Small Business, Innovation, and Tax Policy: A Review

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ABSTRACT

Small businesses occupy an iconic place in American public policy debates. This paper discusses interactions between the federal tax code, small business, and the economy. We summarize the characteristics of small businesses, identify the tax provisions that most affect small businesses, and review evidence on the impact of tax and other policies on entrepreneurial activity. We also examine evidence suggesting that it is young firms, not small ones, where job growth and innovation tend to occur. Policies that aim to stimulate young and innovative firms are likely to prove different than policies that subsidize small businesses.

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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 healthy 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 business. 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 our 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, this 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

[1]See http://waysandmeans.house.gov/uploadedfiles/small_biz_summary_description_03_12_13_final.pdf.

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 entry, exit, duration of entrepreneurial firms; the impact on employment, investment, and firm growth; the effect on research and experimentation spending, which presumably leads to innovations; the effect on organizational form; and the effects of taxes on the financing of new ventures. Section VI offers concluding remarks.

II. Background on the Small Business Sector

A. Defining small business

Despite the common use of the term "small business," there is no single all-encompassing 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.

Small Business Administration Definition

The Small Business Administration (SBA) was created by Congress in 1953 with the goal of supporting small businesses, broadly defined as those that are "independently owned and operated and which [are] not dominant in [their] field[s]of operation."[2] To implement this goal, SBA uses various definitions for small businesses to reflect industry characteristics in which the business operates.

SBA industry definitions of small businesses use either a firm's annual net receipts or its employment. To be eligible for SBA assistance and for contracts reserved for small businesses, firms must have income or employment below the SBA's threshold. In most industries other than manufacturing and mining, the "size standard" is $7 million in average annual net receipts for the

[2] The broad definition of small businesses is provided in the Small Business Act of 1953.

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. For example, in some service and retail industries (including computer programming firms, architectural firms, grocery stores, and department stores), the SBA has increased the annual receipts threshold to $35.5 million. Similarly, employment thresholds can vary, too. Petroleum refineries and wireless communication carriers can employ as many as 1500 employees and still be considered small while merchant wholesalers can employ no more than 100 employees and still qualify.

Using a small business definition of 500 employees, the United States had 27.9 million small businesses in 2010. [3] 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) (SBA 2012). Small businesses with employees accounted for 49 percent of aggregate employment and 43 percent of payroll in 2010 and 38 percent of business receipts net of taxes in 2007.[4]

Definitions based on tax returns

A second common approach to identifying small businesses (and the characteristics of small business owners) is to use information from income tax returns. From a tax perspective, a small business can be organized as a sole proprietorship, a partnership, a limited liability company (LLC), an S corporation, or a C corporation. These alternative legal forms differ in their consequences for taxes, liability, and other factors.

Sole proprietorship refers to unincorporated businesses that are owned and run by a single individual. The owner receives all profits, and assumes all liabilities of the company. For sole proprietorships, net business income or loss is included in the owner's adjusted gross

[3] The U.S. Census and Bureau of Labor Statistics 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.

[4] Data for 2010 is from the 2012 Survey of Small Businesses (SUSB). Although the US Census has finished the 2012 economic census, the first statistics will not be publicly available until December 2013. Data for 2007 is from the 2008 SUSB.

income reported on the individual income tax return and subject to individual income tax. Sole proprietors are also responsible for payroll tax on their profits from the business, in addition to any payroll tax they must remit for employees.[5]

Partnerships, LLCs and S corporations have more than one owner, and are collectively referred to as "pass-through" entities. Unlike C corporations described below, they do not pay a separate business-level tax on their profits. Instead, business profits and losses are allocated to owners, who add the profits to (subtract the losses from) income that is subject to individual income tax.

Partnerships are unincorporated businesses that have at least two owners. For tax purposes, partnerships are deemed to distribute all profits, losses and credits to their owners, where they are taxed as part of the partners' individual income. General partners are considered to be self-employed under the law and thus are liable for SECA taxes from partnership income, similar to sole proprietors. Distributions to limited partners, however, are subject to only income taxes, not payroll taxes.

An S corporation is a corporation that chooses to be subject to the regulations contained in Subchapter S of the Internal Revenue Code. It is different from a C corporation in several respects: it cannot have more than 100 shareholders, it can only have one class of stock, and shareholders must be residents of the United States and cannot be a for-profit corporation or a partnership (trusts, estates, and non-profit corporations, however, are permissible).

An LLC (or limited liability company) is an unincorporated association that shares characteristics of both corporations (e.g. limited the financial liability for members) and partnerships (e.g. pass-through income taxation). LLCs by default are taxed as partnerships but they can choose to be taxed as sole proprietorships, S corporations, or C corporations; they also require less record keeping than a C or S corporation and can distribute income, losses, and credits according to an operating agreement, unlike an S corporation which must make distributions based on company ownership.

Like partnerships, LLCs and S corporations do not pay federal income tax as entities: the company's profit and losses and credits are passed along to owners and taxed as part of their

[5] Sole proprietors pay Self-Employment Contributions Act (SECA) taxes on net income below the Social Security wage base. SECA taxes function like the Federal Insurance Contributions Act (FICA) taxes under a traditional employer-employee relationship. The owner can deduct half of SECA taxes as an adjustment to his or her gross income, similar to how an employer can deduct its share of FICA taxes as a business expense.

individual income. Unlike most partnerships, the owners' allocated shares of profits from LLC's and S corporations are not automatically assumed to be subject to SECA taxes. Rather, distributions are similar to those made to limited partners (LP) in partnerships: since the LP provides capital and not labor (or at least not without a separate pay statement that would then be subject to SECA taxes), he or she is not liable for SECA taxes on his or her partnership distribution.[6] This creates an incentive for owner-employees to understate their wages, which are subject to income and payroll tax, and thereby overstate their profits, which are only subject to the owner-employee's income tax. To counter this, the IRS applies as a "reasonable wage" standard, which is the wage the owner-employee would be willing to accept for performing the same job function for another company. If the IRS determines that the wages are not reasonable, then it may categorize a distributed profit as a wage and assign a penalty to the owner-employee.

