SMALL BUSINESS, INNOVATION, AND TAX POLICY: A REVIEW

William Gale and Samuel Brown

Small businesses occupy a significant role in policy debates. This paper reviews evidence relating to tax policy, small businesses, innovation, and entrepreneurship. We provide background information on the small business sector and alternative business definitions. We examine evidence suggesting that job growth and innovation tend to occur in young firms, which typically start off small, rather than in small firms per se. We review how a wide variety of tax policies influence entrepreneurial activity. The key issue for policy makers going forward appears to be targeting incentives on young firms as opposed to small firms.

Keywords: taxation, innovation, entrepreneurship, small business

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I. INTRODUCTION

Small businesses occupy an iconic place in American public policy debates. Numerous and diverse public policies subsidize small businesses, and political leaders of both parties routinely voice their support for the sector. At least part of this support is based on the notion that a robust small business sector leads to innovation, jobs, and a healthy overall economy.

Not surprisingly, however, the economic issues surrounding small businesses and innovation are more complex and nuanced than any iconic designation would suggest. At the core of these issues are the questions of whether and how public policies should subsidize small businesses. On the one hand, economic theory prescribes that well-designed tax and spending programs, in the absence of externalities or public goods, should be neutral among types of investments and forms of business organization, leaving a free market to allocate resources efficiently between small versus large busi-
ness. On the other hand, small business owners may face special barriers to entry or to firm expansion, and many people assert that the small business sector is the principal engine of jobs, growth, and innovation. Either or both of these situations might justify preferential treatment for the small business sector. Recent proposals by Representative Dave Camp (R-MI), the chair of the House Ways and Means Committee, address a number of issues regarding the tax treatment of partnerships and S corporations.¹

Against this backdrop, our paper aims to provide a clearer understanding of how the federal tax code affects small business. In Section II, we provide background information on the small business sector, including alternative definitions of small businesses, the tax and income characteristics of small business owners, and the allocation of small businesses across different legal forms of business.

In Section III, we examine evidence suggesting that being small, in and of itself, does not confer a special advantage to businesses in job creation or innovation. Rather it is in young firms, which by definition start as small businesses, where job growth and innovation tend to occur. Focusing on young and innovative firms likely implies a different focus for policy interventions than focusing on small businesses per se.

Section IV describes various tax policies and other public programs that are aimed at helping small businesses. We document the panoply of existing tax incentives and the significant credit and lending programs that encourage small businesses to hire, expand, and innovate. At the same time, we note that when pro-small business subsidies or policies are phased out as firm size expands, they may unintentionally discourage businesses from expanding because expansion will lead to loss of those subsidies.

Section V analyzes the existing literature on the impact of tax policies on small business behavior, including (1) the entry, exit, and duration of entrepreneurial firms; (2) the impact on employment, investment, and firm growth; (3) the effect on research and experimentation spending, which presumably leads to innovations; (4) the effect on organizational form; and (5) the effects of taxes on the financing of new ventures. Section VI offers concluding remarks.

II. BACKGROUND ON THE SMALL BUSINESS SECTOR

Despite the common use of the term “small business,” there is no single definition of a small business. Alternative definitions exist in part for data reasons – no single data source has all of the relevant information – but also, importantly, for conceptual reasons. Businesses can be defined as small as a function of their employment, assets, gross receipts, or other characteristics, and for different policy purposes, different definitions may be most relevant.

The Small Business Administration (SBA) defines small businesses on the basis of a firm’s annual net receipts or employment. To be eligible for SBA assistance and for contracts reserved for small businesses, firms must have income or employment below the SBA’s thresholds. In most industries other than manufacturing and mining, the “size standard” is $7 million in average annual net receipts for the previous three years. For many manufacturing and mining industries, the SBA uses employment for its size standard: in general, businesses can employ no more than 500 employees on average during the past twelve months to be considered small. The SBA adjusts these standard definitions in several cases, depending on industry characteristics.

Using a small business definition of 500 employees, the United States had 27.9 million small businesses in 2010. About 6 million small businesses employed between 1 and 499 people (other than the owner). The remaining 22 million were non-employer firms (i.e., had no employees other than the owner) (Small Business Administration, 2012). In 2010, small businesses with employees accounted for 49 percent of aggregate employment and 43 percent of payroll, and they had 38 percent of business receipts net of taxes in 2007 (Statistics of U.S. Small Businesses, 2007, 2010).

A second common approach to identifying small businesses (and the characteristics of small business owners) is to use information from income tax returns. Historically, researchers have defined a small business owner as a tax filer who reports income or loss on Schedule C (non-farm sole proprietorships), Schedule E parts I or II (rental real estate, or partnerships and S corporations), or Schedule F (farming). This “old” definition is straightforward but not ideal. The definition includes owners of very large firms, such as partners in large hedge funds. It includes laborers who happen to work as consultants rather than as paid employees. It includes people who may have made or lost money pursuing hobbies. At the same time, it omits owners of small businesses that are organized as C corporations.

Knittel et al. (2011) use tax return data to refine these definitions in three steps. First, they identify business owners as a tax filer who meets two criteria: (a) at least $10,000 in business income or business deductions or at least $15,000 in the sum of business income and deductions, and (b) at least $5,000 in wages and salaries, interest paid, the

2 The U.S. Census and Bureau of Labor Statistics (BLS) generally do not report a firm’s annual receipts, but they do collect employment data. The SBA, therefore, uses its general manufacturing and mining threshold of 500 employees as the “standard” threshold for small businesses when reporting data.

