CHAPTER 6
Financial Markets, Laws, and Entrepreneurship[1]

Douglas Cumming and Sofia Johan
York University—Schulich School of Business

1. Introduction

Since the global financial crisis of 2008 and 2009, markets for entrepreneurial finance have been in a state of flux in two respects. First, there have been massive innovations in financial technology ("fintech"). Second, there have been evolving regulations that affect fintech and other more traditional areas of entrepreneurial finance. The purpose of this chapter is to provide an overview of theory and evidence to assess what we know about these developments at the intersection of financial markets, laws, and entrepreneurial finance. To do so, we evaluate prior research trends from 2000 to 2017, highlight the state of knowledge of key drivers in promoting entrepreneurial finance markets, and offer policy recommendations based on the state of knowledge. Also, we identify gaps in our understanding and offer some suggestions for future research.

1 We are indebted to the helpful comments and suggestions of Steven Globerman, Christian Keuschnigg, and the conference participants at the 5th Crowdinvesting Symposium in Berlin, October 6, 2017.

Entrepreneurial finance is a wide and segmented area of scholarly examination (Cumming and Vismara, 2017). The field includes, but is not limited to, donations crowdfunding, rewards crowdfunding, debt crowdfunding (sometimes referred to as "marketplace lending"), equity crowdfunding, government granting agencies, incubators and technology parks, angel investors, venture capital funds, private equity funds, private debt funds, hedge funds, and initial public offerings. The field is segmented insofar as most empirical research on entrepreneurial finance is based on datasets that are derived from the source of capital. For example, those who study venture capital markets typically obtain their data from vendors such as Thomson SDC, Pitchbook, Venture Source, or similar data vendors, which offer information about venture capital finance without offering any information about other sources of finance. In turn, our understanding of public policy towards entrepreneurial finance is typically segmented, without many insights as to how policies pertinent to one form of finance may have spillovers towards other forms of entrepreneurial finance (Cumming, Johan and Zhang, 2018).

The comparative importance of different sources of entrepreneurial finance has been changing over time. For example, worldwide investment from angel investors has steadily grown from approximately $19 billion in 2009 to $25 billion in 2015, while global venture capital has increased more sharply from $20.5 billion in 2009 to $48 billion in 2015; and crowdfunding has had exponential growth, more than doubling each year in recent years from much less than $1 billion in 2009 to $34 billion in 2015 (www.crowdfunder.com). While more recent global crowdfunding data had not been formally assembled at the time this chapter was being prepared, projections have suggested that crowdfunding is now more important in terms of the aggregate worldwide amounts invested than both venture capital and angel investment.

The growth in crowdfunding is one of a number of changes affecting entrepreneurs with the rise of fintech more generally and the evolving regulatory landscape. In this chapter, we discuss the prior theoretical and empirical research on the impact of laws and public policy on both the quantity and quality of different sources of capital. We focus this discussion in

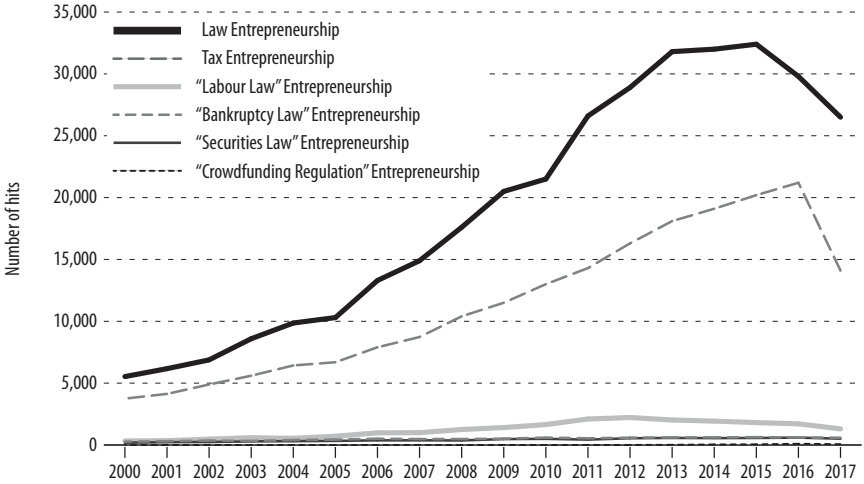
section 3 but, to put the state of knowledge into context, it is instructive to examine the relative focus in the literature and how that focus has evolved over time. To this end, in section 2 we provide a historical analysis of Google Scholar trends in research documents on topics at the intersection of law, entrepreneurship, and finance. After the review of the state of knowledge in section 3, in section 4 we summarize the main policy lessons for the efficient provision of entrepreneurial finance and promotion of entrepreneurship and startup growth. A conclusion giving a summary is provided in section 5.

2. Research trends on law, finance, and entrepreneurship

This section provides evidence from Google Scholar to show the *quantity* of research in different areas at the intersection of law, finance, and entrepreneurship from 2000 to 2017. What academic researchers focus on is a strong indicator of changes in policy and market conditions over time, albeit with some gaps that need filling. Below in section 3, we focus on the most influential contributions—those of high *quality*—that provide theory about, and evidence on, how law and policy can improve access to entrepreneurial finance and spur entrepreneurial activity. Section 4 highlights key policy lessons and needs for future research, taking into account the trends discussed in sections 2 and 3.

Figure 1 shows with evidence from Google Scholar that research at the intersection of law and entrepreneurship was typically focused on the role of taxation over the years from 2000 to 2017. In fact, the growth in the interest in tax and entrepreneurship was substantially more pronounced from 2000 to 2017 than any other topic area, and explains most of the growth in topics pertaining to law and entrepreneurship. The second most referenced topic is labor law and entrepreneurship although, in any given year from 2000 to 2017, there tends to be over 10 times the number of research papers that deal with tax and entrepreneurship compared to those that deal with labor law and entrepreneurship. Furthermore, labor law and entrepreneurship is examined in two to three times the number of research works compared to bankruptcy law and entrepreneurship, and securities

Figure 1: Google Scholar Hits to Documents on Topics Pertinent to Law and Entrepreneurship, 2000–2017

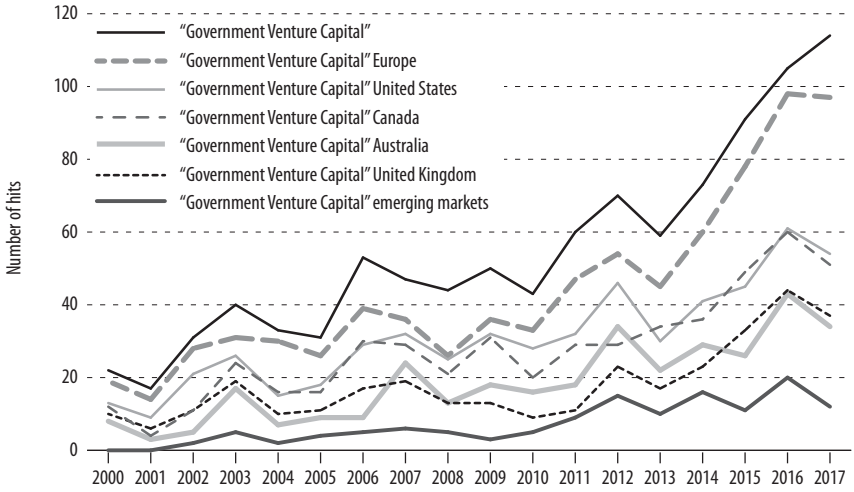


Note: This figure presents the number of Google Scholar hits to documents that have select keywords that include entrepreneurship and different types of laws and regulations for each year from 2000 to 2017.

law and entrepreneurship. Finally, there has been close to no work at all, ever, on crowdfunding regulation and entrepreneurship.

Figure 2 shows that an even smaller number of papers per year deal with government venture capital funds, and only in 2016 and 2017 were there more than 100 papers per year on that topic. Most of this work references Europe. There are roughly an equal number of papers each year that deal with government venture capital in Canada and the United States, which is surprising given the much larger size of the market in the United States. Perhaps the finding is attributable to the large presence of government venture capital in Canada (discussed further below in section 4). After Canada and the United States, there are roughly an equal number of papers per year dealing with the United Kingdom and Australia. Finally, there are notably fewer (less than 20 papers per year) dealing with government venture capital in emerging markets.