Subchapter C corporations are taxed according to the corporate rate structure (Table 1). The corporate tax applies graduated tax rates of 15, 25, and 34 percent on corporate taxable income (i.e. total receipts less cost of goods sold less allowable deductions) below $100,000. For taxable income between $100,000 and $335,000, the marginal rate increases to 39 percent, which recaptures the revenue lost from taxing the first $100,000 of income at15 and 25 percent instead of at 34 percent. By the time the corporation has earned $335,000 in taxable income, its average tax rate is 34 percent, which it maintains until $10 million in income. Between $10 million and $15 million, the marginal corporate tax rate is 35 percent. A 38 percent rate recaptures the revenue lost to the 34 percent corporate tax rate between $15 million and $18.3 million, above which the corporate tax rate is effectively a flat 35 percent.

A C corporation may choose to distribute profits to shareholders in the form of dividends, repurchase shares, or retain earnings to facilitate company growth. If dividends are distributed, they also face taxation at the shareholder level, creating a double-tax on corporate income.[7] However, this double-tax is not completely negated if a C corporation decides to retain earnings:

[6] The rules for LLC treatment of self-employment income are less well-defined than for S corporations and partnerships. Many tax practitioners assume that an LLC is less likely to be audited if its members follow the S corporation and partnership rules.

[7] To help alleviate this burden, dividends were given a preferential rate of 15 percent in the Jobs and Growth Tax Relief Reconciliation Act of 2003 (Pub.L. 108-27). This lower rate was scheduled to expire in 2013, and dividends were to be taxed as ordinary income in 2013, but the American Taxpayer Relief Act of 2012 made permanent a top tax rate of 20 percent for qualified dividends.

the signal of company growth should cause the price of company stock to rise. When the asset is sold, the gains would be subject to capital gains taxes.

Measuring the characteristics of small businesses by their organizational status requires use of income tax return data. Historically, many researchers have defined a small business owner as a tax filer who reports on 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).[8]

This "old" definition is straightforward but not ideal. The definition includes owners of very large firms – partners in hedge funds, for example. It includes laborers who happen to work as consultants rather than 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) match individual income tax returns with returns filed by pass-through businesses to more accurately identify small business owners. They collect documentation on business activity from Form 1065 (income from partnerships), Form 1120 (income from S corporations), and Form 1120 (income from C corporations, whose total income or deductions are less than $10 million). They refine the definition of a business owner by requiring an individual tax return filer (a) to have 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) to have at least $5,000 in wages and salaries, interest paid, the cost of goods and services bought from other firms, rents, and other business deductions.[9] And to restrict the analysis to owners of small businesses, they exclude income individuals receive from business with more than $10 million in the sum of gross receipts, rents and portfolio income or those with business deductions in excess

[8] Treasury, TPC, CBO, and JCT have typically used pass-through status to classify an entity as a small business. For example, Treasury (2007) included as 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's (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.

[9] Knittel et al. (2011) use the first test (the *De Minimis Activity Test*) to separate actual businesses from those entities for whom "business" does not yield significant income. The second test (the *Businesslike Activity Test*) separates businesses from entities that primarily provide labor or are as investment vehicles, which do not usually report significant deductions.

of $10 million. Knittel et al. (2011) used receipts instead of employees as the small business threshold both because employment is not reported on tax forms and because many tax code provisions (see Section IV) for small businesses are based on gross receipts

Using this methodology, Knittel et al. (2011) find that, of the 143 million tax filers in 2007, 44.3 million reported some type of business income. There were 42.4 million individuals had some type of flow-through income and 1.9 million C corporations (Table 2). Almost half of these (45.4 percent) did not meet the dual test to qualify for business activity, resulting in an estimated population of 24.2 million business filers. Almost all (23.9 million) business filers qualified met the $10 million threshold to qualify for a small business: 45 percent were non-farm, non-rental sole-proprietorships, 9 percent were partnerships, 14 percent were Subchapter S corporations, and 7 percent had income from small C corporations.

By industry, almost three out of ten small businesses were in the real estate and rental industry (Table 3). Construction firms garnered about 11 percent of the market and professional and technical firms were about 9 percent of small businesses. In terms of income, professional and technical firms accounted for 21 percent of small business net income while small financial firms yielded 17 percent and real estate and rental firms earned 16 percent.

Knittel et al. (2011) further restricted their analysis to look at owners of small businesses by identifying the owners of partnerships and S corporations and combining their income from these activities with income from sole proprietorships, farms, and rental real estate. These calculations determined what the authors call their "broad" definition of small business owners. They also create a "narrow" definition that restricts the definition of small business owners to those who meet additional requirements: their business income is active rather than passive and business income provides more than 25 percent of the tax filer's Adjusted Gross Income.

Under Treasury's broad definition, 14 percent of tax returns (or 20 million returns) qualified as small business owners in 2007 (Table 4). Small business income accounted for only 13.3 percent of these filers' 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 (Table 5). Filers with AGI between $200,000 and $1 million accounted for 10 percent of small business owners and 47 percent of small business income; almost 23 percent of this group's income came from small businesses.

For those above $1 million, small business income on average accounted for only 6 percent of total income.