3 The U.S. Department of the Treasury (Treasury), Tax Policy Center, Congressional Budget Office, and Joint Committee on Taxation have typically used pass-through status to classify an entity as a small business. For example, Treasury (2007) included a chapter that considered the importance of flow-through businesses to general business activity. Gale (2004) showed that few small business owners, according to this specification, faced the highest marginal tax rates. The JCT (2008) analysis of small business tax issues was more refined and used the IRS’s Statistics of Income to classify business organizations into size categories not by filing status, but by size of assets.

4 Later in the paper, we note the high evasion rate on certain forms of business income. All of the tax-return-related definitions of small businesses are dependent on reported income and so will understate the prevalence of small businesses, if those businesses are not reporting income in the first place.
cost of goods and services bought from other firms, rents, and other business deductions. Second, to create a broad definition of small business owners, they exclude from the business owner sample those filers with more than $10 million in the sum of gross receipts, rents, and portfolio income and those with business deductions in excess of $10 million. Third, to create a narrow definition of small business owners, they retain from the sample of small business owners only those who have active business income and whose business income provides more than 25 percent of their Adjusted Gross Income.

They find that of the 143 million tax filers in 2007, 44.3 million reported business income. About half of these did not pass the two-part test for a business owner, resulting in 24.2 million business filers. Under the broad definition, 14 percent of tax returns (or 20 million returns) qualified as small business owners in 2007 (Table 1). Small business income accounted for only 13.3 percent of these filers’ Adjusted Gross Income (AGI). Those with AGI less than $200,000 represented 89 percent of small business owners, yet they only accounted for 36 percent of small business income and 14 percent of their income came from their small businesses. Filers with AGI between $200,000 and $1 million accounted for 10 percent of small business owners and 47 percent of small business income, and almost 23 percent of this group’s income came from small businesses. For those above $1 million, small business income accounted for only 6 percent of total income.

Under the narrow definition, the population of small business owners decreases to 9.4 million. However, small business income makes up a much larger portion of total income: 46.7 percent. For filers with AGI less than $200,000 (i.e., 92 percent of small business owners), the share of small business income increases to 43 percent and accounts for 40 percent of their income. Those with AGI between $200,000 and $1 million earned 43 percent of small business income while representing 7 percent of small business owners, and small business income accounted for 56 percent of their total income.

In contrast, the older definition based solely on Schedule C, E, and F provides an estimated population of 34.7 million small business owners. Filers with AGI less than $200,000 represented 92 percent of small business owners, and only earned 24 percent of small business income. Filers between $200,000 and $1 million accounted for 37 percent of small business income, while representing only 7 percent of small business owners.

III. SMALL BUSINESS, INNOVATION, AND JOB CREATION

There is a long-standing debate about the role played by small businesses in job creation in the United States. Indeed, policies to support small businesses are often justified based on the assumed effects of small businesses on the economy. What seems relatively clear is that most employers are small businesses and many employees

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5 Knittel et al. (2011) use the first test (the De Minimis Activity Test) to separate actual businesses from those entities for which “business” does not yield significant income. The second test (the Businesslike Activity Test) separates businesses from entities that primarily provide labor or act as investment vehicles, which do not usually report significant deductions.
### Table 1
Small Business Owners and Income by Various Definitions

<table>
<thead>
<tr>
<th>Schedule C, E, and F</th>
<th>Small Business Owners</th>
<th>Small Business Income</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Returns Matching</td>
<td>Owners as Percent of</td>
</tr>
<tr>
<td></td>
<td>Definition</td>
<td>Total Returns</td>
</tr>
<tr>
<td></td>
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<td></td>
</tr>
<tr>
<td>AGI Level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$0–$200,000</td>
<td>31,851</td>
<td>22.3</td>
</tr>
<tr>
<td>$200,00–$1,000,000</td>
<td>2,557</td>
<td>1.8</td>
</tr>
<tr>
<td>$1,000,000 +</td>
<td>331</td>
<td>0.2</td>
</tr>
<tr>
<td>Total</td>
<td>34,739</td>
<td>24.3</td>
</tr>
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</table>

*Knittel et al. (2011), Broad Definition*

<table>
<thead>
<tr>
<th>AGI Level</th>
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</thead>
<tbody>
<tr>
<td>$0–$200,000</td>
<td>17,738</td>
<td>12.4</td>
<td>88.6</td>
</tr>
<tr>
<td>$200,00–$1,000,000</td>
<td>2,005</td>
<td>1.4</td>
<td>10.0</td>
</tr>
<tr>
<td>$1,000,000 +</td>
<td>273</td>
<td>0.2</td>
<td>1.4</td>
</tr>
<tr>
<td>Total</td>
<td>20,016</td>
<td>14.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

*Knittel et al. (2011), Narrow Definition*

<table>
<thead>
<tr>
<th>AGI Level</th>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>$0–$200,000</td>
<td>8,682</td>
<td>6.1</td>
<td>92.5</td>
</tr>
<tr>
<td>$200,00–$1,000,000</td>
<td>656</td>
<td>0.5</td>
<td>7.0</td>
</tr>
<tr>
<td>$1,000,000 +</td>
<td>51</td>
<td>0.0</td>
<td>0.5</td>
</tr>
<tr>
<td>Total</td>
<td>9,389</td>
<td>6.6</td>
<td>100.0</td>
</tr>
</tbody>
</table>
work for small businesses. According to Small Business Administration’s definition of small businesses, small businesses make up more than 99 percent of U.S. firms with employees and account for 49 percent of private sector employment (Small Business Administration, 2012).