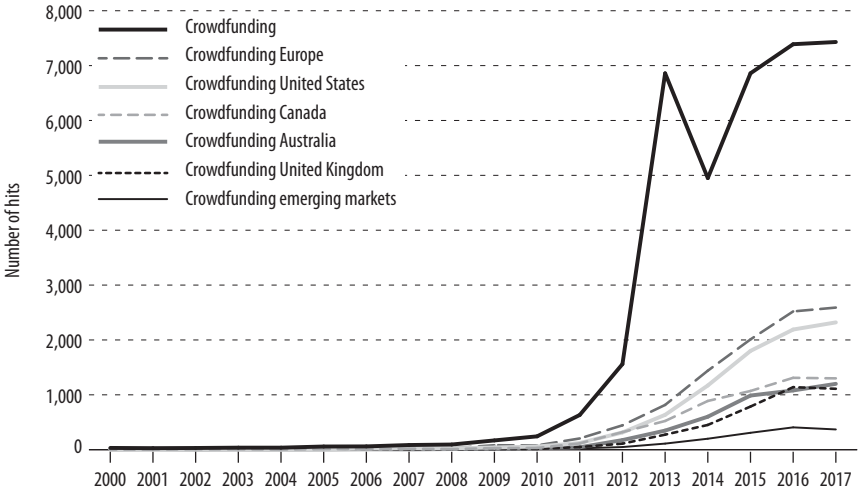
Figure 2: Google Scholar Hits to Documents on Topics Pertinent to Government Venture Capital, 2000–2017



Note: This figure presents the number of Google Scholar hits to documents that have the keywords "government venture capital" alongside various regional keywords for each year from 2000 to 2017.

Figure 3 presents Google Scholar data on crowdfunding. While the global crowdfunding market itself has roughly doubled every year from 2008 to 2016 (www.crowdfunder.com), the growth in research on crowdfunding has grown at an even more rapid pace over the years from 2008 to 2013. Growth in research into crowdfunding was exponential to 2013, with fewer than 100 papers on the topic in 2008 and close to 7,000 in 2013. Since 2013, crowdfunding research has drastically tapered off at approximately 7,500 papers per year. Crowdfunding offers empirical researchers an interesting setting to test many economic theories about signaling, investment decisions, marketing, communication, equality, regulation, and regulatory changes, among other topics, as discussed below in section 4. Furthermore, crowdfunding, unlike other areas of entrepreneurship and entrepreneurial finance, offers plenty of datasets that facilitate doing empirical work on large samples. Figure 3 shows that crowdfunding work is more commonly done in reference to Europe, likely as a result of their longer established

Figure 3: Google Scholar Hits to Documents on Topics Pertinent to Crowdfunding, 2000–2017

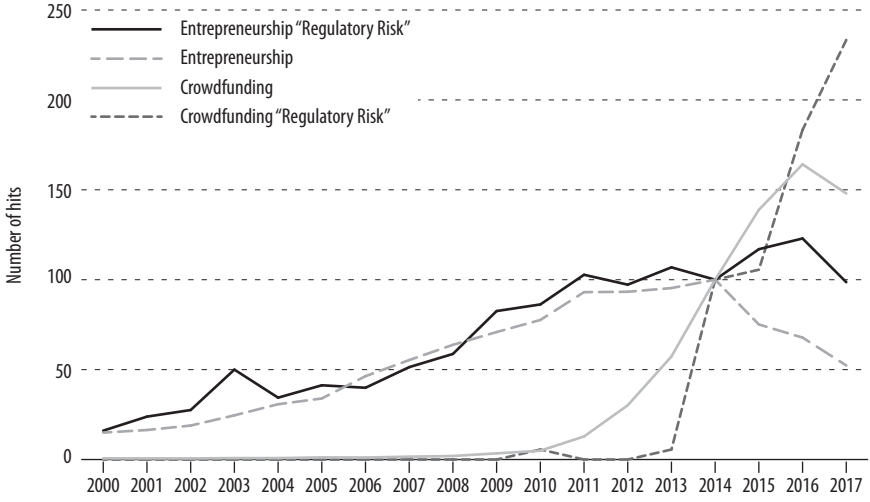


Note: This figure presents the number of Google Scholar hits to documents that have the keyword "crowdfunding" alongside various regional keywords for each year from 2000 to 2017.

crowdfunding centers, including equity crowdfunding and other forms of crowdfunding. After Europe, research is more often done on crowdfunding in the United States, then Canada, Australia, the United Kingdom, and emerging markets.

Figures 4 to 8 present trends in research on topics pertinent to entrepreneurship and regulatory risk. The focus on "regulatory risk" is distinct from "regulation", such as that presented in figure 1, in order to capture work that recognizes there are risks to entrepreneurship that arise from uncertainty about changing regulations. Figure 4 shows that work on regulatory risk and entrepreneurship is growing at a faster rate than research on entrepreneurship that does not deal with regulatory risk, although the volume of work on regulatory risk and entrepreneurship is still comparatively small. As indicated in the note to figure 4, in 2014 (base year set to 100 for the index), there were 96,900 papers touching on all aspects entrepreneurship, and only 218 papers dealing with entrepreneurship and regulatory risk. Figure 4 further shows that work on regulatory risk and crowdfunding is growing

Figure 4: Google Scholar Hits to Documents on Topics Pertinent to Entrepreneurship, Crowdfunding, and Regulatory Risk, 2000–2017



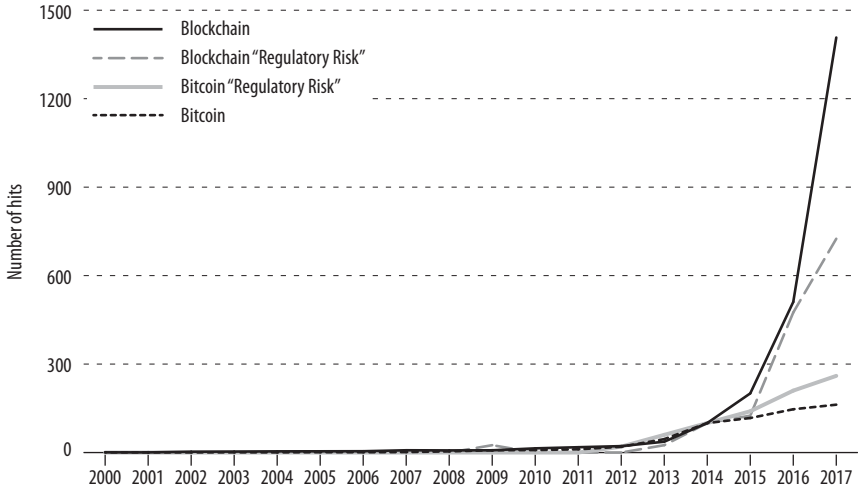
Note: This figure presents the number of Google Scholar hits to documents that have select keywords that are pertinent to entrepreneurship, crowdfunding, and regulatory risk from each year from 2000 to 2017. Hits are benchmarked to an index value of 100 in the year 2014. The actual numbers of hits in 2014 are: 96,900 for entrepreneurship; 218 for entrepreneurship "regulatory risk"; 4,940 for crowdfunding; and 18 for crowdfunding "regulatory risk".

at a much more rapid rate than work on crowdfunding in general, or on work on entrepreneurship, or work on entrepreneurship and regulatory risk.