Under their narrow definition, the population of small business owners decreases to 9.4 million (Table 4). 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 (Table 5). Those with AGI between $200,000 and $1 million earned 43 percent of small business income while representing 7 percent of small business owners; 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 owners (Table 4). Filers with AGI less than $200,000 represented 92 percent of small business owners and only earned 24 percent of small business income (Table 5). Meanwhile, 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 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 (SBA 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: 66 percent 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 (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 2 million jobs, and small businesses of less than 500 employees accounted for 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 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. BLS's 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 (BED 2012).[10]

Davis, Haltiwanger, and Schuh (1996) note three additional issues that muddy the relationship between firm size and employment growth. The first problem – called the size distribution fallacy -- 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 an appearance that small firms have grown in employment when they haven't. 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 et al. (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), and 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. For example, suppose a firm had 250 employees in the first time period and added

[10] BED data starts in the third quarter of 1992.

another 350 employees over the next three month period. Under a base-sizing methodology, the increase in employment would be attributed to small firms. Under an end-sizing methodology, however, the gross job gain would be attributed to large firms.[11] 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.

The problem of base-sizing is further aggravated by the data's temporary fluctuations in size and its potential mismeasurement, which can create transitory spikes. If a large firm is temporarily reduced to a small firm classification due to a reduction in its workforce or statistical mismeasurement, it will show as small firm employment growth once the temporal anomaly has passed.

More recent and careful studies correct for these issues. Davis et al. (1996) used a longitudinal dataset of manufacturing plant-level data from 1972-88 and found that the inverse relationship between employment growth and firm size disappeared after correcting for the 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 driver 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 et al. (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 youth. Indeed, Haltiwanger et al. (2010) find that startups are

[11] 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 (see Butani et al. 2006).

responsible for about 20 percent of gross job creation; yet, young firms also have high gross job destruction rates; 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, who tend to be net job losers. Haltiwanger et al. (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.

They support this result with firm responses from the 2003 Survey of Small Business Finances. 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.[12] According to the survey, only 4 percent of surviving firms added more than ten employees between 2004 and 2008 and only 11 percent added more

[12] 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 will be released in March 2013. The KFS oversamples businesses that are high technology or that employ many research and development workers, and it provides sample weights to make the sample representative of all new firms in the economy.

than 5; 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.

IV. Public policies toward small businesses

Numerous public policies favor small business either directly or indirectly. In this section, we describe many of the major policies.

A. Tax policy for small business[13]

Taxation of Sole Proprietorships and Pass-Throughs Relative to C Corporations.

The largest benefit that many small businesses receive through the tax code is being able to organize as a pass-through organization and avoiding the double taxation of corporate income.[14] The business income of sole proprietorships, partnerships, and S corporations are taxed at the individual level, and an LLC can choose whether its business income is taxed as a partnership, sole proprietorship, S corporation, or C corporation. About 93 percent of small businesses file as flow-through organizations: 45 percent of small businesses are sole proprietors or have rental or farming income; 14 percent file as S corporations; and 9 percent file as

[13] This section builds on Marron (2011) and Toder (2007, 2008a, 2008b).

[14] 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.

partnerships (Knittel et al. 2011).[15] Burnham (2012) documents the growth in the relative share of receipts accounted for by flow-throughs, and Sullivan (2011) specifically notes that the share of total business receipts earned by S corporations has grown substantially since the Tax Reform Act of 1986, which lowered the top individual rate below the corporate rate: in 2008, S corporations accounted for 17.5 percent of total business receipts while they earned only 4.6 percent in 1985. Similarly, the number of LLCs has grown since the 1988 IRS ruling that allowed LLCs to be taxed as partnerships: LLCs provided less than 1 percent of total business receipts in 1988 but accounted for 7.2 percent in 2008 (Sullivan 2011).

Expensing of Investment (IRC Section 179)

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 businesses to fully deduct the cost of purchasing equipment (and software through the 2013 tax year) in the year the purchase was made, provided that the equipment (or software) will be actively used in its trade or business. 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 raising small businesses purchases of equipment and software.

Prior to 2003, section 179 only applied to the first $25,000 of investment and phased out dollar for dollar as total investment exceeded $200,000. [16] If a business spent over $225,000, then Section 179 phased out completely. Both limits were raised in 2003 in the Jobs and Growth Reconciliation Act to $100,000 and $400,000 for tax years 2003 to 2005. Subsequent legislation extended this through 2006 and increased the limits to $125,000 and $500,000 for 2007 and $250,000 and $1 million for 2008 and 2009. The Small Business Jobs Act of 2010 increased the individual expensing limit to $500,000 in 2010 and 2011 and upgraded the reduction in limitation threshold to $2 million. The American Taxpayer Relief Act of 2012 (ATRA) extended

[15] Since LLCs can choose to file as any of the organizational forms, Knittel et al. (2011) did not report them.

[16] The latter limit is called the reduction in limitation and is an aggregate deduction maximum. A business can make as many Section 179 deductions in a single tax year and claim the full value of the deduction as long as the aggregate total does not exceed the reduction in limitation; above that threshold, the value of deduction is reduced dollar for dollar. A third limitation is the limitation based on income from trade or business, which says that the maximum total deduction cannot exceed the trade or business income for the individual or firm.

these limitations for 2012 and 2013. After 2013, the dollar limitation is scheduled to decrease to $25,000 and the reduction in limitation threshold will decrease to $200,000.

Given these limits, Section 179 is clearly intended to benefit small and medium-sized businesses. The Joint Committee on Taxation (2013) estimates that extending the increased thresholds of Section 179 in ATRA will cost about $8.1 billion in revenue for 2013.

