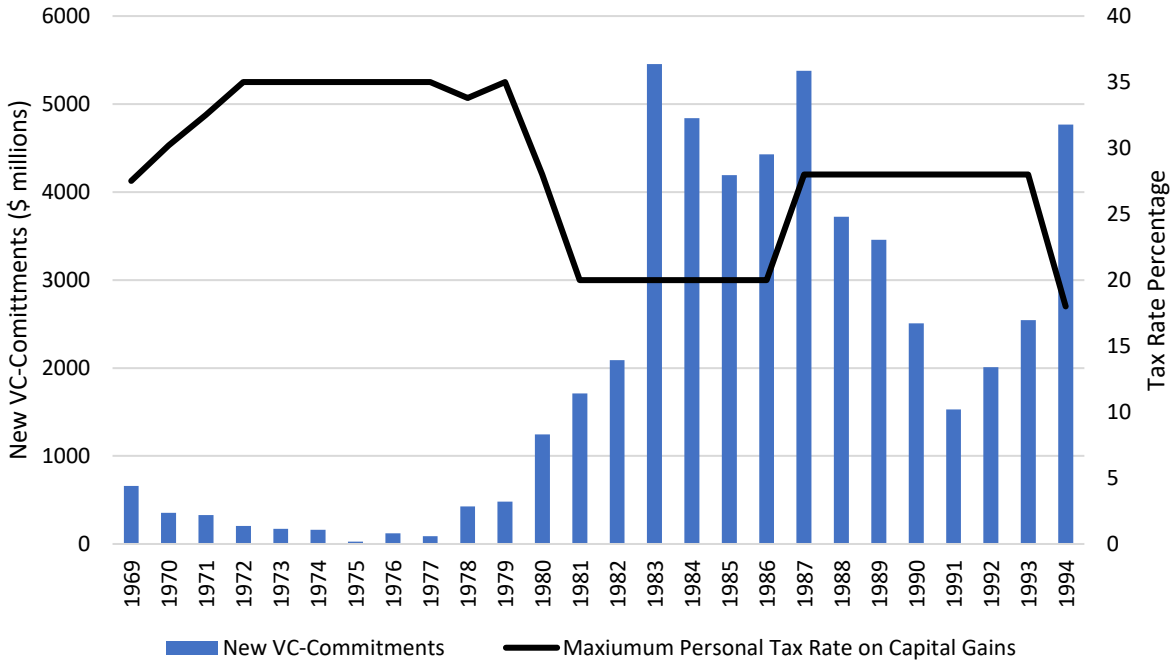
[70] VC-funding increase from an average of $380 million in 1976-1978 to $1.01 billion in 1979-1981 and $3.93 billion in 1982-1984: James Poterba, 'Venture capital and capital gains taxation', *Tax Policy and the Economy* 3 (1989), p. 47.

it more attractive for individuals to become entrepreneurs, start their own company, and bring projects to VCs.[71] However, Poterba didn't estimate the causal mechanisms between capital-gains-tax and VC-funding and therefore didn't resolve any broader questions underlying the relationship.

The causal mechanisms and the validity of Poterba's argument weren't confirmed until Gompers and Lerner studied the implications of capital-gains-tax rates on aggregate flows and individual VC-fund commitments between 1972-1994. Capital-gains-tax was found to have a substantial effect with decreases in the tax rates being associated with increased VC-commitment.[72] This relation is seen in Figure 5.[73] A key result was that contributions by tax-exempt investors were unrelated to the capital-gains-tax-rate, thereby indicating that capital-gains-tax impacted the demand for VC (rather than the supply) as individuals were incentivised to become entrepreneurs as Poterba suggested.[74] Despite this, their results remained suggestive as multiple factors were unexamined in their study.

[71] Poterba, 'Venture capital and capital gains taxation', pp. 56-63.
[72] Gompers, P., and Josh Lerner, 'What Drives Venture Capital Fundraising', *NBER Working Paper 6906* (1999), p. 2.
[73] High capital gains tax rates in the 1970s were associated with low VC-fundraising levels until the 1978 Revenue Act decreased capital gains tax and improved VC-commitments. Increased tax rates in 1988 saw reductions in VC-commitments whilst the reduction of rates in 1993 saw VC-funding rise.
[74] Gompers and Lerner, 'What Drives Venture Capital Fundraising', p. 19.

Figure 5: New VC-Commitments and Capital Gains Tax Rates, 1969-1994



Sources: Data from Gompers and Lerner (1999).