Figure 5 presents Google Scholar statistics for work on Bitcoin, blockchain, and regulatory risk. Somewhat surprisingly, work on Bitcoin has been substantially more common than work on blockchain: in 2014, there were 3,870 papers referencing Bitcoin and only 648 referencing blockchain; however, in 2017, there were 6,280 papers referencing Bitcoin and 9,120 referencing blockchain. The emphasis on Bitcoin is surprising because Bitcoin is an application of blockchain, which is the important underlying platform technology. The comparatively frequent focus on Bitcoin in prior years might be attributable to the fact that blockchain had not been well understood in past years.[2] Research on blockchain and Bitcoin grew at a

2 Numerous commentators have conveyed this sentiment. For example, see commentary by Campbell Harvey in Harvey, 2015.

Figure 5: Google Scholar Hits to Documents on Topics Pertinent to Bitcoin, Blockchain, and Regulatory Risk, 2000–2017



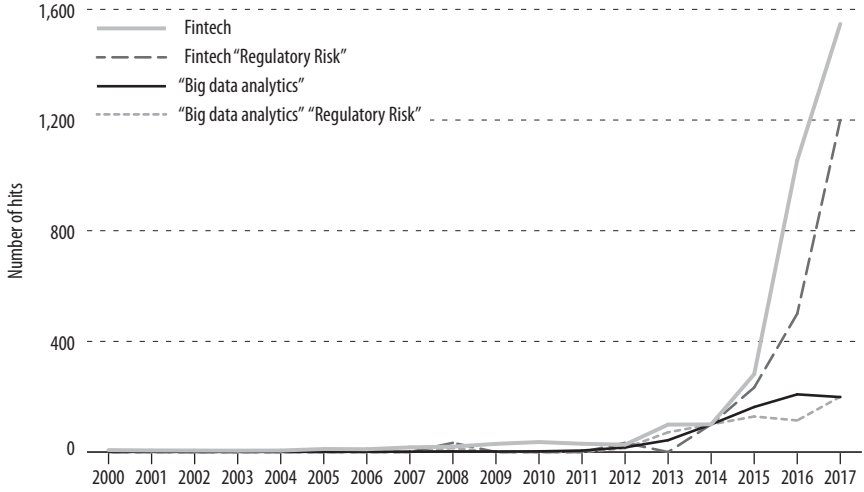
Note: This figure presents the number of Google Scholar hits to documents that have select keywords that are pertinent to Bitcoin, blockchain and regulatory risk from each year from 2000 to 2017. Hits are benchmarked to an index value of 100 in the year 2014. The actual numbers of hits in 2014 are: 3,870 for Bitcoin; 10 for entrepreneurship "regulatory risk"; 648 for blockchain; and 4 for blockchain "regulatory risk".

comparable rate until 2014 but, from 2015 to 2017, work on blockchain has grown tremendously compared to work on Bitcoin.

Figure 5 also shows that work on regulatory risk associated with Bitcoin has grown at a faster rate than work on Bitcoin generally, while work on regulatory risk and blockchain has grown at a slower rate than work on blockchain generally. Below in section 4, we discuss the volatility of Bitcoin and cryptocurrencies more generally, including bans of Bitcoin and a growing concern associated with fraud and cryptocurrencies. It is not surprising that researchers are taking a pronounced interest in regulatory risk associated with Bitcoin.

Figure 6 presents information on the volume of research on topics pertaining to fintech, big-data analytics, and regulatory risk. There has been substantially more work in reference to big-data analytics than fintech: for

Figure 6: Google Scholar Hits to Documents on Topics Pertinent to Fintech, Big Data Analytics and Regulatory Risk, 2000–2017

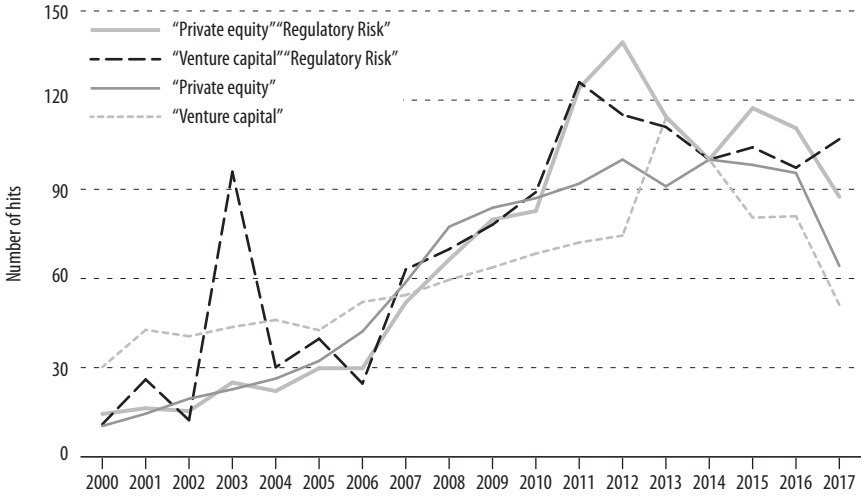


Note: This figure presents the number of Google Scholar hits to documents that have select keywords that are pertinent to fintech, big data analytics and regulatory risk from each year from 2000 to 2017. Hits are benchmarked to an index value of 100 in the year 2014. The actual numbers of hits in 2014 are: 254 for fintech; 3 for fintech "regulatory risk"; 6,090 for "big data analytics"; and 7 for "big data analytics" "regulatory risk".

example, there were 6,090 papers referencing big-data analytics in 2014 and only 254 on fintech. However, since 2014, fintech work has grown much faster, and in 2017, there were 12,100 papers on big-data analytics and 3,930 papers on fintech. Regulatory risk on both topics has been scant with only 50 papers in 2017 on both topics (36 on fintech regulatory risk and 14 on big-data regulatory risk) and fewer in prior years, but there has been more growth in work on fintech regulatory risk than big-data regulatory risk.

Figure 7 presents Google Scholar data on venture capital, private equity, and regulatory risk. Venture capital and private equity are very popular research topics, with 21,500 documents on venture capital and 11,100 documents on private equity found by Google Scholar in 2014. Regulatory risk associated with these topics has received scant attention, peaking in

Figure 7: Google Scholar Hits to Documents on Topics Pertinent to Venture Capital, Private Equity, and Regulatory Risk, 2000–2017



Note: This figure presents the number of Google Scholar hits to documents that have select keywords that are pertinent to venture capital, private equity, and regulatory risk from each year from 2000 to 2017. Hits are benchmarked to an index value of 100 in the year 2014. The actual numbers of hits in 2014 are: 21,500 for "venture capital"; 73 for "venture capital""regulatory risk"; 11,100 for "private equity"; and 104 for "private equity""regulatory risk".

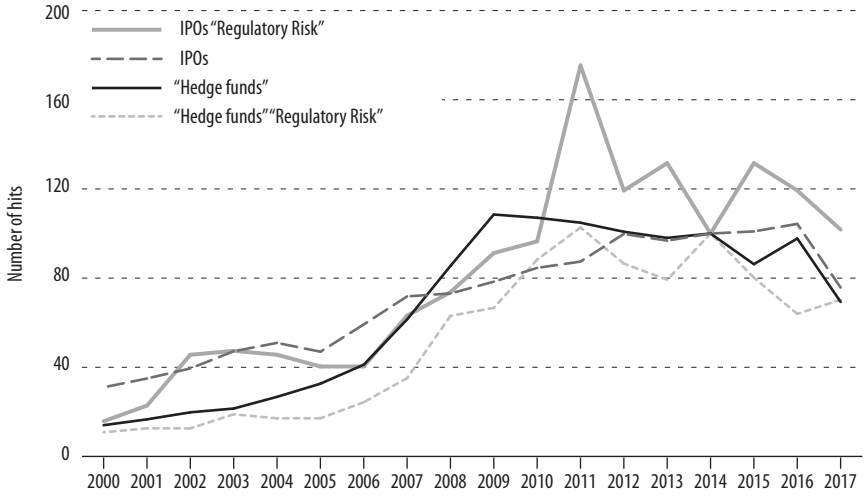
popularity in 2010 and 2011, most likely as a result of regulatory concerns for venture capital and private equity funds that followed the financial crisis.[3]

Figure 8 shows similar trends for hedge funds and IPOs. Research on regulatory risk in IPOs and hedge funds peaked in 2011.[4] Again, work on regulatory risk has been relatively scant for hedge funds and IPOs compared

3 Cumming and Johan, 2013a. While venture capital and private equity funds did not cause the financial crisis, the crisis gave rise to the opportunity to impose regulations on these funds. The *Economist* magazine (2009) explained this attention to venture capital and private equity around the crisis in a colorful way as follows: when you are in a bar fight, you don't hit the person that started the fight but instead you hit the person that you hate the most.

4 This interest in regulatory risk in hedge funds and IPOs is consistent with the impact of the financial crisis. See Cumming and Johan (2013a) for IPOs; Cumming and Johan (2013b) for hedge funds.