What is more controversial is the role of the small business sector as a force in net job creation. Birch (1979, 1981) claimed that small businesses created most of the new net jobs in the country: between 1969 and 1976, he estimated that 66 percent of net new jobs were created by firms with fewer than 20 employees and 82 percent were created by firms with less than 100 employees. Using more recent data, the Small Business Administration Office of Advocacy (Small Business Administration, 2012) estimates that, of the 18.5 million net new jobs created in the United States between 1993 and 2011, small businesses (less than 500 employees) accounted for 11.8 million, or 64 percent. In 2011, businesses on net added about 2 million jobs, and small businesses of less than 500 employees accounted for about 1.3 million, or 64 percent, of these net gains.

The interpretation of these results is controversial, however. The SBA statistics are derived from a very broad definition of a small firm as one having 500 employees or less. If the appropriate definition of a small business involves a lower employment maximum, the numbers could be skewed by including larger companies. The Bureau of Labor Statistics (BLS) Business Employment Dynamics suggests this may be the case: from 1992 until the first quarter of 2012, firms with fewer than 20 employees on average accounted for about 20 percent of the historic net job gains. Expanding the threshold maximum to 49 would increase this proportion to 31 percent. It is not until one defines small businesses as firms between 1 and 249 employees that the proportion of private net jobs created by small businesses increases to 55 percent (Bureau of Labor Statistics, 2012).

Davis, Haltiwanger, and Schuh (1996) note three additional issues that muddy the relationship between firm size and employment growth. First is the size distribution fallacy, which occurs when the study does not follow individual firms and instead looks at aggregate numbers. If, for instance, a firm decreases in size from large in the first period to small in the second, it will cause aggregate employment figures in the small firm category to increase in the second period, thus giving the false appearance that small firms have grown in employment. Using longitudinal data on individual businesses can address this problem.

The second problem arises from not distinguishing between net and gross job creation. Net job creation is the difference between gross job gains and gross job losses. Davis, Haltiwanger, and Schuh (1996) use the example of three firms, one small and two large. The two large firms offset each other — one with a 200-employee gain and the other with a loss of the same size — while the small firm hires 50 new people. In the example, the small business was responsible for all net job gains but only 20 percent of gross job gains.

The third problem is regression to the mean and arises from certain methodologies for determining business size. Birch (1979, 1981, 1987) classified firm sizes in the first period (base-sizing), rather than in the latter period (end-sizing), or as an average between the two periods (mean-sizing). Friedman (1992) shows that this is a common statistical error. Okolie (2004) shows that base-sizing, mean-sizing, and end-sizing can
produce vastly different perspectives of net job flows. Viard and Roden (2009) and de Rugy (2005) note that base-sizing overstates apparent job gains at small firms and biases the results in favor of the conclusion that small businesses contribute to employment growth. Base-sizing issues are aggravated by temporary spikes in reported employment due to measurement error.

Davis, Haltiwanger, and Schuh (1996) used a longitudinal dataset of manufacturing plant-level data from 1972–1988 and found that the inverse relationship between employment growth and firm size disappeared after correcting for these problems: large manufacturing plants and firms were responsible for most new jobs and most jobs lost in the sector. Although smaller plants had greater gross job creation rates, they also had high gross job destruction rates, yielding net job creation rates that were not significantly different from larger plants. Neumark, Wall, and Zhang (2008), however, tested this conclusion with a different longitudinal dataset, also correcting for the common data misinterpretations of prior studies. Although they did find the existence of an inverse relationship for both manufacturing and service sectors, the magnitude was much smaller than Birch’s estimates.

The most recent critique of the small business sector as key to employment growth is also the strongest. While attention typically focuses on “small” business in relation to job creation, it appears that the true drivers of new jobs are young and innovative firms. Haltiwanger, Jarmin, and Miranda (2010) find, prior to adding age controls, an inverse relationship between firm size and net employment growth similar to Neumark, Wall, and Zhang (2008). However, the correlation disappears after controlling for firm age. The apparent inverse relationship between size and growth is due to the fact that nearly all young firms start small — that is, it is not “small-ness” that is driving net job creation, it is relative “new-ness.” Indeed, Haltiwanger, Jarmin, and Miranda (2010) find that although startups are responsible for about 20 percent of gross job creation, young firms also have high gross job destruction rates, and about 40 percent of the initial jobs created by startups are lost after five years by firm exit. If a young firm survives, though, it will tend to grow faster than its more mature small counterparts, which tend to be net job losers. Haltiwanger, Jarmin, and Miranda (2010) suggest that this implies an “up or out” dynamic for small and young firms that is consistent with economic models of creative destruction in the marketplace; as a result, policies that focus on size without accounting for this dynamic are “likely to have limited success.”