The implication that capital-gains-tax increases the demand for VC was considered further by Keuschnigg and Nielson who analyse how capital-gains-tax affects firm-formation. Their main conclusion was that increasing capital-gains-tax discouraged entrepreneurial effort *and* VC-support, hindered entrepreneurship, and decreased economic welfare whilst an increase in income tax had the reverse effect.[75] Taxes operating in this way alter the performance related compensation of entrepreneurs, reducing potential end-profit share, and hence affecting effort incentives. Similar results were found by Armour and Cumming who note capital-gains-taxes were negatively related to VC-activity.[76] Despite the rich literature that acknowledges how capital-gains-tax affects VC-activity through the demand channel, this must be augmented with comprehensive further research into the effects of tax on the *supply* of VC in our period.

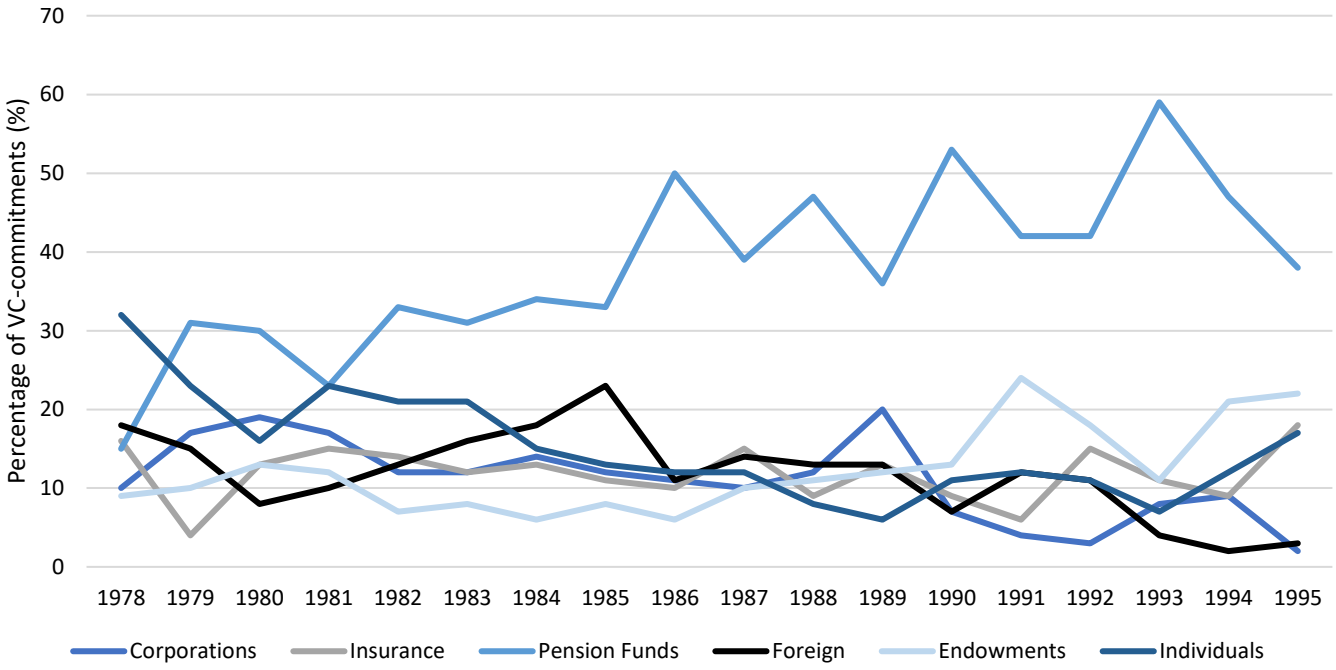
[75] Keuschnigg, C. and S. B. Nielsen, 'Start-ups, venture capitalists, and the capital gains tax', *Journal of Public Economics* 88 (2004), p. 1015.
[76] A reduction in tax by 8% in the 1990s increased early-stage VC-investment by 1.3%: Armour, J., and Cumming, D. J., 'The legislative road to Silicon Valley', *Oxford Economic* Papers 58:4 (2006), p. 620.