Figure 8: Google Scholar Hits to Documents on Topics Pertinent to IPOs, Hedge Funds, and Regulatory Risk, 2000–2017



Note: This figure presents the number of Google Scholar hits to documents that have select keywords that are pertinent to IPOs, hedge funds, and regulatory risk from each year from 2000 to 2017. Hits are benchmarked to an index value of 100 in the year 2014. The actual numbers of hits in 2014 are: 5,320 for IPOs; 57 for IPOs "regulatory risk"; 7,630 for "hedge funds"; and 111 for "hedge funds" "regulatory risk".

to general research on these topic areas, as indicated in the note to figure 8. Below, we show that the focus of research is perhaps a bit misplaced, as there are important implications of regulatory risk in each of these topic areas insofar as they have enormous effects on entrepreneurship and entrepreneurial finance.

3. Public policy and entrepreneurial finance

Section 3 examines substantive lessons from the most influential research at the intersection of law, finance, and entrepreneurship. At the outset, we note that the overriding goal of public policy towards entrepreneurial finance is to correct market failures. Lerner (2009), Cumming and Johan (2013), and

others explain that there some potential market failures, or justifications, for public policy to support entrepreneurial finance. Below are some examples.[5]

- Small, private, innovative firms contribute disproportionately to research and development (although there is debate on this topic and the evidence varies over time and across studies).

- The social rate of return to innovation (the benefit to society) is greater than the private rate of return, which means that an optimal degree of innovation requires government support.

- Financing innovation is too risky for small, private firms (only 0.8% of companies obtain VC backing in the United States, and the percentage is smaller in other countries, and external finance for innovative companies is tough to obtain generally as a result of agency problems), and/or their employees do not always have appropriate incentives to take on the risk (companies not backed by venture capital typically do not use stock-option plans as incentives for their employees).

- It is difficult for private investors to develop the requisite skill set to be good venture capitalists. Government programs provide a way to train individuals to become good venture capitalists.

- Government awards to entrepreneurs certify their quality and, in turn, enable them to overcome information asymmetries and obtain funding from other investors in the future (although, as discussed below, government failure is a concern as these programs often do not work).

As we discuss herein, some government programs in response to these possible market failures have been successful and other no so. In view of

5 We do not necessarily agree with each item on this list, as explained below, but mention them here as these arguments have been put forth in the literature.

the popularity of research into tax in conjunction with entrepreneurship documented above (figure 1), we begin this section by discussing that topic. Then, we examine work on (3.2) entrepreneurship and bankruptcy law, (3.3) labor regulation, (3.4) securities laws, and (3.5) various other regulations. Subsection 3.6 provides an overview of direct government expenditure programs. Based on the analysis in section 3, section 4 then summarizes the most important lessons from prior work through offering policy recommendations to promote entrepreneurship and small business start-ups and growth.

3.1. Tax and entrepreneurship

Taxation is clearly an important policy tool that can enhance or inhibit entrepreneurship. The two primary forms of taxation are income taxation and capital gains taxation.[6] These forms of taxation can influence the level and quality of entrepreneurship, as well as the level and quality of entrepreneurial finance (Kanniainen and Keuschnigg, 2004; Keuschnigg, 2004a, b; Keuschnigg and Nielsen, 2001, 2003a, b, 2004a, b, c). In general, lower levels of taxation promote entrepreneurial activity as entrepreneurs keep a greater share of their efforts. However, taxation cannot be so low as to cause distortions to overall economic infrastructure and public support, which in turn hurts economic activity and the environment for entrepreneurship. Higher levels of income taxation and lower levels of capital gains taxation encourage more employees to engage in entrepreneurship, as the relative costs of taxation are higher by remaining an employee.

There are number of important insights about the effect of taxes upon entrepreneurial finance, and venture capital in particular, in Poterba (1989a, b), Kanniainen and Keuschnigg (2004), Keuschnigg (2004a, b), Keuschnigg and Nielsen (2001, 2003a, b, c) and Armour and Cumming (2006). Low capital gains taxes are critical to a large and vibrant venture capital market. Venture capitalists do not invest for the purpose of collecting dividends on equity or interest on debt, but instead seek capital gains, normally by way of an IPO or acquisition sale after investing in a start-up for 3 to 5 years

6 The reader should also see the chapters by Giertz and by Mitchell et al. in this volume that discuss the effects of income and capital gains taxation on entrepreneurship.

(Cumming and Johan, 2013a). Keuschnigg and Nielsen (2004a, b, c) show that lowering capital gains taxes is in fact more important than other policy levers for encouraging venture capital activity. Empirical evidence from around the world in Jeng and Wells (2000) and Armour and Cumming (2006) is consistent with this finding. The intuition is straightforward. Tax relief associated with capital gains strengthens incentives to generate economic returns. Capital gains tax relief is equally important to private equity as it is to venture capital, as both types of funds invest for the sole purpose of achieving capital gains. Over the past few years, as deal sizes get larger for start-ups, and investee firms quickly grow to "unicorns" with over $1 billion in valuation, larger private-equity funds have played an increasingly important role in the financing of start-ups.

Government subsidies not related to performance, by contrast, do encourage entrepreneurial entry but do not encourage entrepreneurial performance (Keuschnigg and Nielsen, 2001, 2003a, b, 2004a, b, c); instead, subsidies encourage rent-seeking behavior and do not mitigate the problems of moral hazard and, in fact, reduce incentives to perform. It is possible that some firms seek repeated non-performance-related subsidies, which might mitigate moral hazard; however, the allocation of such subsidies tends to be across firms and not to the same firm over time because governmental organizations are not typically in the business of "staged" subsidies to the same firm and instead seek to spread subsidies across different firms in order to spread benefits widely to voting stakeholders. Capital gains tax relief is therefore associated with superior entrepreneurial performance, while subsidies are associated with lower performing entrepreneurial and venture capital markets.[7]

Canadian Labour Sponsored Venture Capital Corporations (LSVCCs)

Canada provides the perfect lesson on failed tax policy towards entrepreneurship and entrepreneurial finance. Cumming and MacIntosh (2006, 2007) and Cumming, Johan, and MacIntosh (2017) provide theory and evidence on the impact of Canadian Labour Sponsored Venture Capital

7 Lee and Gordon (2005) also note the importance of loss offset or loss carry-forward policies, which encourage entrepreneurial activity and risk taking.

Corporations (LSVCCs). LSVCCs are retail venture capital funds; that is, they source capital from retail (individual) investors. Retail investors have incentives to invest as a result of massive tax incentives: the after-tax cost of a $5,000 investment is slightly over $1,100, thereby giving investors a 323% rate of return on investment in the year of investment, as long as the LSVCC does not lose any of the invested capital. Capital is locked up with the LSVCC for a period of 5 years (at times it has been as high as 8 years). The tax incentives have worked insofar as retail investors have contributed billions to LSVCCs over the years, starting in Quebec in the early 1980s, and other provinces (except Alberta and Newfoundland & Labrador) in the late 1980s and early 1990s. LSVCCs have been the dominant form of venture capital in most Canadian provinces since the mid-1990s. Cumming and MacIntosh (2006, 2007) and Cumming, MacIntosh, and Godin (2007) explain the problems with LSVCCs as follows:

- LSVCCs compete with private venture capital funds for deal flow.
- LSVCCs are not accountable to institutional investors demanding a significant rate of return.
- Capital flows to LSVCCs regardless of performance as a result of the tax incentives.

LSVCCs have so much capital that their portfolio size per manager (the number of investee firms per manager) is substantially higher than that of private venture capitalists (Cumming and Johan, 2013a). In turn, LSVCCs do not add as much value to their investee firms. LSVCC managers have limited time to invest money contributed by retail investors (roughly 18 months to the end of the next calendar year) or risk paying a fine or losing their license to operate a LSVCC. LSVCCs also do not have the governance structures that private venture capitalists do in the form of limited partnership covenants (Cumming and Johan, 2013a). Overall, therefore, the structure, governance, due diligence, and value-added of LSVCCs are much worse than those of private venture capitalists.

