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The effect of capital gains taxation on small business transfers and start-ups☆

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ABSTRACT

This paper studies the effect of capital gains taxation on small business transfers and business start-ups. We consider a model in which agents have different abilities to manage businesses and derive an agent's optimal choices as an owner or non-owner of a small business. Agents' optimal choices depend on their abilities. We also find that capital gains taxation has a negative effect on small business transfers but can encourage small business start-ups.

1. Introduction

This paper studies how capital gains taxation affects the incentives of entrepreneurs. In particular, we are interested in the small businesses that are privately owned by an individual and focus on the entrepreneurial choices regarding transferring businesses and launching a new business. In the United States, small businesses contribute significantly to economic activities, and sole proprietorship is the most popular form of small businesses.[1] To the extent that the sector of small businesses owned by an individual plays an important role in the economy, it is worthwhile to understand the effect of taxation on entrepreneurial activities for small businesses.

There have been many studies investigating entrepreneurial activities. For example, Jovanovic (1982); Hopenhayn (1992), and Ericson and Pakes (1995) develop dynamic models to analyze entrepreneurial activities. They mostly focus on the entry and exit of businesses rather than on business transfers. Holmes and Schmitz (1990, 1995) call attention to the importance of business transfers as entrepreneurial activities. There have also been many studies considering the taxation as an important factor that affects entrepreneurial activities, including Gentry and Hubbard (2000), Cullen and Gordon (2002), Hennessy and Whited (2005), Djankov et al. (2010), and Baliamoune-Lutz and Garello (2013). In particular, Balcer and Judd (1987), Auerbach (1992), Cavalcanti (1995), McGee (1998), Dammon et al. (2001), and Seifried (2010) study the effects of capital gains taxation on the investment and portfolio of entrepreneurs. Chari et al. (2005) and Cavalcanti and Erosa (2007) also investigate the effects of capital gains taxation on entrepreneurial activities with a focus on the business transfers and start-ups.

Our work is mostly related with that of Chari et al. (2005). They introduce capital gains taxation to the model developed by Holmes and Schmitz (1990, 1995) and quantify the effect of capital gains taxation on the behavior of small businesses. We also study the effect of capital gains taxation, but our model has different features compared to that in Chari et al. (2005). In Chari et al. (2005), the supply side of the market for small business ownerships consists of entrepreneurs, while the demand side consists of risk-neutral banks, who are intrinsically different from entrepreneurs. By considering banks in the demand side, they can let the price of businesses be independent of the tax rate. In this paper, we allow entrepreneurs to purchase a business, and so the tax burden falls on the buyers as well as the sellers through the equilibrium price. In addition, individuals in our model have different abilities to manage an established business, while entrepreneurs in Chari et al. (2005) have different abilities to start a new business rather than to manage a business. We agree that entrepreneurs have different abilities to start a new business, but it also seems obvious that some entrepreneurs have a comparative advantage in managing a business, for example, making more profit and continuing the business. We will describe the individual's optimal choices depending on their ability to manage a business.

In the paper, we show that, among the individuals who prefer owning a business to working for others, more efficient individuals prefer buying a business to starting a new business, while less efficient

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[1] According to reports by The Small Business Administration, during 1998–2004 in the United States, small businesses produced half of the private nonfarm GDP. In addition, sole proprietorship accounted for 71.7% of small businesses in the United States in 2004.

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individuals prefer starting a new business. In terms of the effect of taxation on the market for small business ownership, we confirm the result well known as the *lock-in effect*. That is, because the tax is paid when an asset is sold and the capital gains are realized, capital gains taxation postpones the realization of capital gains.[2] In addition, capital gains taxation increases the number of new businesses but reduces the number of businesses that survive in the next period by hindering business transfers from less efficient to more efficient entrepreneurs.

The remainder of the paper is organized as follows. In Section 2, we explain the model used to analyze the effect of capital gains taxation. In Section 3, we analyze the individual's choice depending on their ability. The effect of capital gains taxation is discussed in Section 4. In Section 5, we conclude the paper.

2. Model

There is a continuum of infinitely lived agents in the economy. Each agent is characterized by their type θ, which represents ability to manage a firm. θ is distributed on $[\underline{\theta},\overline{\theta}]$. In each period, an agent either owns a business or not. We call an agent who owns a business a *manager* and an agent who does not own a business a *worker*. We assume that each agent owns at most one business in each period.[3]

When an agent owns a business in a period, their type θ determines the profit of the business and the probability that their business succeeds in surviving in the next period. Let $\pi(\theta)$ be the profit of the business owned by an agent θ, and $\mu(\theta)$ be the probability of a business owned by agent θ surviving in the next period.[4] If a manager fails to continue a business, he/she will become a worker in the next period. It is assumed that $\pi(\cdot)$ and $\mu(\cdot)$ are continuous and strictly increasing.

In each period, a manager θ has two alternatives: (S) selling a business and (K) keeping a business. We assume that the trades occur immediately. Thus, if a manger sells a business, he/she becomes a worker in the current period. If he/she continues his/her own business, he/she enjoys the profit $\pi(\theta)$ in the current period and becomes a manager with probability $\mu(\theta)$ and a worker with probability $1-\mu(\theta)$ in the next period.

A worker θ has three alternatives in each period: (W) working for others, (N) launching a new business, and (B) buying a business from others. If he/she works for others, he/she is paid a wage $w>0$ in the current period and remains a worker in the next period. We assume that it takes one period to establish a new business. Thus, if a worker chooses to launch a new business, he/she receives zero payoff in the current period. In addition, he/she becomes a manager with probability $\eta\in(0,1)$ and a worker with probability $1-\eta$ in the next period. If a worker buys a business, they become a manager immediately.

