Chapter 7

Enhancing Productivity Growth by Encouraging Entrepreneurship

By Russell S. Sobel

Invention versus innovation: Defining entrepreneurship

While *invention* is the creation of a new product or process, often facilitated by the knowledge of engineering and science; *innovation* is the successful introduction and adoption of a new product or process—the economic application of inventions and new techniques in the commercial marketplace. Understanding this difference is important because while developing the capacity to discover and create is an important step, these ideas must somehow find a commercial application to subsequently influence productivity growth. Importantly, most inventions are not profitable business ideas, and very few innovations require scientific invention or discovery. Refining or altering a production process in a way that drastically increases productivity is also innovative entrepreneurship, for example.

Some historical examples may help to clarify. While the modern upright electric vacuum cleaner was *invented* by a department store janitor named James Spangler in 1908, it was his cousin William Hoover who bought the patent and started the business that successfully produced the product commercially. Another more familiar example is the case of milkshake mixer salesman Ray Kroc, the entrepreneur famous for commercially developing the process of franchising (and the McDonald's brand) based on seeing Richard and Maurice McDonald's restaurant in California. Finally, Henry Ford's innovative use of the assembly line drastically increased the productivity of automobile manufacturing even though he wasn't the inventor of the automobile. Each of these examples represents a different aspect of innovative entrepreneurship, one involving the commercial introduction of a new product that is productivity enhancing, another the introduction of a productivity enhancing business model,

and finally, a productivity enhancing change to the process of commercial production.

These innovations are the defining feature of "entrepreneurship" according to scholars such as Joseph Schumpeter (1911/1934).[24] While entrepreneurship of the form we are discussing often is embodied in the creation of a new business venture, perhaps even a spin-off from an existing business organization, it also frequently occurs within existing business firms—a phenomenon known as "intrapreneurship." The revolutionary iPhone, for example, was introduced in 2007 after being developed within the Apple Corporation, which at that time had existed for over 30 years.

A variety of authors including Schumpeter (1911/1934), Baumol (2005), and Christensen (1997) argue that most breakthrough, disruptive innovations come from new, small start-up firms, and that large existing firms are best at incremental improvements to existing products and technology. However, this does not mean that the "intrapreneurial" advances made by existing firms, particularly large firms with well-developed research and development capabilities, are unimportant to productivity growth. One example is the massive improvements in computer chip manufacturing and processing speed developed and commercialized internally within the Intel Corporation. As Baumol (2005) points out, from 1971 to 2003, the speed of Intel's processor chips increased by 3 million percent, vastly improving the productivity of every computer and an uncountable number of production machines in the world.

What should be distinguished explicitly, however, is how innovations embodied in new business startups differ simply from opening a business more generally. Take as a contrasting example a person who opens a new Subway restaurant franchise location, adding to the over 40,000 locations worldwide in over 100 countries. While the difference is clearer in theory than in practice, the types of entrepreneurial innovation that greatly enhance productivity are ones that embody new ways of doing things that are "significantly" different from existing products or processes. Thus, a more generally accepted definition of the type of entrepreneurship we are discussing involves the commercialization of a new product or process through a start-up organization.

Often this innovation-commercialization process through new business start-ups involves trial and error. As Hayek (2002 [1968]) points out, the market process is one of discovery, and it is not possible for anyone to know in advance exactly which new ideas will be commercially successful. According to Levie, Don, and Leleux (2011), the true survival rates of new

[24] New innovations often result in the old ways of doing things going by the wayside, a process known as "creative destruction" (see Schumpeter (1911/1934, 1942) and Sobel and Clemens (2020)).

businesses in advanced OECD economies tend to be around 80 percent after one year and around 50 percent after five years. For Canada specifically, they provide corresponding figures of 85.2 percent and 50.5 percent respectively.[25] Also for Canada, Monk (2000) shows that 68 percent of businesses with fewer than 5 employees fail within 5 years, and 48 percent of business with 5 to 99 employees fail within five years.