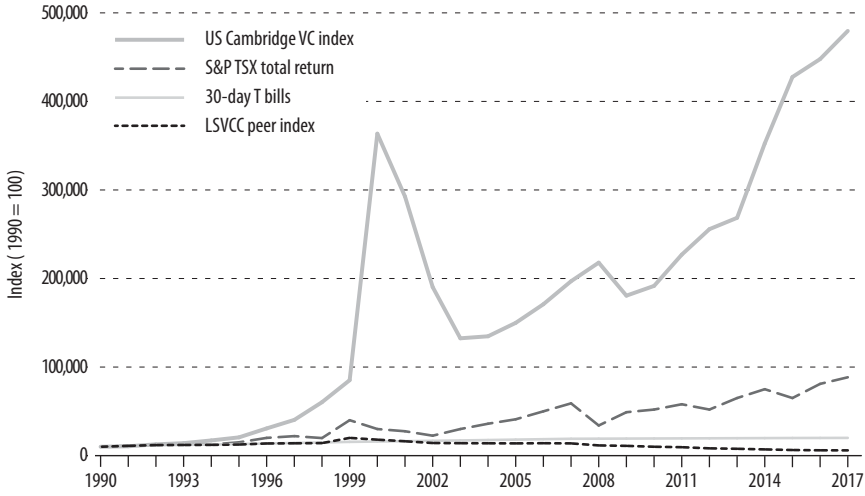
The performance implications of LSVCC's poor structure and governance are shown in figure 9. LSVCCs are collectively negative value-added, such that investors that put $1 into LSVCCs would have substantially less than $1 in 2017 (actually, they would have about $0.50). LSVCCs have performed worse than 30-day T-bills, except during the Internet bubble in the late 1990s (figure 9). The absence of economic returns to LSVCCs highlights their direct cost. Some commentators apologize or excuse their poor performance by claiming that LSVCCs create jobs. However, the absence of the economic rate of return clearly shows that any job created is not sustainable in the long run in the absence of the LSVCC tax subsidy.

Cumming and MacIntosh (2006, 2007a, b) and Cumming, Johan, and MacIntosh (2017) show an additional cost to LSVCCs: they crowd out private investment. Simply put, more LSVCCs means fewer private venture capitalists, since LSVCCs compete with private venture capitalists for deal flow and lower returns in the market. And, if institutional investors are risk averse and cannot predict growth in LSVCCs from one year to the next, then they will overestimate the presence of LSVCCs in the market (because of their risk aversion), reduce their commitments to private venture capitalists by more than 100%, and thereby contribute to a reduction in total venture capital. If LSVCCs were a superior organizational design with fewer organization and governance problems and lower agency costs, then such crowding out might not be problematic. However, the evidence in figure 9 and elsewhere from other research shows that LSVCCs are not a superior organizational form, and hence crowding out is particularly problematic.

Ontario announced the phase-out of the LSVCC tax credit in 2005; this became effective in 2011. The removal was met with significant resistance, and LSVCC shareholders have been further damaged as a result (Johan, Schweizer, and Zhan, 2014; Jacob, Johan, Schweizer, and Zhan, 2016). Nevertheless, the removal made way for the introduction of other and better designed programs in Ontario, as discussed further in subsection 2.6 below.

The federal government in Canada tried to phase out the LSVCC tax credit in 2011. However, the federal Liberal election campaign promises in 2016 included a promise to reinstate the federal LSVCC tax credit, an election promise that appears to be consistent with the strong ties between

Figure 9: Performance of $10,000 in Venture Capital Sponsored by the Canadian Government, 1990 to 2017



Sources: Cumming, Johan, and Zhang, 2018; *Globe and Mail* <http://globefunddb.theglobeandmail.com/gishome/plsql/gis.fund_filter?pi_type=B>; Cambridge Associates LLC <https://www.cambridgeassociates.com/benchmarks/>.
Note: "LSVCC" refers to venture capital sponsored by the Canadian government under the Labour Sponsored Venture Capital Tax Credit. "TSX" refers to the Canadian Toronto Stock Exchange Index. "VC" refers to venture capital.

Quebec politicians and LSVCCs in the political arena. The Solidarity Fund is the largest and oldest LSVCC in Canada, manages more than $10 billion in capital, and is a very influential entity in Quebec economics and politics. The Liberal reinstatement of the LSVCC tax credit has taken effect, an event that highlights the difficulty of removing legislation that inflicts capital losses on particular segments of society.

LSVCCs are not unique. There are tax subsidy programs similar to LSVCCs in other countries, such as the Venture Capital Trust program in the United Kingdom. These programs have similar organizational design flaws and consequences (Cumming and Johan, 2013a).

Small business tax programs

Apart from tax-subsidized venture capital programs, similar lessons are gleaned from the structure of taxes designed to encourage or give relief to small firms. Small business tax programs such as the Canadian program, which allows a lower corporate tax rate when revenues are less than $500,000, do not encourage firms to grow beyond $500,000. This rate will be lowered by the Trudeau liberal government, pursuant to their 2016 election promises, from 10.5% to 9% (CBC News, 2017), while the regular corporate tax rate is typically around 26% (Trading Economics, 2018). These policies are widely seen to encourage small firms to stay small and do little to promote growth and an increase in capacity (Chen and Mintz, 2011).

Just as tax relief for small firms causes problems, taxes directed towards mature firms, such a dividend taxes, also cause problems for smaller firms. Keuschnigg and Nielsen nicely explain that the returns to high-growth venture capital investment need to account for mature firms as follows:

> Another lesson is that looking at taxes directly levied on young firms cuts too short in fully defining the tax environment for start-up investment. The average tax burden on mature firms is capitalized in firm value and thereby reduces venture returns, which drives the discrete investment choice by startup firms. This is most clearly demonstrated by the dividend tax. According to the "new view", the dividend tax is fully neutral with respect to capital accumulation of mature firms. However, it clearly reduces firm value because of tax capitalization and thereby discourages start-up entrepreneurship as part of the economy-wide investment. By reducing venture returns, it also discourages effort and VC support and thereby contributes to a higher rate of business failure. To put it more provocatively, the dividend tax harms mostly those firms which actually don't pay the tax. (Keuschnigg and Nielsen, 2004a: 386–387)

In short, tax policy has the potential to do tremendous good for entrepreneurship. However, tax policy can also cause serious harm to entrepreneurship and entrepreneurial finance. Tax policies need to be structured in

ways that strengthen incentives. Otherwise, if tax policies are distortionary and provide relief in the absence of strengthening incentives, they can cause more problems and even undermine their legislative intent. Canada's experience is representative.

3.2. Bankruptcy law, entrepreneurship, and entrepreneurial finance

It is well accepted that personal bankruptcy law encourages entrepreneurship (Fan and White, 2003; Armour and Cumming, 2008; Jia, 2015) and entrepreneurial finance (Armour and Cumming, 2006). Personal bankruptcy law matters more than corporate bankruptcy law (Cumming, 2012) because lenders and other sources of capital can write contracts with entrepreneurs personally, not through the corporate entity, which ordinarily requires them to make personal guarantees.

The impact of bankruptcy laws is large. For example, in many European countries in the late 1990s and early 2000s, discharge from bankruptcy was introduced for the first time, and/or the number of years to obtain a discharge was lowered. As a consequence, entrepreneurial activity increased dramatically (Armour and Cumming, 2006). Similar effects have been empirically demonstrated for bankruptcy-friendly states in the United States (Fan and White, 2003). Cumming and Li (2013), however, have noted that the impact of bankruptcy on entrepreneurship might change over time, and the effect appears to be different if one includes extreme changes in economic conditions, such as those during the financial crisis in the late 2000s. Bankruptcy-friendly regimes did not encourage entrepreneurship during the financial crisis (Cumming and Li, 2013). Further research with evidence from longer time series and more detailed data on the types of entrepreneurial activity that are created under more entrepreneur-friendly bankruptcy regimes is warranted.