Hurst and Pugsley (2011) provide additional evidence on these topics. Using the 2005 Business Dynamic Statistics — a longitudinal establishment-level data set from the U.S. Census Bureau — they show that 87 percent of all operating firms are small by their definition of fewer than 20 employees. About 92 percent of young firms (less than 10 years of operation) and 86 percent of mature firms (10–25 years of operation) are small. They interpret this as implying that most firms do not grow even as they age; rather most firms start and stay small.

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* Aware of this limitation, the BLS uses a dynamic size classification methodology, whereby changes in employment are attributed to each size category through which a firm passes (Butani et al., 2006).
They support this result with firm responses from the 2003 Survey of Small Business Finances.\textsuperscript{7} Between 2002 and 2003, 14 percent of all businesses with fewer than 20 employees added at least one employee; even among young small firms, only 19 percent added at least one employee. The numbers, however, do increase as the horizon grows longer: 21 percent of small added at least one employee between 2000 and 2003, and 28 percent of young small firms added at least one employee. About 61 percent of young small firms had no change in employment over that three-year period. For these reasons, Hurst and Pugsley argue that employment growth is not common for the typical small business.

They also consult the Kauffman Firm Survey (KFS) to assess the magnitude of employment change among young firms.\textsuperscript{8} According to the survey, only 4 percent of surviving firms added more than 10 employees between 2004 and 2008 and only 11 percent added more than five; 58 percent did not add any employees, suggesting that even among young firms, employment growth is not the norm.

Hurst and Pugsley (2011) also provide evidence that most small businesses are not engines of innovation. First, using the Statistics of U.S. Businesses, they show that over two-thirds of American small businesses can be grouped into just 40 industries. These industries are not generally considered technologically innovative; rather, they include businesses such as restaurants, small professional practices, skilled craftsmen, and shop keepers.

Second, they offer evidence from Kauffman Firm Survey showing that just 2.7 percent of small businesses in the survey had applied for patents and less than 6 percent of new firms applied for patents, trademarks, and copyrights during their first few years in existence. Understanding that these measures may not be all-encompassing since firms may innovate and not patent their inventions, Hurst and Pugsley also reveal that less than 8 percent of new businesses reported they had developed any proprietary business practices or technology during their first few years of business.

\section*{IV. PUBLIC POLICIES TOWARD SMALL BUSINESSES}

Numerous public policies favor small business either directly or indirectly (Mar-ron, 2011; Toder, 2007, 2008a, 2008b). Some of the largest tax benefits that accrue to


\textsuperscript{8} The Kauffman Foundation administers the KFS, which is a longitudinal study that follows 4,928 firms randomly sampled from the Dun & Bradstreet database of new firms in 2004. To ensure that the sample included only new firms, Kauffman limited the same to firms that had at least one of the following activities in 2004, and none in 2003: paying state unemployment insurance, paying FICA, have legal status for the business, use an employee identification number, or use schedule C to report business income on an individual income tax return. Firms have been surveyed for each year since 2004 and the latest published year of data is 2010. The next year of data was released in March 2013. The KFS oversamples businesses that are high technology or that employ many research and development workers, and provides weights to make the sample representative of all new firms in the economy.
small businesses may not be seen as “small business” policies at all. For example, a small business organized as a pass-through organization avoids the double taxation of corporate income. In addition, the preferential treatment of capital gains relative to ordinary income helps small business owners, as the accrual of equity in their company is not taxed until or unless the company is sold, and even then it is taxed at preferential rates.

The major tax provision directly affecting small business is the expensing of investment. Normally, when a business purchases a piece of equipment, it must depreciate the cost of the investment over time in accordance with Internal Revenue Code Section 167 and 168 and the Modified Accelerated Cost Recovery System. Section 179, however, allows small and medium-sized businesses to fully deduct the cost of purchasing equipment (and software through the 2013 tax year) in the year in which the purchases were made, provided that the equipment (or software) will be actively used in its trade or business. In 2013, businesses could deduct up to $500,000 of such purchases, but the deduction is phased out, dollar for dollar, if total purchases exceed $2 million. The phase-out means that this provision primarily applies to small and medium-sized businesses. The deduction is scheduled to drop to $25,000 after 2013, and the deduction will start to phase out at $200,000. The immediate expensing offered by section 179 raises the net present value of the deductions that can be taken relative to depreciating the investment over time. It effectively increases the profitability of investment, potentially increasing small business purchases of equipment and software.

A variety of other tax provisions provide additional benefits, including the use of cash-basis accounting, exemption from the corporate AMT, amortization of business start-up costs, tax breaks on investments in start-up companies, credits for setting up retirement accounts or making businesses more accessible to disabled individuals, and exemption from uniform capitalization rules (Burnham, 2012; Gale and Brown, 2013; Gravelle, 2012; Gravelle and Lowry, 2012; Marron, 2011; Guenther, 2009; Toder, 2007, 2008a, 2008b).

Other tax policies favor large businesses, including specialized tax breaks like oil depreciation allowances. These targeted breaks for large companies offset some of the relative subsidization of small businesses. In addition, at least two important tax provisions have significant effects on entrepreneurship and innovation, even if they are not targeted toward small or young companies.