Cash-Basis Accounting

The Internal Revenue Code requires companies to compute their taxable income via the same method by which they maintain their accounting books as long as the method is consistent in how it treats income and deductions across years. Although the IRS permits many methods, private sector firms most often use one of two: the cash-basis method and the accrual method. Cash-basis accounting treats transactions as income when income is actually received and expenses as deductions when they are paid. Accrual accounting, however, counts a transaction as income when the firm has a legal right to the income or as an expense when the firm becomes legally liable for it, whether the income has been received or the expense actually paid.

The IRS generally requires accrual accounting for C corporations and for most other firms when inventory is necessary for operation of the business. Business size based on receipts, however, provides an exception; sole proprietors, partnerships, S corporations, C corporations with gross receipts averaging $5 million or less in the three previous tax years may use the cash method of accounting. In general, the cash-basis method is easier to administer and therefore lowers the compliance burden for these small businesses. Furthermore, if a sole proprietor, partnership, or S corporation averaged $1 million or less in annual gross receipts in the three previous tax years, it may also use cash-basis accounting to report purchases and sales of inventory items, which is not allowed for C corporations. The JCT (2012) estimates the cost of this tax expenditure for individual filers to be $1.1 billion in 2013.

Exemption from the Corporate AMT

The corporate alternative minimum tax (AMT) was created in 1986 to ensure that profitable corporations pay at least some federal income tax. The AMT applies a lower marginal rate of 20 percent to a base that includes fewer tax preferences in a parallel calculation to the regular corporate tax code; corporations must use the calculation that generates the larger tax liability and most business tax credits cannot be used to reduce corporate AMT tax liability.

The Taxpayer Relief Act of 1997, however, granted exemption from the corporate AMT based on size. In their first three tax years, small corporations are exempt as long as their average annual gross receipts do not exceed $5 million. After their first three years, their rolling three-year average of annual gross receipts must not exceed $7.5 million – if the average exceeds $7.5 million, then the corporation becomes ineligible for the AMT exemption, starting in the year it exceeded the limit and continuing thereafter. A corporation cannot regain AMT exemption once it has lost eligibility, even if its three-year average gross receipts once again drops below the $7.5 million threshold. Neither the JCT nor the OMB include an estimate of the corporate AMT provision in their annual tax expenditure estimates, but Guenther (2009) suggested it may be less than $10 million per year. [17]

Amortization of Business Start-Up Costs (IRC Section 195)

The American Jobs Creation Act of 2004 created IRC Section 195, which allows the deduction of business start-up costs. Business taxpayers that incurred start-up costs after October 22, 2004, are allowed to deduct up to $5,000 in business start-up and organizational costs for the tax year when the business begins, including those related to the investigation prior to starting the business. The maximum deduction of $5000 is reduced (down to $0) by the amount by which start-up costs exceed $50,000, which makes this especially beneficial to small firms. Large start-ups, however, must capitalize these cost into the asset price of the business, which can only be recouped when the business is sold.[18] Businesses that incurred these costs on or before October 22, 2004, were allowed to deduct the costs in equal annual amounts over five years.

Tax Incentives for Private Equity Investment in Small Firms

The tax code also includes a number of provisions to encourage investment in start-up small firms. Section 1044 allows taxpayers to roll over any capital gains tax-free on the sale of

[17] The JCT specifically does not include the exemption as a tax expenditure because "the effects of the AMT exceptions are already included in the estimates of related tax expenditures" (JCT 2012). Even if the JCT did a tax expenditure estimate, the exemption may not exceed the $50 million *de minimus* requirement for JCT to report the cost of the tax expenditure.

[18] Under a normal income tax baseline, start-up costs should be excluded and capitalized into the asset as they are technically used to acquire an asset, not used to earn income. Section 195 deviates from this standard principle of federal income taxation.

publicly traded securities so long as the proceeds from the sale are used to purchase stock in specialized small business investment companies (SSBICs).[19] Neither the JCT nor the Treasury have estimated the cost of this provision**.**

Section 1202 allows taxpayers who are not C corporations to partially exclude a capital gain from selling or exchanging a qualified small business stock[20], provided it has been held for longer than 5 years. Prior to 2009, the exemption was 50 percent and rose to 60 percent in empowerment zones; the exemption amount was increased in 2009 and ATRA extended a full exemption through 2013. This provision aims to facilitate the acquisition of capital from stock sale by small C corporations – those with gross assets less than $50 million. The OMB (2012) estimated that the exclusion of capital gains cost $60 million in 2012 while the JCT (2012) estimated a cost of $400 million.

Section 1242 allows the capital losses on investments in stock in SBICs to be treated as ordinary income without limit; the IRS only allows an ordinary income deduction of $3000 for other capital losses. Neither OMB nor the Treasury have estimated the cost of this tax expenditure. Section 1244 is similar to 1242, but it applies to small business stock and has a maximum deduction of $50,000.[21] The OMB (2012) estimated the cost at $60 million in 2012.

Other Small Business Tax Incentives

IRC Section 45E helps qualified small firms pay for the start-up costs of setting up employees in new retirement plans. The credit is equivalent to 50 percent of the first $1,000 in eligible costs incurred each of the first three years of a qualified pension (which can be a defined benefit or defined contribution plan). Firms with fewer than 100 employees are eligible to claim

[19] SSBICs are like SBICs (see Section IV.A.) except that they must invest in small firms that are owned by economically or socially disadvantaged individuals.

[20] Only certain stocks meet the definition of a qualified small business stock. First, it must have been issued after August 10, 1993 and acquired at its original issue, either from the corporation directly or from an underwriter. Second, the business must be a domestic C corporation with less than $50 million in gross assets. Third, a supermajority of the corporations assets (80 percent) must be used for active business. Small firm in many commercial activities (e.g. law, architecture, health care, etc.) are not eligible for the partial exclusion.