3.3. Labor regulation and entrepreneurial finance

Prior evidence is consistent with the view that stringent labor regulations hurt entrepreneurship and entrepreneurial finance.[8] Sobel (2008) pro-

8 Wayne Crews' chapter in this volume talks more generally about the relationship between regulations and entrepreneurship.

vides the first evidence using the indexes published in the Fraser Institute's *Economic Freedom of the World* (EFW) for a cross-section of US states. Cumming and Li (2013) provide similar evidence from the EFW indexes, and note that it is quite important to make use of the time series of this data, and not merely the cross section. That is, if you use only a cross section of data, then the results will vary depending on the year that you pick. With the cross section and time series of data, labor market restrictions matter more than any other element in the EFW indexes for creating new business starts. Labor market frictions constrain entrepreneurs' ability to make human resource decisions, thereby discouraging start-up formation and growth. Moreover, they can hamper the quality of entrepreneurship as proxied by wage growth (Cole, Cumming, and Li, 2016).

Labor market restrictions vary internationally, and particularly across Europe. These restrictions significantly lower the quality and quantity of venture capital in Europe. Labor frictions are more important than any other type of international differences in regulation in the study by Bozkaya and Kerr (2014) on venture capital over time and across a number of countries in Europe.

3.4. Securities law and entrepreneurial finance

Securities laws are extremely important for promoting entrepreneurship in a variety of ways. First, the quality of listing standards (Johan, 2010) and rules regarding prospectus disclosure (La Porta, Lopez-de-Silanes, and Shleifer, 2006) and enforcement (Cumming and Johan, 2008; Jackson and Roe, 2009) influence the number of IPOs each year that an exchange will attract, and the underpricing (first-day return) and long-term performance of the IPOs. Canadian listing standards on the TSX-V, for example, are so low that underpricing of IPOs is over 40% on average, and long-run performance is much weaker on average than on other exchanges because firms appear simply under-prepared to be publicly listed (Johan, 2010). Johan (2010) explains that lower listing standards—being able to list your company on an exchange with minimal size, operating profits, operating history, share prices, and trading activity—reduce the certification of quality of the exchange and companies on the exchange, thereby leading investors

to demand more pronounced underpricing to encourage investment. With massive underpricing, firms raise less capital than they otherwise would have raised, which is a cost to the issuing firm, and hurts their long-term performance. Furthermore, lower listing standards discourage many investors from participating on the exchange as a result of the exacerbated risks; this, in turn, limits the ability of companies on the exchange to attract long-term investors and continued trading activity and share liquidity, which further hampers long-term performance. IPOs are a critical exit channel for venture capitalists (Cumming and Johan, 2013a) and poorly performing IPO markets therefore cause poor venture capital markets. IPOs are likewise important for entrepreneurs and non-venture capital investors that seek to scale up their businesses and investments.

Second, the quality of the rules that protect creditors, shareholders, minority investors (La Porta, Lopez-de-Silanes, and Shleifer, 1999; La Porta, Lopez-de-Silanes, Shleifer, and Vishny, 1997, 1998, 2002) and trading rules on stock exchanges (Cumming, Johan and Li, 2011) has massive implications for the proper functioning of stock markets. Without proper functioning stock markets with active trading and means to invest and save capital, earlier-stage investments suffer.

Third, the quality of securities laws that enables efficient operation of intermediaries is very important to encourage entrepreneurial finance. For example, rules that encourage reporting from hedge funds to their investors such as through the Delaware Limited Partnership Act promote scale-up investment (Cumming, Dai, and Johan, 2015). By contrast, rules that increase the cost of intermediation such as the Dodd-Frank Act in the United States discourage intermediation and lead to a shift of investment activities to other countries; and give rise to comparatively lower returns to investment for those that did not shift to other countries (Cumming, Dai and Johan, 2018).

Fourth, recent efforts to promote entrepreneurial finance through regulatory changes have failed. For example, in the United States, the JOBS Act of 2014 brought a number of changes to enable more private investment in order to encourage entrepreneurship, including investments of a larger scale with a greater number of shareholders, without having to make public

disclosures. Partly, these regulatory changes were designed to encourage equity crowdfunding in the United States. Thy have done so but they have also had unintended effects that include venture capital investments on a massive scale with valuations over $1 billion per investee firm, which is not a bad outcome in itself depending on your point of view and emphasis, but can change the landscape of investment and focus of venture capital funds to larger and fewer investments. Other unintended effects are fewer IPOs and greater underpricing of IPOs, both bad outcomes for entrepreneurship (Chaplinsky, Weiss Hanley, and Moon, 2017).

Unlike the success of US crowdfunding since May 2016, recent efforts to promote entrepreneurial finance through the introduction of equity crowdfunding in Canada have not attracted entrepreneurs raising capital through crowdfunding portals. There are a few reasons for this lack of interest in Canada. First, there are many regulations imposed on portals, which calls into question their economic viability. Second, social media is not permitted in Canada in conjunction with equity crowdfunding, which makes marketing to "the crowd" difficult, impracticable, or impossible. Third, audited financial statements are required to engage in equity crowdfunding, and taken together with the limits on capital raised in any given year, the costs of audited financial statements are too large relative to the benefit from equity crowdfunding capital.

3.5. Other regulations pertinent to entrepreneurship

A variety of other legal rules have an impact on entrepreneurship and entrepreneurial finance. Here are a few notable examples. First, similar to equity crowdfunding rules, there are rules pertaining to new technologies in fintech. Some, such as the Basel regulations, are faced by large institutions, as well as small. Unfortunately, compliance with many of these rules have associated fixed costs, and hence the costs relative to the asset base of a large established firm are much smaller than the costs relative to the asset base of a small firm. Notably, Cumming and Schwienbacher (2016) find that the growth in fintech venture capital investments is much more pronounced in countries around the world that do not have a major financial center, as

those countries are reputed to have significantly less severe or stringent enforcement of fintech-related regulations.

Second, there have been bans on certain activities related to fintech. These bans create massive regulatory risk. For example, Bitcoin was recently banned in China, which caused massive disruption in trading activity of Bitcoin and reductions in the price of Bitcoin (*Economist*, 2018). These regulatory changes are important to entrepreneurs, not only in China, but also in the rest of the world. Regulatory changes such as this have spillover effects across countries, and the growth in the number of entrepreneurs in the fintech market, and many other markets influenced by fintech, is highly affected by regulatory risk. Such regulatory risk damages financing through cryptocurrencies by making cryptocurrency markets less liquid.

The markets for cryptocurrencies are ever evolving and time will tell how they perform. For example, crowdfunding has enabled a recent spate of Initial Coin Offerings (ICOs) in the United States (Hincks, 2017). The market for ICOs is highly risky and highly unstable, and not confined to geographic or national boundaries. Furthermore, academics (Gandal, Hamrick, Moore, and Obermanm, 2018) and media (Biggs, 2018) are becoming increasingly aware of the pronounced degree to which Bitcoin is easily manipulated, and regulators will, one hopes, find ways to curtail such manipulation. The most important developments in curtailing risk and manipulation in these markets is through electronic computer surveillance linking text-mining software on message boards that are used to pump up offerings with real-time monitoring of trading activities. This type of monitoring through computer surveillance (Cumming and Johan, 2008) and trading regulation (Cumming, Johan and Li, 2011) has been successful in improving trading activity and reducing fraud on stock exchanges (Cumming, Dannhauser, and Johan, 2015) and it has the potential to be invoked to a greater degree in the alternative forums that are used to launch ICOs.

Third, there are varieties of legal rules pertaining to starting up a business that differ around the world. These regulations and the quality of regulations in different countries around the world are best summarized by the World Bank's *Doing Business* project (http://www.doingbusiness.org). These rules include, but are not limited to, the number of procedures required

to start a business, the difficulty in enforcing contracts, and other related items.