First, the research and experimentation credit (IRC Section 41) establishes a baseline level research proportion (at least 50 percent of qualified research expenses) and subsidizes 20 percent of qualified research expenditures above that amount. Covered expenses are wages (for those engaging in, directly supervising, or otherwise supporting qualified research), supplies linked to research activities, 65 percent of contract research

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9 The tax differential between corporate and non-corporate form goes beyond double taxation, including using pass-through losses to offset non-business personal income and deferring tax liability within the corporate form.
payments to a third party (regardless of success of the project), and 75 percent of basic research payments made to non-profit organizations and institutions.\(^{10}\)

Second, the qualified production activities income (QPAI) deduction, authorized in section 199, allows manufacturers to deduct up to 9 percent of domestic production gross receipts in excess of the cost of the goods sold and other expenses, losses, and deductions that are attributable to those receipts. Domestic production gross receipts are any receipts that are derived from selling, renting, or leasing (or otherwise disposing) of property that was produced, extracted, or grown predominantly in the United States.\(^{11}\)

Besides the tax provisions noted above, the federal government supports small business through numerous public policies and programs. The largest and most significant reside in the Small Business Administration, which acts as a “gap lender.” Various programs subsidize or otherwise facilitate credit for small businesses that would otherwise be unable to obtain credit, financing to purchase fixed assets, short terms loans, and private equity financing of small business, among other goals.

The Small Business Innovation Research (SBIR) program requires federal agencies with extramural research and development budgets exceeding $100 million to set aside at least 2.5 percent of their research and development budget for contracts or grants to small businesses. Five agencies — the Department of Defense, National Institutes of Health, National Aeronautics Space Administration, Department of Energy, and the National Science Foundation — account for 96 percent of the program’s expenditures.

Furthermore, small businesses are exempt from many federal laws and regulations. Companies with fewer than 50 employees are exempt from the Family and Medical Leave Act (which regulates unpaid leave) and the Patient Protection and Affordable Care Act of 2010 (President Obama’s health care reform act). Those with fewer than 20 employees are exempt from the Age Discrimination in Employment Act and Title VII of the Civil Rights Act of 1964 (prohibiting discrimination by race, color, religion and sex). Those with fewer than 15 employees are exempt from Title I of the Americans with Disabilities Act (prohibiting employment discrimination against individuals with disabilities). Moreover, larger firms face more stringent environmental regulation and face greater reporting requirements to comply with EPA regulations (Congressional Budget Office, 2012).

\(^{10}\) The calculation differs based on whether the company was traditional (i.e., in existence before 1984 or had at least three taxable years between 1983 and 1988) or a start-up (i.e., not traditional). The tax code also provides an Alternative Simplified Credit for firms that cannot substantiate research expenses for the other two credits.

\(^{11}\) Major exceptions include selling food or beverage produced at the establishment, transmitting electricity, natural gas, and potable water, and selling, leasing, or renting out land. Domestic production in Puerto Rico was allowed in ATRA for 2012 and 2013. IRC Section 199 was created in the American Jobs Creation Act of 2004 after a World Trade Organization ruled that the United States was explicitly subsidizing exports by excluding foreign trade income from taxable income. The Congress repealed the foreign trade income exclusion and created the QPAI deduction, which encourages domestic production and implicitly subsidizes exports over imports since importers do not receive the same tax benefit; since it applies to domestic producers who do not export, it may not run afoul of WTO rules against export subsidies.
Along with the tax subsidies aimed at small businesses, the roles of compliance and evasion among small business are also relevant to understanding the impact of federal taxes on the small business sector. The burden of complying with the tax system is significant. The IRS estimates that owners of small businesses (defined as less than $10 million in assets) spent between 1.7 and 1.8 million hours and around $15 billion in out-of-pocket expenses in preparing and filing tax returns in 2002 (DeLuca et al., 2007). Using estimates from Toder (2007) that value small business owners’ time at $45.40 per hour, the estimates above imply a total compliance burden of about $100 billion per year.

The compliance burden — including the accounting and paper work costs of filling out tax forms — is larger relative to business size for small businesses than for larger ones (Slemrod and Venkatesh, 2002). DeLuca et al. (2007), using an estimate of the value of small business owners’ time of $25 per hour, estimate that compliance costs fall from around 150 percent of gross receipts for firms with gross receipts lower than $10,000, to around 10 percent for those between $50,000 and $100,000, and fall further to 0.3 percent for firms with receipts over $1 million.

Small businesses account for a large share of tax evasion in the United States. According to detailed 2001 data provided by the Internal Revenue Service, business income accounted for about 55 percent of all underreporting of income in the income tax. The most recent available data, from 2006, provide approximately the same overall business share of underreporting of income but do not provide the detail discussed below, all of which refers to 2001 data. About 43 percent of all business income that should have been reported on the income tax form was not reported. This figure is a weighted average of the underreporting rate for nonfarm proprietor income (57 percent), farm income (72 percent), rents and royalties (51 percent) and Partnerships, S Corporations and Trusts (18 percent) (Internal Revenue Service, 2006). Individuals earning income from businesses have a greater opportunity to underreport income since their earnings have fewer third-party enforcement mechanisms. By comparison, in 2001, the IRS estimated, for example, that for wages and salaries — income sources subject to withholding and third party reporting — the underreporting rate was 1 percent.

V. EFFECTS OF PUBLIC POLICIES ON SMALL BUSINESS AND INNOVATION

A. Entrepreneurial Entry, Exit, and Duration

The most fundamental choice for a potential entrepreneur is whether to enter the business sector in the first place. Bruce (2000, 2002) argues that, if the key decision is whether to enter (or leave) self-employment, the relevant tax variables to consider relate to the average tax rate in each option. If the decision examined is whether to expand or contract one’s hours associated with self-employment, the relevant variables are the marginal tax rate in the two sectors.