[21] Eligible stocks were issued after November 6, 1978 by a small business corporation, which is defined as having less than $1 million in money and property when it issues stock. The stock cannot have been exchanged for other stocks or securities, and a loss cannot be recognized unless the corporation received less than half of its receipts from royalties, rents, dividends, interest, annuities, and stock and security transactions during the five years preceding the loss (IRC §1244(c)(1)(C)).

the credit, as long as employees received at least $5,000 in compensation from the firm in the previous year.

IRC Section 44 allows qualifying small business – those with 30 or fewer employees and less than $1 million in gross receipts for the preceding tax year – to claim a credit for expenses used to make the business more accessible to disabled individuals by removing architectural and transportation barriers. The credit is equal to 50 percent of the amount of eligible expenditures above $250 and below $10,250. The JCT (2012) estimates the tax expenditure cost of this tax credit to be $100 million in 2013.

IRC Section 263A exempts businesses with average annual gross receipts of $10 million or less in the three previous tax years from the uniform capitalization rule (UNICAP). Most firms that produce or trade merchandise must maintain inventories to determine the cost of goods sold – that is, the sum of the inventory at the beginning of the year and inventory purchased during the year less the inventory at the end of the year. Labor and material used to produce or purchase new inventory must be capitalized into the value of the inventory, and any allocable indirect costs are also capitalized. Small businesses, however, are exempt from these expensive administrative costs. The cost of this tax exemption is not known.

Tax Compliance and Tax Evasion

Along with the tax subsidies aimed at small businesses, the role 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 large ones (Slemrod and Venkatesh 2004). DeLuca et al (2007), using an estimate 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 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). Individuals earning income from businesses have a higher chance of underreporting income since their earnings have fewer third party enforcement mechanisms. In 2001, the IRS estimated, for example, that for wages and salaries -- income sources that are subject to withholding and third party reporting – the underreporting rate was 1 percent.

B. Other tax provisions that affect entrepreneurs and innovation

It is worth noting that some 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 effect of entrepreneurship and innovation, even if they are not targeted toward small or young companies.

Research and Experimentation Tax Incentives

The research and experimentation credit (IRC Section 41) was introduced in the Economic Recovery Tax Act of 1981 in an effort to spur new innovation. The credit was originally equal to 25 percent of a firm's qualified research expenditures in excess of the average expenditures in the previous three years or 50 percent of the current year's expenditures, whichever was greater.[22] However, this formula encouraged firms to decrease their R&E in the

[22] Qualified research expenses are those that meet the four tests of: 1) permitted purpose (creating or improving a business component), 2) elimination of uncertainty about the development or improvement of a business component,

second and third years to maximize the credit in the fourth year. In 1989, the credit was reformed; it now establishes a baseline level research proportion (at least 50 percent of qualified research expenses) and subsidizes 20 percent of costs that exceed that baseline. 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 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. 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).[23]

Prior to ATRA, the research and experimentation credit had expired at the end of 2011; Congress used ATRA to extend Section 41 through December 21, 2013 and retroactively applied it to the 2012 tax year. The JCT (2013) estimates that the R&E credit will cost $6.2 billion in 2013.

Section 174 provides two other ways for businesses to fund research and experimentation. Section 174(a) allows expensing R&E expenditures when incurred, but this option must be used in the first year of R&E expenditures. If Section 174(a) cannot be taken, Section 174(b) allows firms to capitalize and amortize qualifying expenditures. Expenditures such as the cost of obtaining a patent, or the development of a pilot model are eligible for Section 174 expensing. The OMB estimates the cost of this tax expenditure to be $5.1 billion dollars in 2013.

Section 199, the qualified production activities income (QPAI) deduction, 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

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3) process of experimentation (one or more alternatives must be attempted), and 4) technological in nature (must rely on principles of physical or biological sciences, engineering, or computer science).

[23] The IRS also has an Alternative Simplified Credit for firms that cannot substantiate research expenses for the other two credits.

predominantly in the United States.[24] Although it is not directly targeted at small businesses, section 199 does help small manufacturing firms.

The Section 199 deduction started at 3 percent in 2005 and 2006, increased to 6 percent through 2009, and was fully phased-in at current 9 percent in 2010. The deduction cannot exceed taxable income (or adjusted gross income for those filing as individuals). The OMB (2012) estimates that the QPAI will have a tax expenditure cost of $14.5 billion, a fourth of which was attributable to individual income taxes.

C. Other Public Policies Toward Small Business

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." Often small businesses have limited assets and a short credit history, which makes it difficult to obtain loans or revolving lines of credit from private lenders given normal credit standards. The SBA's 7(a) General Business Loan program facilitates credit for small businesses by guaranteeing term loans or revolving lines of credit made by private lenders that otherwise would be declined . Currently, the maximum loan guaranteed is $5 million, increased from $2 million by the Small Business Act of 2010. At the beginning of the 2011 fiscal year, the SBA had an outstanding cumulative balance of $76.2 billion in guaranteed business loans and added $19.6 billion in new business loans throughout the fiscal year (OMB 2012).

The SBA also administers many small business programs, such as the 504 Loan Program , the Microloan Program, and the Small Business Investment Company Program. The 504 Loan Program facilitates financing for small businesses to purchase fixed assets (e.g. real estate, buildings, and machinery) by guaranteeing the loan of a regional nonprofit corporation called a Certified Development Company (CDC). The CDC's loan usually represents 40 percent of the

[24] 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.

overall financing for the fixed asset with the borrower providing 10 percent and the primary lender the remainder.