Pension-fund investment-regulation is a second policy that significantly impacted VC's development in America. Pension-fund investment is beneficial to VC as it allows a large amount of capital to be raised solely by one investor that has a large amount of capital to allocate. Gompers and Lerner explain how a clarification of the 1974 Employment Retirement Income Security Act's (ERISA) 'prudent man' rule by The [US] Department of Labour in 1979 positively impacted VC-fund supply. This clarification implied that allocating up to 10% of a pension-fund's portfolio to VC was allowed when previously ERISA advised against investing in VC as it could be seen as imprudent. Changes to ERISA were associated with increased VC-commitments with the strongest increase coming from contributions by pension-funds (shown in figure 6).[77] Kortum and Lerner similarly trace the institutionalization of VC in America to the clarification of ERISA which subsequently saw corporate- and public-pension funds increase VC-allocations across the 1980s.[78]

Gornall and Strebulaev take previous author's analysis one-step further by demonstrating that the US didn't create top public companies at a higher rate than the other G7 countries before the 1970s ERISA-reforms but produced twice as many after them.[79] They argue that such regulatory changes transformed the allocation of American long-term investment capital into VC, allowing VC-firms to 'flourish', and impacting long-term macroeconomic growth.[80]

[77] Gompers and Lerner, 'What Drives Venture Capital Fundraising', p. 19.
[78] Kortum and Lerner., 'Assessing the Contribution of Venture Capital to Innovation', p. 676.
[79] The G7 consist of Canada, France, Germany, Italy, Japan, the United Kingdom, and the United States.
[80] Specifically, they attribute the growth of 63 companies in the top 300 US companies to the causal impact of the ERISA reforms on the VC-industry: Gornall and Strebulaev, 'The economic impact of venture capital', pp. 29-30.

Figure 6: Sources of Commitments to Venture Capital Funds, 1978-1995



Source: Data from Gompers and Lerner (1999).

3.3 Legal Institutions

The presence of efficient legal institutions was important for American VC-development as it impacted the extent to which contracts between VCs, their investors, and entrepreneurs could be written and enforced. Gilson was first to identify the core of the US VC-contracting model between VC and investors, and recognized that fundamental to the development of the VC-market was the contracting structure known as private-ordering.[81] He stresses that VC private-ordering contracting overcame obstacles such as uncertainty, information asymmetry, and agency costs which were preventing early-stage companies from receiving funding.[82] Kaplan and Stromberg build on this initial research describing how the contracts between VCs and entrepreneurs were legally enforced so that VCs were able to separately allocate cash flow, board, voting, liquidation, and other control rights that were retained or removed depending on

[81] Private ordering was an effective contracting structure that covered the whole venture capital investment cycle from initial fund investment to exit from portfolio and allowed venture capital fund's cash investment to be protected and continually recycled.
[82] Gilson, 'Engineering a venture capital market', p. 1069.

several measures of the start-up's performance.[83] Vesting provisions and non-compete agreements were also often included to make it more expensive for entrepreneurs to leave start-ups.[84]

Moreover, legal institutions also protected the intellectual-property-rights of entrepreneurs. Comparing external-finance across 49 countries as a function of their law enforcement, La Porta et al. initially found strong evidence that the US's legal environment had a significant impact on the size and scope of capital markets.[85] Ueda later developed a model to investigate entrepreneur's trade-offs between using VC-financing or bank-financing. Given that the entrepreneur needed to share rents from the project with the VC to prevent expropriation when sharing their idea, the strong protection of intellectual-property-rights by US legal institutions encouraged entrepreneurs to finance through VC.[86]

Cumming et al.'s study is the most comprehensive yet regarding the legal environment's impact on American VC development as they investigate the former's impact on time from VC-fundraising to deal with a start-up, VC-syndication networks, and VC-involvement within the firm's structure. Studying 39 countries of which the most transactions occur in the US between 1971-2003, their results demonstrate that better laws and legal institutions facilitated faster firm screening and origination regarding time from fundraising to investment in start-up; increased VC-syndication and lowered harmful co-investment between VC-firms; and led to more beneficial VC board representation within portfolio companies.[87]

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[83] Kaplan, Steven, and P. Stromberg, 'Financial contracting theory meets the real world: Evidence from venture capital contracts', *Review of Economic Studies* 70 (2003), p. 281.
[84] Ibid., p. 282.
[85] La Porta, R., Lopez-de-Silanes, F., Shleifer, A. and Vischny, R.W., 'Legal determinants of external finance', *The Journal of Finance* 52:3 (1997), p. 1132.
[86] Ueda, M., 'Banks versus venture capital: project evaluation, screening, and expropriation', *Journal of Finance* 59 (2004), p. 620.
[87] Cumming, D., D. Schmidt and U. Walz, 'Legality and venture capital governance around the world', *Journal of Business Venturing* 25 (2010), pp. 66-69.