Let p denote the price of businesses. When a business is transferred, the seller has to pay a tax for transferring the business. Let $\tau\in(0,1)$ denote the tax rate for transferring businesses. In the paper, we consider τ, which is away from zero and one.[5] That is, for some $\underline{\tau},\overline{\tau}\in(0,1)$, $\underline{\tau}\le\tau\le\overline{\tau}$ holds. Because there is no cost, except time, to launch a new business, the price of businesses can be interpreted as a capital gain and the tax levied in transferring businesses as capital gains tax.[6] We assume that

$$0\le\pi(\underline{\theta})\le\frac{(1-\overline{\tau})(1-\beta\mu(\underline{\theta})+\beta\eta)}{\beta\eta}w \quad\text{and}\quad \frac{1-\beta\mu(\overline{\theta})+\beta\eta}{\beta\eta(1-\overline{\tau})}w<\pi(\overline{\theta}). \tag{1}$$

In other words, the profit of the business can be low or high enough depending on the manager's ability. Agents are assumed to behave as if the future price and the future tax rate are given at the current level. In addition, their ability θ is assumed to be fixed.[7]

Given a price p and a tax rate τ, the value $U(\theta)$ of a manager θ is

$$U(\theta)=max\left\{U^S(\theta),U^K(\theta)\right\}, \tag{2}$$

where $U^S(\theta)$ is the value of selling a business and $U^K(\theta)$ is the value of continuing a business. The value $V(\theta)$ of worker θ is

$$V(\theta)=max\left\{V^W(\theta),V^N(\theta),V^B(\theta)\right\}, \tag{3}$$

where $V^W(\theta)$ is the value of working for others, $V^N(\theta)$ is the value of trying to launch a new business, and $V^B(\theta)$ is the value of buying a business. $U^S(\theta)$ and $U^K(\theta)$ are determined as follows:

$$U^S(\theta)=(1-\tau)p+V(\theta) \tag{4}$$

$$U^K(\theta)=\pi(\theta)+\beta(\mu(\theta)U(\theta)+(1-\mu(\theta))V(\theta)) \tag{5}$$

where $\beta\,(0,1)$ is a common discount factor. In addition, $V^W(\theta)$, $V^N(\theta)$, and $V^B(\theta)$ are determined as follows:

$$V^W(\theta)=w+\beta V(\theta) \tag{6}$$

$$V^N(\theta)=\beta(\eta U(\theta)+(1-\eta)V(\theta)) \tag{7}$$

$$V^B(\theta)=U(\theta)-p. \tag{8}$$

Let G_M be a measure of managers and G_W be a measure of workers. We note that G_M and G_W are not probability measures. So, it is possible that $G_M([\underline{\theta},\overline{\theta}])\neq1$ or $G_W([\underline{\theta},\overline{\theta}])\neq1$. It is assumed that G_M and G_W do not have a mass point in $[\underline{\theta},\overline{\theta}]$. That is, there is no $\theta\in[\underline{\theta},\overline{\theta}]$, for which $G_M(\{\theta\})>0$ or $G_W(\{\theta\})>0$. In addition, G_M and G_W do not have a gap in the sense that, for any $\theta',\theta''\in[\underline{\theta},\overline{\theta}]$ with $\theta'<\theta''$, $G_M([\theta',\theta''])>0$, and $G_W([\theta',\theta''])>0$.

3. Agent's choices

In this paper, we are interested in the economy where all choices are made. In other words, we are interested in U and V satisfying

$$G_M\left(\left\{\theta\in[\underline{\theta},\overline{\theta}]:U(\theta)=U^X(\theta)\right\}\right)>0 \quad\text{for each } X=S,K, \tag{9}$$

$$G_W\left(\left\{\theta\in[\underline{\theta},\overline{\theta}]:V(\theta)=V^X(\theta)\right\}\right)>0 \quad\text{for each } X=W,N,B. \tag{10}$$

This section is devoted to analyzing an agent's choices in such an economy. If the price p is high enough, a worker prefers working for others to buying a business, and so there may not be an economy in which all choices are made. We first find a condition on p for which

[2] For recent empirical evidence of the lock-in effect, see Ivković et al. (2005) and Dai et al. (2008).

[3] Chari et al. (2005) find from PSID data that more than 85% of entrepreneurs own only one firm, and more than 97% own one or two firms.

[4] One may consider a model in which a firm's profit depends on its quality. That is, a firm's profit depends on its quality $q\,\{q_l,q_h\}$ as well as the manager's type θ. Here, q_l represents low quality and q_h high quality. Then, a firm's profit is represented by $\pi(q,\theta)$. Similarly as before, assume that a high quality firm remains a high quality firm with probability $\mu(\theta)$ and becomes a low quality firm with probability $1-\mu(\theta)$ in the next period. In addition, assume that $\pi(q_l,\theta)=0$ holds for all $\theta\in[\underline{\theta},\overline{\theta}]$. Then, it can be shown that low quality firms are not traded in the market. Thus, low quality firms can be interpreted as a failure in continuing their businesses.

[5] With τ away from zero, we implicitly assume that there is a cost in trading businesses other than tax. Let the unit cost be $c>0$ and τ be a tax rate in transferring businesses. Then, the sellers, when they sell a firm, receive $(1-\tau)p$ where $\tau=\widetilde{\tau}+c$.

[6] We adopt this notion of capital gains tax following Chari et al. (2005). Letting the buyers pay a tax in transferring a business does not change the results in this paper.

[7] In this paper, an agent can be interpreted as a household. A source of change in θ is a change in the members of a household through birth and death. Another source is a technology shock. If an agent is behind in adopting a new technology, they become less efficient in managing a business.