The Microloan Program provides short terms loans of less than 6 year terms, business training, and technical training through nonprofit micro-lender intermediaries. The SBA lends money to micro-lenders, which is then lent to small businesses. Small business can borrow up to $50,000 for developing working capital and purchasing inventory, supplies, equipment, and furniture.

The Small Business Investment Company (SBIC) Program uses qualified private equity funds as intermediaries between the SBA and small businesses. Private equity funds receive SBA loan guarantees, which they use with their own capital to finance equity capital, long-term loans, and management assistance in small businesses.

The SBA also helps small businesses obtain business opportunities from the federal government. By law, 23 percent of federal contracting must go to small businesses (SBA 2012). The SBA works with each federal agency to improve the opportunities for small business contracts.

Other federal agencies and departments also support small businesses. Every federal agency is required to have an Office of Small and Disadvantaged Business Utilization, which helps small businesses take advantage of procurement opportunities and government contracts. The State Small Business Credit Initiative subsidizes state programs that facilitate credit to small businesses. The Small Business Lending Fund provides capital to qualified community banks and community development loan funds who subsequently leverage the capital to provide funding to local small businesses.

The Small Business Innovation Research (SBIR) program was created in 1982 and has been renewed periodically, and the latest legislation authorized it through 2017. The 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. Eleven government agencies participate in the SBIR, but 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. In FY2005, the latest year for which there is available data, the program disbursed $1.85 billion dollars in awards to innovative small firms. The

program provides firms with Phase I awards, essentially funding a research feasibility study worth up to $100,000. In FY2005, 4,208 firms received Phase I funding. About 40 percent of these firms eventually receive Phase II awards, which are on the order of about $500,000 to $850,000.

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. 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 (CBO 2012).

V. Effects of public policies on small business and innovation

This section reviews the impact of public policies -- in particular tax policies – on the behavior of small businesses across a variety of dimensions, including 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) examines the tax determinants of entry into self-employment using 1979-1990 data from the Panel Study of Income Dynamics (PSID). He restricts the sample to male heads of household between 25 and 54 who are in the wage-and-salary sector in the first observed period.

He 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, and he applies this concept to create the

average tax rate differential and the marginal tax rate differentials. Since the author can only observe the actual wage-and-salary or 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 (2003) 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 the ages of 18 and 60, they estimate the determinants of entry into self-employment, focusing on the marginal tax rate level, 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 minus the average MTR faced by an unsuccessful one.[25] The authors also control for individuals' education, earnings potential as an employee, and demographic characteristics, as well as time-specific macroeconomic factors.

[25] 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 are 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.

Gentry and Hubbard (2003) find that higher marginal tax rates in self-employment have a negative impact on entry into self-employment, but this effect is not statistically significant. They find that higher average tax rates in self-employment raise entry into self-employment. They also show that tax code convexity reduces entry into self-employment. They estimate that a five-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 (2004) expand on this work by looking not just at self-employment transitions in general, but examining entry to particularly innovative new industries or occupations.[26] They show that the entry rate into innovative occupations and industries is lower than in the overall self-employment sector. They 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 move to the entrepreneurial sector.[27] For a high-income, risk-neutral investor, a graduated tax rates 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. He uses

[26] 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.

[27] The authors use self-employment as a proxy for entrepreneurial activity.

PSID data from 1979 to 1990 and confines the analysis to male heads of households between 25 and 54 that are self-employed. Bruce finds that entrepreneurs with higher expected ATRs in self-employment (holding wage and salary ATR constant) are less likely to exit self-employment. For instance, a 1 percent increase in the self-employment ATR would reduce the self-employment exit rate from 14.6 percent to 14.0 percent in annual data – this finding differs from Bruce (2000). Bruce's analysis on the marginal tax rate effects, however, is consistent with his earlier work, since he finds that, for example, a 1 percent increase in the self-employment MTR reduces the probability of exit from 14.6 percent to 5.9 percent. This result may be explained either by a tax avoidance or evasion argument or by the fact that higher tax rates act as insurance against fluctuating income.

In a related paper, Gurley-Calvez and Bruce (2007) 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 royalty and rental income. The average length of entrepreneurial spells in their data is 3-4 years. 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, the traditional model of 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). There is substantial evidence that many start-ups face

borrowing constraints (see, for example, Evans and Jovanovic 1989 and Holtz-Eakin, Joulfaian and Rosen 1994). Still, 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).

Using data from the Kauffman firm survey, Robinson (2012) and Robb and Robinson (2012) 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 start to 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.[28]

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. In addition, formal bank lending is often a significant component 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 (1999) 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 (1999) find that the demand for venture

[28] For example, see CBO Insights, *Venture Capital Activity Report, Q3 2012* and Fenwick & West, "2011 Seed Financing Survey," March 2012.

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 yields more revenue or hires more employees – that is, subsidies to encourage small business entry may actually discourage their growth.

Carroll, et. al (1998a, 1998b, and 2000) analyze the effects of the Tax Reform Act of 1986 -- which lowered the highest personal income tax rates significantly -- on small business hiring, growth, and investment. The studies examine a sample of sole proprietors taken from income tax returns, based on income data from 1985 and in 1988.

Carroll et. al (1998a) 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. About 33 percent of Schedule C filers made some positive capital investment in 1985, a figure that dropped to 29 percent in 1988. 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. (1998b) look at how the same tax reform affects an employer's labor demand choices. About 34.1 percent of Schedule C filers employed labor (reported a positive wage bill) in 1985, compared to 32.8 percent in 1988. The authors 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. Note that wage payments are expensed under the income tax. Thus, one has to appeal to a cash flow model to explain the results -- that is, lowering tax rates increases the entrepreneur's cash flow and allows them to hire more workers.