If the legal setting were to impede the screening and investment process, the rate of investment in VC and the levels of entrepreneurship would be negatively impacted. By defining and protecting the legitimate interests of parties, strong American legal institutions raised investors' willingness to surrender funds to VC whilst also making entrepreneurs more willing to share ideas, subsequently increasing the breadth of VC-markets. Further research could look to quantify precisely how specific changes to the legal environments in the form of regulation impacted levels of VC-commitment, and subsequently the channels through which any effects persisted.

3.4 Experienced Investors

Formal financial institutions required informal networks of experienced investors and a culture of investing to ensure that the American VC-industry developed from a 'cottage' industry and impacted economic growth. For the VC-industry to grow, industry-specific knowledge and networks of experienced investors were prerequisites to ensure good investment opportunities were capitalised-on and turned into growth opportunities. Such an effect was self-perpetuating as once a critical level of social capital had been established it continued to exponentially propel the VC-industry forward. Experienced investors impacted the VC-industry by better monitoring portfolio companies, accessing larger networks to benefit said portfolio companies, and communicating unobserved qualities of the company to the market. A considerate amount of literature, but particularly that of Lerner and of Sorensen, indicates that experienced VCs were more likely to take companies public, and were more proficient in timing IPOs than less-experienced VCs.[88] However, this effect was potentially driven by the fact that entrepreneurs wanted to be associated with more-reputable and better-experienced VC-firms and hence the latter had greater investment options.[89]

[88] Lerner, J., 'Venture capitalists and the decision to go public', *Journal of Financial Economics* 35:3 (1994), p. 294; Sorensen, 'How Smart Is Smart Money?', p. 2725.
[89] Ueda, 'Banks versus venture capital', p. 602.

An even larger body of research identifies that VC-experience impacted VC-fund performance and industry development. Gompers and Lerner were first to indicate that both strong firm performance and reputation had positive effects on subsequent sizes of VC-funds raised, whilst Keuschnigg added that VC experience and market knowledge raised the quality of VC-financing and translated into a higher rate of innovation.[90] Kaplan and Schoar also argued that a VC's fund performance was positively related to their ability to attract capital into funds.[91] Critically, Gompers et al. showed that VCs with the most industry experience reacted best to market signals of investment opportunities between 1975-1998 as measured by subsequent performance.[92]

Social-capital networks connecting members of the VC-community (investors, investment-bankers, consultants, accountants, lawyers, entrepreneurs) eased information sharing and increased economic exchange. These socially constructed informal networks ensured the VC-industry thrived by creating an entrepreneurial environment that aided start-up selection, monitoring, development, and exit. Studying empirically the patterns of exchange in the VC-industry between 1986-1998, Sorenson and Stuart indicate that professional relationships facilitated the dissemination of timely and reliable information about new start-ups to VCs and also increased trust between entrepreneur and VC.[93] Furthermore, Hochberg et al. specifically show that VC-firms with more influential relationship-networks between 1980-1999 witnessed significantly better fund-performance as measured by successful portfolio exits across ten

[90] Gompers and Lerner, 'What Drives Venture Capital Fundraising', p. 28; Keuschnigg, 'Venture Capital Backed Growth', p. 240.
[91] Steve Kaplan and Antoinette Schoar, 'Private Equity Returns: Persistence and Capital Flows', *Journal of Finance* 60 (2005), p. 1821.
[92] Their results indicate that more industry-experienced venture capital firms invest 3.5% more than less industry-experienced firms when public market signals of industry attractiveness are high as measured by Tobin's Q: Paul Gompers, Anna Kovner, Josh Lerner, and David Scharfstein, 'Venture Capital Investment Cycles: The Impact of Public Markets', *Journal of Financial Economics* 87 (2008), pp. 13-15.
[93] Sorenson, O., & Stuart, T. E., 'Syndication networks and the spatial distribution of venture capital investments', *American Journal of Sociology* 106:6 (2001), p. 1548.

years.[94] Thus the informal social structure of the market determined the ability of actors to overcome informational constraints to exchange and were critical to the entrepreneurial-VC process.