Entrepreneurship and productivity growth

There are many studies that try to empirically document the link between entrepreneurship and productivity growth. The relationship is not easy to measure precisely due to difficulties in measuring both variables individually, although it is clearly positive.

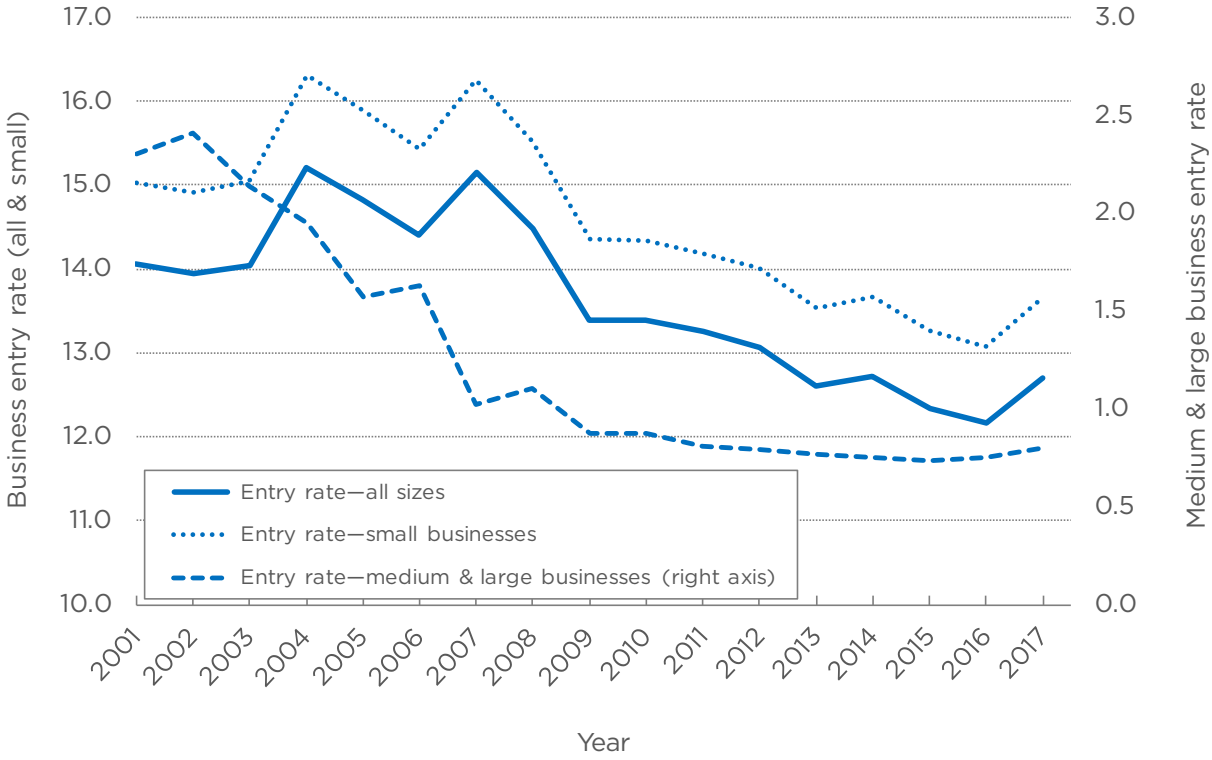
Wong (2015) contains the most comprehensive review of studies on the linkage between entrepreneurship and productivity. Wong begins by outlining and discussing the five ways entrepreneurial new firm entry impacts productivity: 1) the diffusion of new knowledge and technology to existing firms, 2) the creation of new industries, 3) competitive pressure on existing firms to innovate and complete with new entrants, 4) growth of new firms and the destruction/exit of less productive incumbent firms, and 5) failure and exit of new firms. In Wong's review of the over 40 studies on the issue, he finds that entrepreneurship is generally strongly, and positively, related to both the growth of labour productivity and total factor productivity, particularly when examining developed (OECD) countries. While no studies examine Canada specifically, even in the raw data there is a strong positive correlation of 0.76 between measures of Canadian multifactor productivity and the entry rate of new business firms with 20 or more employees.[26]

While the link between productivity growth and entrepreneurial activity is clear, the bad news is that measures show that entrepreneurial

[25] Accordingly, true start-up "business failure" rates appear to be around half to a third of the inverse of the survival rate (i.e., 100 percent minus the survival rate), depending on how failure is defined, because many new businesses are either sold, legally reorganized, or disbanded due to other reasons than a market driven failure. Interestingly, as Levie, Don, and Leleux (2011) argue, this true rate in the data is lower than the rate popularly, and casually, cited that only 50 percent survive the first year, which is based on misleading or undocumented sources, as they illustrate.