Carroll et al. (2000) also estimated the effect of the tax reform act of 1986 on growth of gross receipts in small business firms. The authors find a large and negative effect of the marginal tax rate on sole proprietor gross receipts. They estimate that a decline in sole proprietors' average marginal tax rate from 50 percent to 33 percent would lead to an increase in gross receipts of about 28 percent. 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.

D. Innovation and risk-taking

Both the Research and Experimentation (R&E) tax credit and the Small Business Innovation Research (SBIR) 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&D 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 (described above) on R&E spending intensity (R&E spending divided by sales), using data from 1981 through 1995 and treating the reform as a natural experiment, thus serving as a source of exogenous variation in firms' incentives. They find that the median R&E intensity of high-tech firms that qualified for the credit increased by 15.9 percent in 1990-1994, relative to the 1986-1989 period. The results imply that qualified research expenditures in 1990-1994 were $3.72 billion higher, or 15 percent, higher than they would have been without the reform.

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 $1,000,000 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&D 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.

Lokshin and Mohnen (2007) estimate that, in the Netherlands, the R&E tax credit encouraged R&E spending, with a 10 percent decrease in the user cost of R&E increasing the long-run R&E stock by 4.6 percent. The authors find larger elasticities for smaller firms than for larger firms, and hypothesize that the credit plays a major role in helping small firms in increasing their R&E expenditures because of capital constraints that limit their ability to invest in resources they deem necessary.

There is limited evidence on the effectiveness of the SBIR program. Lerner (1996) examines the impact of SBIR on employment and sales growth in a set of 1135 firms. He compares Phase II recipients of SBIR grants to a matching sample of non-recipient firms (including some who received Phase I funding) and finds 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.

Lerner looks at the demographic specifications of the firms to evaluate the impact of SBIR with respect to the presence of venture financing. Since venture financing is concentrated in certain parts of the country, the author tries to determine whether SBIR has greater effects in regions where other types of financing were already available. He found that the positive impacts of the program were only significant in 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.

The National Research Council recently conducted a study of SBIR grant recipients. The survey indicated that 47 percent of Phase II recipients reported sales greater than $0, although over half of the sales dollars came from 26 firms that reported over $15,000,000 in sales. The same survey showed that the average responding firm had 29.9 more employees than at the time of the award; however, the measure did not include those that did not respond and were more likely to have failed. Finally, 55 percent of respondents attribute over half of their growth to their initial SBIR grant.

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 define risk-taking as whether the individual reported non-corporate losses greater than 10 percent of reported wage and salary income – they argue that while profits can take place even without risk, losses should only occur if a firm has undertaken a risky project. They find that the 1986 tax reform 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 fall by 14 percent due to the 2001 and 2005 tax reforms, due to the drop in personal income tax rates. 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 and sole proprietorship, tax policy may impact the organizational form of entrepreneurial ventures.[29] Indeed, since the tax reform act of 1986, there has been a substantial shift in organizational form, away from C Corporations and toward pass throughs (see Figure 1).

Several researchers have studied the impact of tax policy, in particular the distinctions between corporate and individual taxation, on how firms choose to organize. Although much of this literature focuses on analysis of the implied deadweight loss of the corporate income tax, in this section we focus on the positive (as opposed to normative) question of how the tax differentials affect entrepreneurs' choice of organizational form.

Researchers have taken a number of approaches to this question. One approach uses pre-1986 data. 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 this information is more dated than Mackie-Mason and Gordon (1997), and has the implications that some organizational forms that exist today (e.g., S corporations) did not exist in the sample

[29] For a comprehensive discussion of related background issues, see JCT (2008).

period, his analysis has the advantage of exploring a time period that contains more variation in the corporate tax rate, relative to the personal income tax rate on dividends and capital gains. His results, nevertheless, suggest that corporate income taxes have only a small impact on organizational form choices.

Two papers examine the impact of the 1986 tax reform act on organizational form choices. Gordon and Mackie-Mason (1990) examine the effects of the 1986 tax reform on organizational choice. The 1986 act 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. The authors argue that the changes in taxation induced by TRA 1986 were complex and that, depending on a firm's circumstances, the changes might lead to a preference for corporate or non-corporate status. Nevertheless, they do find the notable empirical patterns that loss operations tended to shift to the corporate sector after 1986 and gains tended to shift to the non-corporate sector.

Carroll and Joulfaian (1997) use a panel of corporate tax returns from 1985 to 1990 to estimate the impact of the 1986 tax reform act on organizational form. They find that increases in the tax differential between corporate and non-corporate businesses will raise the probability that a C corporation converts to S corporation status, and they show that the tax savings are largest for the most profitable firms.

Two papers have used state-level variation in taxes. Goolsbee (2004) uses cross-sectional state-level data to estimate the sensitivity of organizational form to tax parameters. The evidence 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-level data from the states and document a similar sensitivity.[30]

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

[30] Edmark and Gordon (2012) find a similar sensitivity of organizational form choices using data from Sweden.