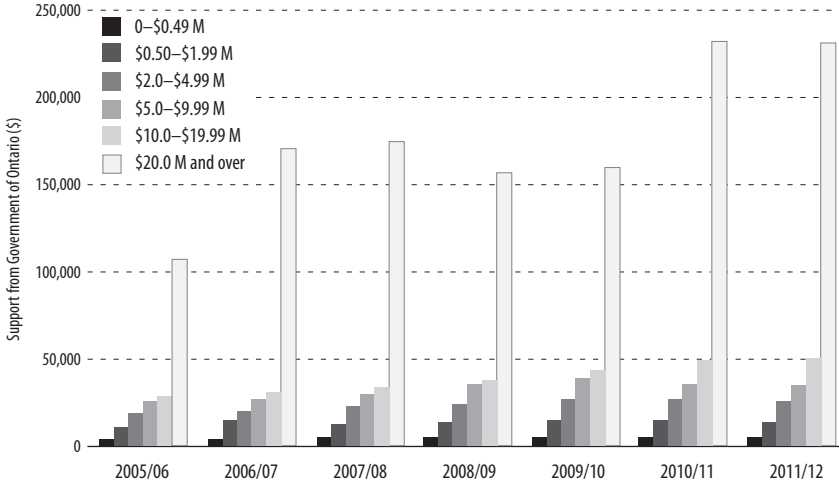
Fourth, there are significant differences in corruption around the world, which can have enormous implications for starting and growing new firms. Taking away the ability to bribe through regulations such as those designed to limit foreign corrupt practices imposes costs on large firms (Zeume, 2017). However, corruption exacerbates opportunism and agency problems by limiting unfettered access to market and distorting the efficient allocation of capital to the entrepreneurial investments offering the best opportunity, thereby reducing access to external capital for the average (non-corrupt) market participant and worsening the quality and quantity of entrepreneurship in a region (Tonoyan, Strohmeyer, Habib, Perlitz, 2010).

3.6. Government expenditure programs

Governments spend an enormous amount of taxpayer funds each year subsidizing businesses through direct expenditure programs. For example, in the province of Ontario, Canada, roughly $4 billion per year (over the years from 2005 to 2012) was spent on over 80 programs to help businesses. The number of programs tends to increase over time, as politicians create new programs to show change for a political gain, but do not want to take away old programs at a political cost. Unfortunately, the largest political gains come from creating programs that benefit larger organizations with greater numbers of voters. Therefore, in Ontario, businesses are much more likely to receive support and receive more support if they are larger, with more revenues, and if they have been in business longer (Cumming, Daziel, and Wolf, 2014). See figure 10 and figure 11 for the direct evidence from Ontario official records.

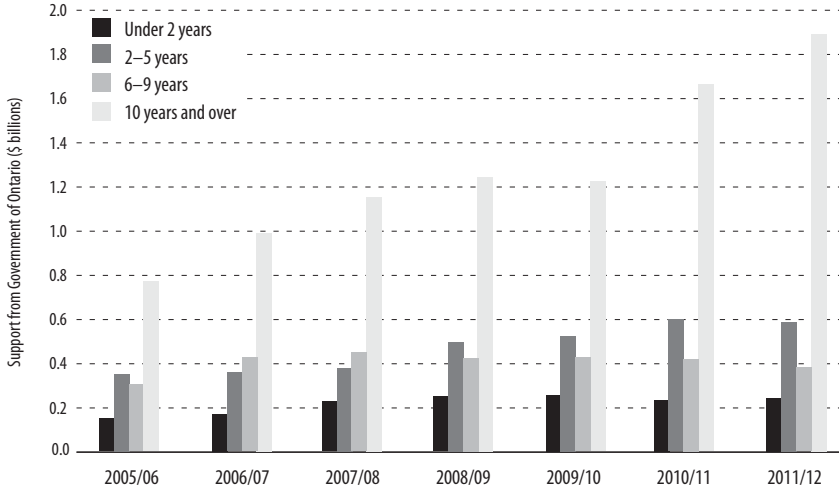
Keuschnigg and Nielsen (2001, 2003a, b, 2004a, b, c) remark that there can be benefits associated with subsidy programs as they tend to lower the cost of capital for firms. Subsidy programs include subsidized loans, credit guarantees, favorable depreciation rules, or direct subsidies to R&D and start-up investment spending. These subsidy programs, however, are typically not as efficient as tax programs that create incentives for, and reward, effort (Keuschnigg and Nielsen, 2001, 2003a, b, 2004a, b, c) (for reasons

Figure 10: Total Business Support from Government of Ontario, by Company Revenue, across All Types of Support Programs, 2005/06–2011/12



Source: Cumming, Daziel, and Wolf, 2014.
Note: This figure presents the average dollar value of support from the Ontario government in real 2012 dollars (horizontal axis) for different firms based on the revenues of the firm.

Figure 11: Total Business Support from Government of Ontario, by Company Age, across All Types of Support Programs, 2005/06–2011/12



Source: Cumming, Daziel, and Wolf, 2014.
Note: This figure presents the average dollar value of support from the Ontario government in real 2012 dollars (horizontal axis) for different firms based on the age of the firm.

discussed above in subsection 3.1), though some have been more effective than tax programs, depending on how those programs are structured. For example, the tax policies that subsidize retail venture capital are ineffective at best or more likely downright harmful.

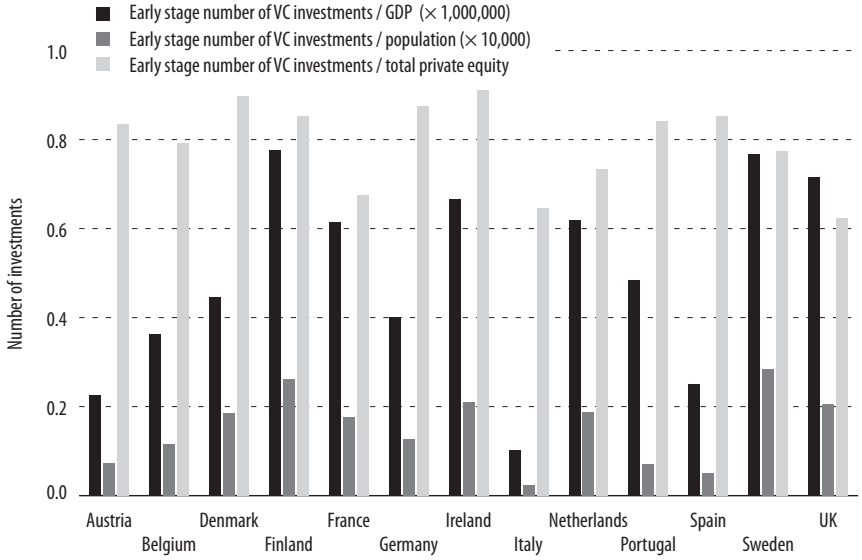
Another way to structure government venture capital is to have the government act as a limited partner in privately managed venture capital funds with payback rights subordinated to private institutional investors. This type of structure has been used in Ontario with the Ontario Venture Capital Fund (OCVF) as part of the program to phase out LSVCCs in Ontario (Cumming, Johan and MacIntosh, 2017), and in Canada through the Venture Capital Action Plan (VCAP). These types of structures have worked well in Australia (Cumming, 2009; Cumming and Johan, 2009) and Israel (Avnimelech and Teubal, 2006). However, Standaert and Manigart (2018) find that venture capital funds backed by the government as a fund-of-funds[9] in Belgium are worse at creating employment than private funds without government involvement.

There have been some concerns about how the VCAP allocates public funds to venture capital funds. First, anecdotally, some practitioners have expressed concerns that those funds that received public funding were the ones that artificially inflated valuations on companies in their past portfolios that had not yet been sold. These types of artificially inflated values distort capital in private institutional venture capital fundraising from institutional investors (Cumming and Walz, 2010; Johan and Zhang, 2016). Indeed, government employees may be at a comparative disadvantage in addressing these concerns about the valuation of private companies because they lack expertise and experience in valuing private companies, which is not part of their regular tasks, and which makes valuation risks more pronounced among government disbursements to venture capital funds. Second, it has been noted that the size of these programs, at least in Canada, are trivial compared to what would be required to enable Canada to have levels of investment comparable on per-capita and per-GDP bases to what exists in some US jurisdictions (Cumming, Johan, and MacIntosh, 2010).