26 Defined as those with 20 or more employees per the description in the next paragraph combined with data from Statistics Canada, Table 36-10-0208-01: Multifactor productivity, value-added, capital input and labour input in the aggregate business sector and major sub-sectors, by industry <https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=3610020801>, as of July 1, 2020.

Figure 1: New Business Entry Rate in Canada, 2001-2017



activity, measured by new business formation, has been on a downward trend in most of the developed world, including Canada. Figure 1 shows this data for Canada from 2001 to 2017.[27] Specifically, the data show the number of new business entrants per 100 active private employer businesses each year, including separately the trends for small businesses (those with fewer than 20 employees) and other medium and large businesses (20 or more employees). By 2017, both had fallen from their initial values, with the medium and large firm entry rate a meager one third of its initial 2001 level. These meaningful reductions were clearly aided by the 2008/09 recession, but the downward trend, especially for medium and large firms, began earlier and both have stagnated or continued to fall since. Obviously, the additional economic downturn associated with the COVID-19 pandemic in 2020 will drive these numbers even lower once data is available for more recent years.

27 Data for figure 1 and table 1 are from. from Statistics Canada, Table 33-10-0164-01: Business Dynamics measures, by industry, <https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=3310016401>, as of July 1, 2020.

Table 1: New Business Entry Rate by Industry Sector in Canada, 2001 to 2017 change

Industry classification by sector	Sector size (percent of all businesses)	Entry rate 2001	Entry rate 2017	Percent change
All private	100.0%	14.1	12.7	-10.7%
Agriculture, forestry, fishing and hunting	4.9%	11.8	9.5	-23.8%
Mining, quarrying, and oil and gas extraction	0.8%	15.6	11.2	-38.6%
Utilities	0.1%	12.8	11	-16.8%
Construction	14.3%	14.1	12.5	-13.0%
Manufacturing	4.4%	9.6	7.1	-35.2%
Wholesale trade	4.3%	10.3	6.1	-69.4%
Retail trade	9.5%	11.2	9.2	-21.8%
Transportation and warehousing	6.9%	15	13.9	-8.6%
Information and cultural industries	1.2%	15.7	11.4	-37.4%
Finance and insurance	3.2%	13.2	13.5	2.2%
Real estate and rental and leasing	5.2%	13.3	12.9	-3.3%
Professional, scientific and technical services	14.7%	16.7	12.9	-29.7%
Management of companies and enterprises	0.6%	15.6	8.7	-78.5%
Administrative and support, waste management and remediation services	4.8%	16.3	11.7	-39.9%
Arts, entertainment and recreation	1.8%	13.3	10.1	-31.9%
Accommodation and food services	6.9%	14.5	11	-31.8%
Other services (except public administration)	9.9%	13.7	8.7	-57.9%
Unclassified businesses	6.5%	51.6	36.8	-40.0%

It is important to note that these reductions in entrepreneurship measured by new business entry are not isolated to just one or a few major industrial sectors. Table 1 shows the entry rates for 2001 and 2017, and the percentage change by industrial sector, along with data showing the importance of each sector in the economy (percentage of all businesses that are in that sector). Again, these are the number of new business entrants per 100 active private employer businesses in the year indicated. Every sector, with the exception of finance and insurance, has seen reductions in new firm entry. The reduction in new business entry in the largest industrial category, "professional, scientific and technical services," which com-

prises almost 15 percent of all firms and is obviously an industry closely related to productivity, was almost 30 percent over the period.