3.5 Entrepreneurship

Informal norms of, and orientation towards, entrepreneurial behaviour within society also affected VC's development in America. Gompers and Lerner were first to demonstrate the empirical relationship between entrepreneurism, VC-investment, and market development when examining VC-activity across America from 1976-1994. They showed that industrial and academic R&D spending were significantly related to VC-investment and the number of firms receiving VC-funding. They proposed that R&D spending promoted innovation and increased the attractiveness of becoming an entrepreneur, subsequently increasing firm start-ups demanding VC.[95] The impact of entrepreneurism on VC wasn't further explored until recently when Hausman et al. studied the effects of increases in innovative activity on VC-funding between 1970-1995 by taking advantage of a positive shock to innovative activity for research universities: the Bayh Dole Act of 1980.[96] They demonstrate that the Act-induced-shock to innovative activity in research universities led to increased VC-fundraising in university regions and to industries related to each university's *ex-ante* technological strength.[97] The flow of VC-funds to regions and industries where innovation was *ex-ante* strongest suggests VC responded positively to entrepreneurism and innovativeness.

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[94] A one-standard deviation increases in network centrality increased exit rates by 2.5% and increased fund internal rate of returns by 2.5% also: Hochberg, Ljungqvist, and Lu, 'Whom you know matters', p. 253.

[95] Gompers and Lerner, 'What Drives Venture Capital Fundraising', p. 24.

[96] The Bayh Dole Act gave universities property tights to innovations developed in their institutions and hence incentivised universities to engage in entrepreneurism, patenting, and licensing activity.

[97] A one standard deviation increases in their university 'innovation index' measure led to an increase of $117,000 in VC-funds after Bayh Dole amounting to around $23.2 million additional VC-investment per county: Hausman, Fehder and Hochberg, 'The virtuous cycle of innovation', p. 3.

Despite the initial findings of this research, studies solely focus on how positive shocks to innovative activity (changes to R&D-trends or government policy) have impacted VC. For example, entrepreneurism may have impacted VC in America through the arrival of new technologies and VC's attempts to commercialize these. Although Janeway et al. note that state-backed mission-driven initiatives such as NASA's Space Missions may have catalysed innovation and entrepreneurship, they don't test for the impact of such initiatives on VC.[98] There remains a large gap in the literature which understands, measures, and explains what specific factors affect entrepreneurial behaviour within America in this period and how this may have increased demand for VC. Important here will be overcoming the difficulty in measuring entrepreneurship.[99] Further research would benefit from quantifying how culture and religion affected entrepreneurship and incentivised risk-taking. In doing so, the impact of informal societal norms of behaviour such as entrepreneurism on American VC-development can be better understood.

4. Conclusion

This dissertation argued that the American VC-industry made significant contributions to American economic growth between 1975-1995 whilst simultaneously contextualising the institutional contingencies necessary for this relationship to occur. It makes a significant contribution to the literature as one of the first studies hitherto to provide a comprehensive historical-literature-review of both the effects of VC on economic growth *and* the combined formal- and informal-institutional determinants of American VC-industry-development in this period.

The first chapter demonstrated how VC accelerated technological innovation and business creation becoming a prime driver of American macroeconomic growth.

[98] William H. Janeway, Ramana Nanda, Matthew Rhodes-Kropf, 'Venture Capital Booms and Start-Up Financing', *Annual Review of Financial Economics* 13:1 (2021), p. 122.
[99] Storey, D.J., 'The birth of new firms? Does unemployment matter? A review of the evidence', *Small Business Economics* 3:3 (1991), pp. 167–178.

As the focal point of an ecosystem of innovation, VC performed a 'technological gatekeeping role' in the economy, catalysing start-ups whilst financing inventive ideas to improve economic productivity. The new firms created by VC benefited from their expertise and became large and successful companies that drove US economic performance. However, recent revelations regarding the 'virtuous cycle' of VC and innovation could implicate current understandings of VC's economic impact. Moreover, it remains difficult to quantify the positive externalities that large and successful VC-backed companies undoubtedly have at a macroeconomic-level. Both complications provide fruitful areas for future research.

The second chapter indicated the institutional factors that allowed VC to become an integral component of the American economic milieu. It argued that financial market development, regulatory reform, and tax policy decisions were important drivers of the VC-industry alongside sound legal systems that solved agency and control problems inherent in the VC-entrepreneur relationship. Nonetheless, future studies that differentiate between the separate demand and supply contributions to overall VC-funding would allow for a more comprehensive understanding. The analysis makes noteworthy contribution by suggesting that informal networks of experienced investors and societal entrepreneurship-behaviour were a pre-requisite for the development of high-quality start-ups, the performance of VCs, and the development of a VC-market that impacted economic growth. Future research could investigate what impact educational institutions, social capital, and cultural appetite for risk-taking played in inspiring economic agents to pursue entrepreneurial career choices. Regardless of any future research, by highlighting the positive economic experience of the American VC-industry in the late-twentieth century, this paper has provided several implications for global policy makers wishing to stimulate VC-activity.

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