9 A fund-of-funds is an umbrella fund that invests in other venture capital funds.

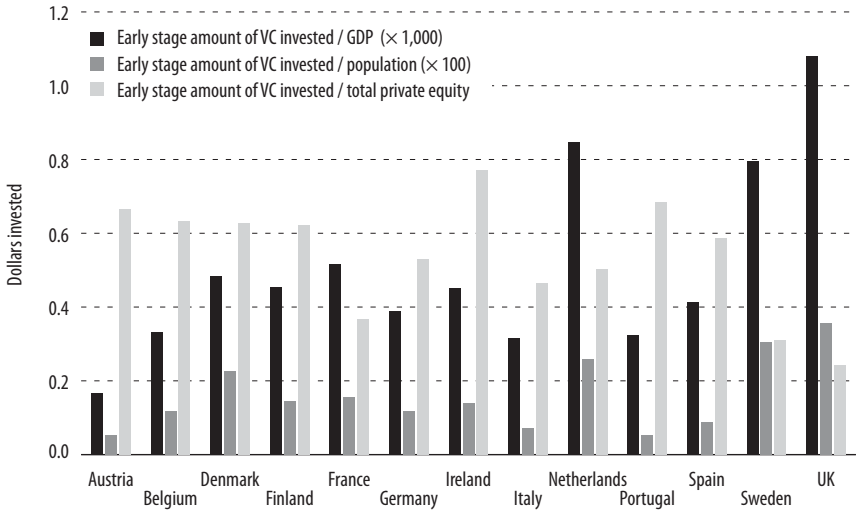
Other expenditure programs focused on innovation centers have shown promising success in past studies, as reported in Cumming and Fischer (2012) for the VentureLab in Markham, Ontario. However, there is insufficient systematic data on the topic to provide a full policy assessment. Further research is warranted. Further research on the success of government expenditure programs in venture capital and other types of entrepreneurial finance markets is also desirable as additional time series data become available. Moreover, there is scope for better policy assessment. Surprisingly, many studies have evaluated the success of government venture capital programs on the basis of investment level statistics that compare early- to late-stage venture capital (for example, Lerner, 2009). As explained by Cumming (2011a, b), this metric is clearly wrong, as it means countries do better with their government venture capital programs when the country has a poorly performing late stage (Cumming, 2013). Figure 12

Figure 12: Comparison of Number of Venture Capital Investments by Total Private Equity versus GDP and Population, 1989–2011



Source: Cumming and Johan, 2013.
Note: This figure shows the differences across countries in terms of numbers of deals in early-stage VC/total PE, early-stage VC/GDP, and early-stage VC/population.

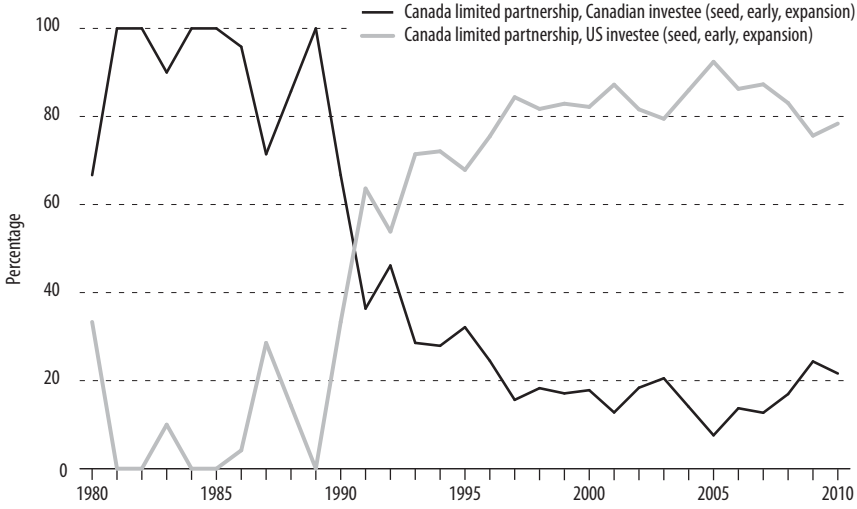
Figure 13: Comparison of Venture Capital Dollars Invested by Total Private Equity versus GDP and Population, 1989–2011



Source: Cumming and Johan, 2013.
Note: This figure shows the differences across countries in terms of dollar value of deals in early-stage VC/total PE, early-stage VC/GDP, and early-stage VC/population.

and figure 13 show that the United Kingdom, based on the early-to-late-stage ratio, is the worst-performing venture capital market in Europe but, based on the ratio of early stage VC to GDP and early stage VC to population, the best-performing. Policy conclusions are completely reversed when one picks the wrong ratio (Cumming, 2014). Furthermore, Lerner (2009) mistakenly asserts that poorly performing government venture capital funds in Canada have not caused as much damage as previously thought in terms of crowding out, since investors may have directed their capital to US investees. That assertion is wrong as well (figure 14). Mistakes like these in policy assessment exacerbate the harm caused by misinformed public policy expenditure programs, and more needs to be done to monitor assessors and speak up when research about program evaluation is clearly misguided and blatantly false.

Figure 14: Canadian Limited Partnership Cross-Border Investment into the United States versus Domestic Canadian Investment, 1980–2010



Sources: Cumming, 2011a, b.
Note: Graph shows all available venture capital transactions from Thompson Financial VentureXpert, January 1980 to March 2010.

4. Summary of key policy mechanisms and recommendations

Prior research is consistent with the following policy recommendations designed to create a vibrant environment for long-term entrepreneurship that will encourage start-ups and facilitate access to entrepreneurial finance.

1. Tax policy, particularly low capital-gains taxation, is the most efficient way to encourage high-growth entrepreneurship and access to entrepreneurial finance.

2. Special tax rates for small business do not encourage businesses to scale-up. At best, they encourage entrepreneurial starts, but subsequently lead to reduced incentives to grow, or incentives to move to different jurisdictions after reaching a certain scale.

3. Tax programs that encourage retail investors to invest in venture capital funds that are structured like mutual funds, such as the LSVCC and the VCT, do not work and have the potential to be extremely harmful.

4. Entrepreneur friendly bankruptcy laws, low labor frictions, healthy securities laws that promote IPOs and enable intermediaries such as venture capital and private equity companies, and hedge funds, encourage entrepreneurial activity and enable scale-up investment.

5. Equity crowdfunding rules in the United States with the JOBS Act have had negative externalities on the US IPO market. The JOBS Act has given rise to fewer IPOs and greater underpricing of IPOs, contrary to the objectives of the JOBS Act (Chaplinsky, Weiss Hanley, and Moon, 2017).

6. Equity crowdfunding rules in Canada are too stringent, and no entrepreneur has made use of this new form of finance. By contrast, equity crowdfunding has been successful in other countries, including Australia (Ahlers, Cumming, C. Guenther, and D. Schweizer (2015)) and the United Kingdom (Vismara, 2017; Signori, A., and Vismara, 2018).

7. Some government subsidy and direct expenditure programs, such as those where governments act as limited partners in venture capital funds, have been successful but the success is highly dependent on the way in which the program is implemented. This poses risks for both entrepreneurs and the broader entrepreneurial finance marketplace in the region.

8. Policy programs to stimulate entrepreneurship and entrepreneurial finance should not be evaluated in isolation, but should be assessed with consideration for their possible spillovers and unintended consequences. For example, a tax subsidy to LSVCCs can

have negative consequences for private VCs. As another example, regulation changes affecting crowdfunding can also affect other forms of entrepreneurial finance such as angel investment, venture capital, and IPOs. Cumming, Johan and Zhang (2018) document the extent of our knowledge on spillovers to date, and point out that what we know is quite limited; further empirical work is warranted.

5. Conclusion

In this chapter, we provide new evidence from Google Scholar to show that academic research has been focused on tax and entrepreneurship. There has been relatively scant attention paid to other policy mechanisms and how those mechanisms influence entrepreneurship. For example, there has been less interest on topics relating to bankruptcy regulation, labor market regulation, and securities regulation. Likewise, there has been comparatively little work on other policy levers such as government expenditure programs, which includes, but is not limited to, government venture capital programs. And, the work that has been done on government policy programs in venture capital has to a notable degree been wrong as a result of the use of improper methods and metrics, leading some commentators to reach incorrect conclusions and inferences (see Cumming, 2011a, b; 2014, for an extended discussion). We documented a significant change in focus since 2013 towards research on regulatory risk around topics pertaining to fintech, including Bitcoin, blockchain, crowdfunding, and big-data analytics, and explained how regulation and regulatory risk have an impact on financial markets that affects entrepreneurship.

Policy interventions to spur entrepreneurship and entrepreneurial finance should be put in place to correct market failures. More successful policy interventions are those that provide incentives for performance and not mere existence. We offered a number of policy suggestions based on our review of the literature and suggest avenues for future research based on gaps in the literature.

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