Bruce (2000) defines the tax rate differential as the tax rate an individual would face in a wage and salary position minus the one faced in self-employment. Since he can only
observe either the actual wage-and-salary or the self-employment earnings and tax rate for each individual for each year, depending on the sector, he estimates the individual’s earnings and tax rate in the alternative sector for each year using regression analysis. He finds that an increase in the average tax rate differential of 5 percentage points raises the probability of transitioning to self-employment in a given year by 0.4 percentage points. This implies that facing a lower average tax rate in the self-employment sector relative to the wage and salary sector will induce people to move into self-employment. However, the 0.4 percentage point effect is small compared to the sample average transition to self-employment probability of 3.3 percent per year. In contrast to the average tax rate results, Bruce shows that increasing the marginal tax rate (MTR) differential by 5 percentage points reduces the average transition into self-employment by 2.4 percentage points. This implies that individuals facing a lower MTR in self-employment than in the wage and salary sector are less likely to transition to self-employment. The MTR effect is quite large relative to a base transition probability of 3.3 percent per year. While the direction of the effect may seem counter-intuitive at first, the conclusion is consistent with a view that people move to self-employment in part because business ownership may provide opportunities to avoid or evade taxes.

Gentry and Hubbard (2000) also examine the impact of tax policy on entry into self-employment. Using PSID data from 1979 to 1993 and focusing on heads of households between ages 18 and 60, they estimate the determinants of entry into self-employment, examining the marginal tax rate as well as the convexity of the tax code — which they define as the difference between the average marginal tax rate faced by a successful self-employed individual and the average MTR faced by an unsuccessful one.12 They find that tax code convexity reduces entry into self-employment. They estimate that a 5 percentage point increase in the spread between the MTR on successful and failed projects reduces the probability of entry in a given year by 0.67 percentage points, from a baseline probability of entry of 3.26 percent. Similar results apply for increases in the spread between the ATR on successful and failed projects. Their results imply that the tax code imposes a “success” tax, since the government claims a larger share of payoffs for successful entrepreneurs. Gentry and Hubbard (2005) expand on this work by looking not only at self-employment transitions in general, but examining entry to particularly innovative new industries or occupations.13 They show that the entry rate

12 To construct these tax rate estimates, they simulate the income of hypothetical successful and failed entrepreneurs for each sample member by assigning various probabilities of success to self-employed individuals and multiplying it by their wage income. For instance, they consider four possible “successful” entry outcomes in which the individual’s labor income increases by 25, 50, 100, or 200 percent. Each of these scenarios is assigned different probabilities, the marginal tax rate is calculated in each scenario, and an average marginal tax rate is calculated. The same approach is created for “unsuccessful” outcomes, with labor income falling by 10, 25, 50, and 75 percent in the different scenario.

13 They define innovative industries to include those in machinery, transportation equipment, scientific instruments, chemicals, petroleum and coal, rubber and plastics, commercial research, development and testing labs, and computer programming services, while innovative occupations include computer specialists, engineers, scientists, science and engineering technicians, science teachers and operations and science researchers.
into innovative occupations and industries is lower than in the overall self-employment sector. They also find that higher marginal tax rates and a more convex tax system reduce entry into self-employment for people who were previously employed in innovative industries and occupations.

Cullen and Gordon (2007) present a theoretical examination of the effects of the tax code on an individual’s decision to move to self-employment. For a high-income, risk-neutral investor, a graduated tax rate discourages entrepreneurial activity, since it taxes gains more than it subsidizes losses, while the payroll tax phase-out creates a subsidy to risk-taking by making the tax schedule less convex. For risk-averse individuals, a progressive tax structure can generate more entrepreneurial activity and risk-taking, since progressive taxes provide a form of insurance by imposing lower average tax rates when income is low and higher average tax rates when income is high. For risk-neutral or risk-seeking individuals, however, progressive taxation (with less than full offset) will reduce entrepreneurial activity.

While the studies above examine the determinants of entry into small and innovative businesses, Bruce (2002) examines the determinants of exit from self-employment. Bruce finds that entrepreneurs with higher expected ATRs in self-employment (holding wage and salary ATR constant) are less likely to exit self-employment.

In a related paper, Gurley-Calvez and Bruce (2008) examine the duration of entrepreneurial spells, using panel data from 1979 to 1990 that includes over 200,000 tax returns. Entrepreneurial exit is marked as having entrepreneurial activity in one year but not in the following one, where entrepreneurial activity is defined by having schedule C income (sole proprietorship), income from partnerships or royalties, or rental income. The authors observe the tax rate for individuals in each sector (wage and entrepreneurial) and use TAXSIM to estimate the tax rate they would have faced in the alternative sector. They find that a 1 percentage point decline in the marginal tax rate on wage income reduces entrepreneurship spells by 16.1 percent for single filers and 12.7 percent for married ones, while a similar cut in the MTR on business income increases spells by 32.5 percent and 44.8 percent for single and married filers, respectively. Given these results, an across-the-board cut in tax rates would have a net positive impact on entrepreneurial spell length.