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: 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, in terms of research, more 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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Table 1

Subchapter C Corporation Tax Rate Schedule

Minimum Taxable Income	Maximum Taxable Income	Marginal Tax Rate	Cumulative Tax Owed	Effective Tax Rate
-	50,000	15.0	7,500	15.0
50,000	75,000	25.0	13,750	18.3
75,000	100,000	34.0	22,250	22.3
100,000	335,000	39.0	113,900	34.0
335,000	10,000,000	34.0	3,400,000	34.0
10,000,000	15,000,000	35.0	5,150,000	34.3
15,000,000	18,333,333	38.0	6,416,667	35.0
18,333,333		35.0		35.0

Table 2

Sources of Small Business Income

Tax Form	Filers	Percent	Total Income	Percent	Net Income	Percent
Filers Reporting Some Form of Pass-Through Income	4427 3	100.0%	3624 5	100.0%	3246	100.0%
Income Qualifies as Business Income	2418 4	54.6%	3597 5	99.3%	3080	94.9%
Income Qualifies as Small Business Income	2394 2	54.1%	6455	17.8%	517	15.9%

Tax Form	Filers	Percent	Total Income	Percent	Net Income	Percent
Schedule C: Sole Proprietors	1067 9	44.6%	1136	17.6%	222	42.9%
Schedule E: Rent	4592	19.2%	208	3.2%	-21	-4.1%
Schedule F: Farmers	1415	5.9%	125	1.9%	-13	-2.5%
Form 1065: Partnerships	2232	9.3%	1163	18.0%	167	32.3%
Form 1130-S: S Corporations	3462	14.5%	2418	37.5%	169	32.7%
Form 1120: C Corporations	1563	6.5%	1405	21.8%	-6	-1.2%
Total	2394 2	100.0%	6455	100.0%	517	100.0%

Table 3

Small Businesses by Industry

Industry	Firms	Percent	Total Income	Percent	Net Income	Percent
Real Estate and Rental	7067	29.5%	855	13.2%	84	16.2%
Construction	2609	10.9%	939	14.5%	51	9.9%
Professional and Technical	2266	9.5%	639	9.9%	107	20.7%
Agriculture	1786	7.5%	233	3.6%	-6	-1.2%
Retail	1738	7.3%	874	13.5%	17	3.3%
Health Care and Social Services	1250	5.2%	468	7.3%	74	14.3%
Transportation	1019	4.3%	238	3.7%	13	2.5%
Administrative and Support	1010	4.2%	239	3.7%	18	3.5%
Financial	755	3.2%	299	4.6%	90	17.4%
Accommodation and Food	627	2.6%	306	4.7%	7	1.4%
All Other Services	3816	15.9%	1365	21.1%	64	12.4%
Total	23942	100.0 %	6455	100.0 %	517	100.0%

Table 4

Small Business Owners by Various Definitions

Previous Treasury Definition[1]

AGI Level	2007 Tax returns	Number of Returns	Percent of Returns	Percent of Definition
$0 - $200,000	138441	31851	22.3%	91.7%
$200,00 - $1,000,000	4145	2557	1.8%	7.4%
$1,000,000 +	392	331	0.2%	1.0%
Total	142978	34739	24.3%	100.0 %

Treasury's Broad Definition[2]

AGI Level	2007 Tax returns	Number of Returns	Percent	Percent of Definition
$0 - $200,000	138441	17738	12.4%	88.6%
$200,00 - $1,000,000	4145	2005	1.4%	10.0%
$1,000,000 +	392	273	0.2%	1.4%
Total	142978	20016	14.0%	100.0 %

Treasury's Narrow Definition[3]

AGI Level	2007 Tax returns	Number of Returns	Percent	Percent of Definition
$0 - $200,000	138441	8682	6.1%	92.5%
$200,00 - $1,000,000	4145	656	0.5%	7.0%
$1,000,000 +	392	51	0.0%	0.5%
Total	142978	9389	6.6%	100.0 %

1. Treasury's previous definition counted all taxpayers reporting flow-through income as small business owners.

2. Treasury's broad definition counts anyone (even passive partners) who report income that meets their criteria of small business income as small business owners.

3. Treasury's narrow definition only counts individuals who report active small business income or loss that represents at least 25 percent of their AGI.

Source: Knittel et al. (2011).

Table 5

Income Distribution by Various Definitions of Small Business Owners

Previous Treasury Definition[1]

AGI Level	Total Income	Small Business Income	Small Business Income as Percent of Total Income	Proportion of Small Business Income
$0 - $200,000	N/A	162	N/A	24.5%
$200,00 - $1,000,000	N/A	242	N/A	36.6%
$1,000,000 +	N/A	258	N/A	39.0%
All	N/A	662	N/A	100.0 %

Treasury's Broad Definition[2]

AGI Level	Total Income	Small Business Income	Small Business Income as Percent of Total Business Income	Percent of Small Business Income
$0 - $200,000	969	134	13.8%	35.6%
$200,00 - $1,000,000	774	175	22.6%	46.5%
$1,000,000 +	1075	67	6.2%	17.8%
All	2818	376	13.3%	100.0 %

Treasury's Broad Narrow[3]

AGI Level	Total Income	Small Business Income	Small Business Income as Percent of Total Business Income	Percent of Small Business Income
$0 - $200,000	360	144	40.0%	43.0%
$200,00 - $1,000,000	255	144	56.5%	43.0%
$1,000,000 +	102	47	46.1%	14.0%
All	717	335	46.7%	100.0 %

1. Treasury's previous definition counted all taxpayers reporting flow-through income as small business owners.
2. Treasury's broad definition counts anyone (even passive partners) who report income that meets their criteria of small business income as small business owners.

3. Treasury's narrow definition only counts individuals who report active small business income or loss that represents at least 25 percent of their AGI.

Source: Knittel et al. (2011).

Table 6

Financing Source for Startups

	Mean (all Firms)		Percent of Financing		Firms Using Financing Stream		Percent of Using Firms	
	Equity	Debt	Equity	Debt	Equity	Debt	Equity	Debt
Owner	27,365	3,506	34.9%	4.5%	3292	1221	79.1%	29.3%
Insider	1,695	7,605	2.2%	9.7%	186	564	4.5%	13.5%
Outsider	6,979	31,255	8.9%	39.9%	223	1487	5.4%	35.7%
Total	36,039	42,366	46.0%	54.0%	4163		N/A	

Source. Robb and Robinson (2009).