While a variety of factors are behind this trend of declining entrepreneurship rates in Canada, including demographic changes, policy reforms to promote entrepreneurship can help to reverse this trend.[28] One of the most compelling aspects of the literature on the relationship between productivity growth and entrepreneurial activity is that the strong positive relationship between them seems to clearly depend on the quality of a country's economic policies and institutions as the findings of Wong (2015), van Praag and Versloot (2007), and Bajona and Locay (2009) show. Less-developed economies and those that contain higher degrees of government central planning tend to have higher rates of "necessity" and "unproductive" entrepreneurship. In these economies, the lower rewards and overall difficulty of starting and operating a private business lead to many individuals having to engage in household production or lobbying and rent-seeking to survive.[29] The studies mentioned above generally use the Economic Freedom of the World (EFW) index by Gwartney, Lawson, Hall, and Murphy (2019), as it measures of the degree of reliance on market economic institutions.[30] On the opposite side of the spectrum, economies with strong market institutions have the strongest relationships between entrepreneurship and productivity growth, even for what might be considered mundane industries such as retail food and services (see Toh and Thangavelu, 2017).

Policy recommendations

Based on this literature, it is possible to develop a set of policy recommendations that can help increase the rate of innovative entrepreneurship and intrapreneurship that will raise productivity and prosperity.

[28] See Sobel (2018) for more information on these trends.

[29] See Sobel (2008, 2015) and Baumol (1990) for additional information on unproductive entrepreneurship and its link to economic freedom and institutions.

[30] A country's economic policies and institutions, as measured by the Economic Freedom of the World (EFW) index, fall into five overall area groups: the size of government; legal system and property rights; sound money; freedom to trade internationally; and regulation.

1. Consider the incentives (and disincentives) influencing entrepreneurial innovation

One of the most noted scholars in entrepreneurship, Kirzner (1973, 1997), stressed that profit provides incentives to engage in entrepreneurial discovery and innovation. The higher the potential rewards, the more experimentation and commercialization will take place. When high tax rates lower the return to entrepreneurial initiatives, this lowers innovation—so entrepreneurship (and thus productivity) can be increased by reducing the marginal tax rates on both small businesses and corporations. Strong protection of intellectual property through patents, trademarks, and copyrights also helps to generate higher rewards, which are temporarily protected from competition, and thus help to create larger "prizes" that incentivize the investments needed to discover and commercialize new ways of doing things.

2. Profits, losses, taxes, and subsidies: Create a level playing field

The profit and loss system is a quick and efficient mechanism that gives feedback to entrepreneurs as to whether their idea is valuable enough to consumers to cover the resource cost of production. Taxes and subsidies that distort the profit and loss system reduce the efficiency by which this mechanism operates. To promote entrepreneurship and productivity growth, government should try not to unduly interfere in the profit and loss signals of private markets through distortionary and selective taxes and subsidies. Government should also avoid interfering with the normal competitive process that discovers the efficient size and scope of firms, and level of industry concentration. Anti-trust policy, for example, which breaks up or constrains the growth of firms attempting to become more efficient in scale or scope or through acquisition of small firms with innovative ideas, risks imposing unintended and negative secondary effects on productivity growth.[31] Ensuring markets are open for competition, our next point, is the key factor to ensure that markets work relatively efficiently, even if they are concentrated, and this is a much better strategy than breaking up large firms through anti-trust laws.

[31] Bourne (2020) points out that in modern technology-based economies, rising industry concentration tends to be associated with robust productivity growth.

3. Lower barriers to ensure competitive markets

One of the key hurdles that affects entrepreneurs are regulations and other barriers that make it costly or more difficult to start a new business, particularly one that might compete with existing firms. As Calcagno and Sobel (2014) show, government regulations, permitting processes, and taxes with high compliance costs often function as fixed costs that make it difficult for small firms to open. Larger incumbent firms with tax and legal departments tend to have the upper hand. But since small firms are a key part of the entrepreneurial process, lowering these barriers, especially through policies that waive some of these obstacles for new firms (regulatory "sandboxes") can promote entrepreneurship.[32] A recent study by Geloso (2019) found that roughly one third of the Canadian economy is shut off from powerful competitive forces through barriers to entry. Making these markets open for competition by reducing the barriers to entry that were pointed out in that study can promote entrepreneurship and productivity growth. Geloso's chapter in this volume reviews his evidence on this subject and provides additional insights along these lines.