**B. Financing of Start-Ups**

Financing is a crucial consideration for any business, but especially for start-ups. The unique circumstances of start-ups often distinguish their financing from that of more traditional firms. Since startups typically have few assets and are not profitable for the first years of their existence, traditional debt financing is rarely available (Denis, 2004). Furthermore, entrepreneurs bear an enormous amount of risk, at least until an IPO occurs or the company is acquired (Hall and Woodward, 2010). Many start-ups face borrowing constraints, but the notion that “opaque start-ups” are left to starve for financing on a diet of the owner’s credit cards and friends’ and family’s largesse is a “myth from the classroom” (Robinson, 2012; Evans and Jovanovic, 1989; Holtz-Eakin, Joulfaian, and Rosen, 1994).
Using data from the Kauffman firm survey, Robinson (2012) and Robb and Robinson (forthcoming) present a more nuanced picture. Startups are typically grouped by stage of development: seed, early stage, expansion, or later stage. The primary sources of seed financing are owner and insider equity and debt, and personal bank loans, often with the owner’s house used as collateral. With the advent of crowdfunding (recently allowed by the Jumpstart Our Business Startups Act, or JOBS Act), outsider equity may play a larger role in the financing of startups, and recent evidence suggest that venture capital funds are starting to invest in earlier stages of startups (CB Insights, 2012; Fenwick and West, 2012).

Once a product is developed and the market potential of the product is less uncertain, startups may start to gain outsider equity through angel investors and venture capital funds. Angel investors are wealthy individuals who make investments in young companies, providing the needed capital to advance to a later stage of growth. Venture capital firms mostly provide funding to early stage, expansion, and later stage startups before a startup issues an IPO. Formal bank lending is often a significant part of financing at every stage of business development.

Tax policy affects financing issues in two principal ways: the tax deduction for interest payments, which is a normal operating part of the income tax, and the preferential rate on capital gains, which affects venture capital. In principle, taxes can affect both the supply and demand for venture capital. In practice, the evidence seems to suggest that supply effects are weak but demand effects are present. Poterba (1989) shows that most suppliers of venture capital are not even affected by changes in the individual income tax treatment of capital gains, interest, and dividends. Likewise, Gompers and Lerner (1998) show that venture capital commitments by taxable and tax-exempt investors are roughly equally responsive to changes in capital gains tax rates, a trend that would not occur if the supply of venture capital funds were tax-sensitive. However, both Poterba (1989) and Gompers and Lerner (1998) find that the demand for venture capital among entrepreneurs increases with reductions in capital gains tax rates, as compensation via corporate stock can be substituted for wage and salary compensation.

C. Employment, Investment, and Firm Size

Holtz-Eakin (1995) argues that subsidies of small businesses through the tax code (and by inference other public policies) effectively constitute a tax on growth since the preferential treatment phases out and is eventually eliminated as a firm expands. That is, subsidies to encourage small business entry may actually discourage their growth.

Carroll et al. (2000a,b) examine a sample of sole proprietors taken from income tax returns, based on pre- and post-1986 income data. Carroll et al. (2000a) construct estimates of the user cost of capital and examine how tax reform affected the user cost and how the changes in the user cost affect firms’ willingness to make capital investments. They find that increasing marginal tax rates of each entrepreneur by 5 percentage points would reduce the mean likelihood of making any positive investment by 10.4 percent, from 33.5 percent to 30.0 percent. Carroll et al. (2000a) look at how the same
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tax reform affects an employer’s labor demand choices. They find that lowering the employer’s marginal tax rate by 10 percent increased the mean probability of hiring workers from 21.5 percent to 24.1 percent.

Carroll et al. (2000b) estimate the effect of the Tax Reform Act of 1986 on the growth of gross receipts in small business firms. The authors find a large negative effect of the marginal tax rate on sole proprietor gross receipts. However, this may reflect shifts from the corporate to the non-corporate or subchapter S corporate forms among closely held companies and may not reflect the effect of the marginal tax rate on business income.

Acemoglu et al (2013) and Chatterji, Glaeser, and Kerr (2013) provide further analysis of how policies toward innovative and entrepreneurial businesses can increase overall economic activity.

D. Innovation and Risk-Taking

Both the Research and Experimentation (R&E) tax credit and the Small Business Innovation Research (SBIR) program may influence innovation among small businesses. Most studies of the R&E credit examine the impact on R&E spending, as opposed to more direct measures of innovation, and most focus on large business. Hall and Van Reenen (2000) conduct a meta-analysis of studies of the credit and find that the tax price elasticity of total R&E spending was about 1 during the 1980s. More recently, Rao (2010) provides results along similar lines. Gupta, Hwang, and Schmidt (2011) examine the effect of the 1989 R&E credit reform on R&E spending intensity (R&E spending divided by sales), using data from 1981 through 1995. They find that the median R&E intensity of high-tech firms that qualified for the credit increased by about 16 percent in 1990–1994, relative to the 1986–1989 period.

The studies noted above focus on all firms. Since small firms claim just a small portion of the credit — for example, in 2008, firms with less than $1 billion in assets claimed just 1.8 percent of the credit — it is difficult to gather data to evaluate the effect of the credit on such firms. This is in part due to the fact that the R&E credit is non-refundable, which means that firms that do not have taxable income (mostly small and/or young firms) are not eligible for the credit. Nonetheless, Park (2011) shows that small firms spend a higher fraction of their revenue on R&E than large firms.

There is limited evidence on the effectiveness of the SBIR program. Lerner (1996) examined the impact of SBIR on employment and sales growth in a set of 1135 firms. He compared Phase II recipients of SBIR grants to a matching sample of non-recipient firms (including some who received Phase I funding) and found stronger growth in sales and employment for recipient firms in the 1985–1995 period compared to non-recipient ones, controlling for sales and employment in 1985. He found that the positive impacts of the program were only significant in geographic areas where venture financing was already present. For instance, employment increased by 47 percent in firms located in the venture-capital heavy areas, while employment decreased by 5 percent for the non-awardees. (In other areas, the sectors grew by 13 percent and 10 percent, respectively.) The author also compared growth in Phase I firms to non-awardees, to ensure that the
SBIR program is not simply identifying superior firms and found that the growth of these two sets of firms did not differ significantly (both lagged behind Phase II award recipients).

Cullen and Gordon (2007) develop a model that incorporates numerous features of the tax code and examines how previous tax reforms affected entrepreneurial risk-taking. They find that the Tax Reform Act of 1986 lowered personal tax rates relative to the capital gains tax rate, which resulted in entrepreneurs being responsible for more of their losses, yet keeping less of their capital gains, thus discouraging risk-taking. They also estimate that entrepreneurial risk-taking falls by 14 percent due to the 2001 and 2005 tax reforms, due to the drop in personal income tax rates, which reduced the risk-sharing aspect of the tax system. They also examine more canonical tax reforms such as broadening the base or moving to a flat tax. They conclude that broadening the base by closing loopholes would decrease entrepreneurship by as much as 22 percent relative to the 2005 benchmark since a smaller fraction of business losses would be deductible and because the Section 172 provision, which allows for net operating losses to be carried back and forward, would be discontinued. Furthermore, a 19 percent flat tax (which would leave revenue unaffected) would increase risk-taking among all income quintiles, except for the top one, resulting in an overall increase in risk-taking of 17 percent from the 2005 benchmark.

E. Organizational Form

Because of the different taxation of C corporations versus pass-through organizations, tax policy can affect the organizational form of entrepreneurial ventures (JCT, 2008; Burnham, 2012). Burnham (2012) is the most complete study of this issue to date. He finds that although taxes have shifted to favor non-corporate organizational forms since the early 1980s, tax considerations alone do not explain more than about a quarter of the secular shift toward pass-through organizations.

Mackie-Mason and Gordon (1997) examine the responsiveness of organizational form choices to the relative taxation of corporate and personal income taxes during the 1959 to 1986 period. They find little impact of taxation on the share of capital in C corporations. However, as Goolsbee (1998) points out, almost all of their variation is due to changes in the personal income tax, and responsiveness to changes in corporate taxes could differ. Goolsbee (1998) examines this question looking at data from 1900 to 1939. Although some organizational forms that exist today (e.g., S corporations) did not exist in the sample period, his analysis has the advantage of exploring a time period that contains more variation in the corporate tax rate, relative to personal income tax rates. His results, nevertheless, suggest that corporate income taxes have only a small impact on organizational form choices.

The Tax Reform Act of 1986 significantly reduced the top tax rate on corporate income as well as individual income, and closed loopholes in the treatment of business income and both the corporate and non-corporate sector. Gordon and Mackie-Mason (1990) argue that the changes were complex and that, depending on a firm’s circumstances,
the changes might lead to a preference for corporate or non-corporate status. They find that loss operations tended to shift to the corporate sector after 1986 and profit-making operations tended to shift to the non-corporate sector. Carroll and Joulfaian (1997) use a panel of corporate tax returns from 1985 to 1990 and find that increases in the tax differential between corporate and non-corporate businesses raised the probability that a C corporation converted to an S corporation.

Two papers have used state-level variation in taxes. Goolsbee (2004) shows that increasing the differential between corporate and non-corporate activity raises the sales, employment, and number of firms accounted for by non-corporate entities. One possible concern with cross-sectional data exploiting state-level variation in tax rules is that the results could be capturing other state-specific effects and mislabeling them as tax effects. However, Luna and Murray (2010) use panel data from the states and document similar sensitivity. Edmark and Gordon (2013) find similar sensitivity of organizational form choices using data from Sweden.

VI. CONCLUSION

Federal policies tend to favor and support small businesses over larger enterprises, including tax incentives and programs operated or administered by the Small Business Administration. The support is founded on the notion that small businesses are integral to the U.S. economy, job growth, and innovation, yet the evidence is mixed about the efficacy of this support as studies have started to question whether the size of a firm or its age is the correct variable to analyze.

Our primary conclusions run along two dimensions. First, in terms of policy, it is crucial for policy makers, the media, and the public to understand that issues regarding innovation and entrepreneurship are conceptually distinct from issues regarding small businesses. Second, more research is needed to understand the distinctions of small business versus entrepreneurial business and to understand the impact of taxes and other policies, on start-up, financing, investment, and organizational form of entrepreneurial enterprises. The literature on small business entry and exit provides, at best, mixed evidence as to what extent tax policy influences an individual’s entry into or exit from entrepreneurship. The impact of public policies on innovation is even less well understood. As information has become more available and as tax policy has changed dramatically in the past quarter-century, further analysis would appear to be very profitable for understanding the small business sector, the entrepreneurial sector, the role of innovation, and the appropriate stance of federal policy.

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