4. Reduce barriers to trade and exchange across borders

Freedom to trade and exchange, both within a country internally and across international borders, is essential for the development of economies of scale and the dissemination of ideas. As the father of economics, Adam Smith, pointed out, specialization is limited by the extent of the market. When producers can sell to a larger marketplace, they can increase specialization, and thus productivity. In large consumer markets, for example, small specialty stores are able to succeed. These same specialty stores would likely not be able to survive in a small town. When firms can find ways to reach out to larger marketplaces, and penetrate the markets of other states, provinces, or nations, and sell to a global marketplace, they can specialize more finely and increase the division of labour and productivity.

Similarly, the threat of international competition not only disciplines firms, but allows consumers and workers to benefit from productivity enhancements throughout the world and incorporate them into their daily lives and into the goods and services they produce for others. Thus, lowering domestic and international barriers to trade can increase entrepreneurship and productivity.

[32] See Knight (2019) for an introduction to regulatory sandbox design policy issues.

5. Be open to new ideas and immigrants

Immigrants disproportionately (to their share of the population) start new businesses.[33] Furthermore, as Zelekha (2013) shows based on data across 176 countries, these positive effects are magnified as the flow of immigrants grows. Immigrants bring new ideas helping to create an environment conducive to the discovery and commercialization of new combinations of resources and technology. Innovation often occurs when individuals from different backgrounds come together and share ideas. Sobel, Dutta, and Roy (2010), for example, find that a variety of measures of innovative entrepreneurship including business startups, patents, and venture capital in an area are all increased as the degree of cultural diversity grows. Helping to lower the barriers to the mobility of individuals in ways that increase immigration and cross-fertilization of ideas can foster entrepreneurial innovation.

6. Celebrate, respect, and don't discourage entrepreneurs and successful businesspeople

Prior to the 1700s, the most well-respected people in society were usually military, political, or religious leaders who obtained their riches through conquest, government power, and violence. An intellectual revolution subsequently occurred in which the "bourgeoisie"—the commercial class of traders, businesspeople, and owners of capital who earn their income through voluntary trade, entrepreneurship, and innovation—also began to be respected and honored. McCloskey (2006) argues this was the start of the "Great Enrichment"—the birth of a commercial society in which people were free to trade, innovate, and compete; and in which becoming wealthy from doing so was considered noble. This change in social structure has produced the longest sustained period of wealth creation in human history—one that is still ongoing.

Even in today's society, some people still wish to vilify successful businesspeople and entrepreneurs, view their rewards as unearned, and levy high taxes on capital, wealth creation, and business income. To promote entrepreneurship, we must instead work to ensure a society in which these individuals are celebrated for their contributions—one in which children aspire not just to be doctors or lawyers—but also to be successful entrepreneurs. While much of this is cultural, it is also reflected in the

[33] See Kerr and Kerr (2016) and Fairlie and Lofstrom (2015) for overviews, and Fairlie, Zissimopoulos, and Krashinsky (2010), Fairlie, Zissimopoulos, Krashinsky, and Kumar (2010), and Razin and Langlois (1996) specifically for Canada.

public policies we adopt regarding how heavily we regulate businesses and tax capital, wealth, and business income.

Conclusion

The rate of new business formation and entrepreneurship has been on a sustained downward trend in Canada. Given the close link between entrepreneurship and productivity growth, the consequences are clear. Policy changes that help to better encourage the initiation and expansion of new business ventures can help to reverse this trend, leading to faster productivity growth and greater prosperity for all citizens. Entrepreneurship can also be encouraged by ensuring that a career as a successful entrepreneur or business owner is viewed as worthwhile and respected way to contribute to progress and well-being.

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