Corporate Deductibility Provisions and Financial Constraints of Innovative Entrepreneurs

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Version: April 5, 2016

Abstract

A common feature of the majority of corporate income tax systems around the world is the fact that they treat returns to equity and to debt in a different manner. This characteristic leads to distortions on the financing decisions. Furthermore, startups face the problem of accumulating venture capital due to the accompanying high risk and the uncertain success. We defend the proposition that ACE, a product of public policy thought to mitigate the unequal treatment of returns to owned and borrowed capital, can also enhance the process of financing startups.

Keywords: Allowance for Corporate Equity, Corporate Income Tax Systems, Entrepreneurship, Finance, Public Policy

JEL classifications: D21, E62, F21, F30, G24, H20, H30

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1 Introduction

We are witnessing how technologies such as smart grids, smart homes, intelligent transportation, smart cities and programmable money set new rules on the functioning of economics and society. All these concepts are a result of innovation. Innovation is what leads society and economics ahead. However, exactly this revolutionary moment is usually connected with a high degree of risk. Therefore, financing these projects is a challenge. A matter of interest of this article is how public policy affects the financing aspects of entrepreneurship. Central to this paper is the question whether the ACE tax which is frequently seen as an improvement of the corporate income system can also enhance the financing of startups.

The paper first analyses the decision-making process of the source of the financial resources of entrepreneurship with taxation. Firms are allowed to decrease their profits with the interest they pay on debts. The companies benefit because that decreases their overall tax base and makes expansion cheaper. However, taxation also provides a structural effect in the sense that financing through debt becomes cheaper than financing through equity and therefore biases the financing decisions of firms. A high amount of debt makes business and the financial sector highly vulnerable to shocks. In this paper, we use a model to create a simplified setup of the above described problem. We demonstrate that the established firms and the startups finance themselves indeed with a high debt to equity ratio. In the next section, we introduce an allowance for corporate equity (ACE) as a result of the public policy which aims to decrease the incentives of piling up debt. Our results
indicate that an ACE indeed changes the financing decision and decreases debt. Our considerable contribution is archived in the second result we obtain, namely, that an ACE supports the startups in finding financiers.

The present paper carries on the analysis in three further sections. Section 2 consists of a brief literature review and brings to focus the main idea and theory about entrepreneurship and ACE. Section 3 comprises the main building blocks of the model we employ and investigates the default scenario and the changes which result after the implementation of an ACE. Section 4 presents the main results, a short summary and some final remarks.

2 Literature review

This paper suggests that public policy exercised through the introduction of ACE, can affect positively initial investment in startups as public sector and entrepreneurship interact in many aspects. Among other factors, this interaction has already been analyzed in terms of entrepreneurial training, government consulting, subsidies, output subsidies, moral hazard and progressive taxes capital gain taxes (Keuschnigg et al. 2001, Keuschnigg et al. 2004). The interplay between firm behavior and the exemption of the cost of investment has been investigated first by Boadway et al. (1984). Their suggestions have been recommended in the 1990’s (IFS, 1991) and nowadays are still under the scope of the analysis (Koethenbuerger et al. 2014). We combine the two theories and suggest, that an introduction of ACE would not only decrease the bias towards debt in financing already established firms, but also helps to finance entrepreneurship.
Around the world we can observe a variety of corporate income tax systems. However, one of the features which is true for most of them is that there is a different tax treatment of the income derived from equity and obtained capital. Namely, interest is deductible as an expenditure when calculating taxable profits, while dividends are not. Very often this matter is referred to as discrimination against equity finance (Klemm, 2006).

One can find many promising suggestions for reform in the corporate income tax system within the economic and political literature (Boadway and Bruce, 1984; Wenger, 1983). The proposition which is a matter of interest to us is the Allowance for Corporate Equity (ACE). It enables firms to “deduct a notional interest rate on their equity” (Klemm, 2007). This idea can be traced back to the early 80s of the 20th century with the theoretical tax suggestion of Boadway and Bruce. The authors believe that instead of deducting interest, one should calculate the allowance as the interest cost of total assets. A slightly different form of the ACE is provided by Devereux and Freeman (1991). They design ACE so it allows firms to deduct notional interest rate on their equity as well. Following the Fane’s (1987) definition of notional interest rate, namely that the notional interest rate is the risk free nominal interest rate because the tax advantages are certain. The above presented theories are not too far from each other in practical application. The total assets equal the total debt plus equity. Therefore, in practice the two approaches are equal, as long as the interest rate on debt paid is similar to the notional interest rate allowed on equity (Klemm, 2006).

The academic literature about ACE is divided into two fractions. Some of the strongest propositions defending the implementation of ACE are made
by the Institute for Fiscal Studies Capital Taxes Group (IFS, 1991) followed by Fehr and Wiegard (2003) pointing a variety of benefits of applying the allowance. On the other hand, there are researchers who deny such benefits and warn for the serious malfunctioning of the general tax systems due to ACE, especially when ACE is implemented only in a restricted number of countries (Isaac, 1997).

This work supports the introduction of ACE as our reasoning is to be found in the sections below.

3 The model

In the following sections, we develop a model which simulates the decision making process of the main economic agents within the set-up of financing entrepreneurship.

3.1 The setup

For the sake of the economic analysis, the stakeholders are separated into three main groups: depositors, banks and firms. Depositors are individuals and other firms who possess free financial resources and are eager to lend them to third parties in order to receive a return. Banks are financial institutions which main functions consist of the intermediation of capital. (IMF, 2003) Within the category “firms” we distinguish two types of companies with respect to the period of their establishment and market existence: an established firm which already has made their market appearance and have developed a network, against a startup, which just emerges on the market.
and has no reputation or developed client-supplier structure. For simplicity, we do not specify into the branches where the companies perform, products, services or investment projects. The two criteria by which we compare the startup and the established firm are the probability of success and the amount of equity, as we believe that namely they influence significantly the process of capital accumulation. Both, the startup and the old firm face a financing decision through equity and debt capital. The main source of borrowed capital is the bank. Both, the established firm and the startup choose a profit maximizing debt to equity ratio.

To make the agents’ choices clearer to observe and compare we assume that the bank must choose between lending funds to the old or the new firm. The two alternative investment projects bring a return to the bank equal to the interest rate defined by the capital market, plus an individual risk surcharge. Additionally, we assume that the startup does not have as much equity as the established firm. The risk surcharge increases with the ratio of debt to equity the established firm and the startup have. Due to the lower amount of equity the startup has, it faces a higher debt to equity ratio and therefore a higher risk surcharge. Accordingly, whenever the probability of the startup to be successful is high enough, it can become the profit maximizing choice of the bank to invest in. In case, the startup’s probability to be successful is sufficiently low, the bank prefers to invest in the established firm.

On its turn, the bank also does not operate with own capital only. The funds which the bank invests consist of its equity and borrowed capital, which is raised by the depositors. It can be shown, that a profit maximizing bank
only uses the depositors’ capital to invest in the two alternatives (Hellmann et al. 2000). Therefore, the risk neutral bank can be thought of as a risk intermediary who earns its profits only due to the risk surcharge.

The category “depositors”, or else the part of society which possess the free financial funds could potentially finance directly the firms. However, we assume them to be risk averse and thus prefer to lend their capital to the bank. The bank guarantees the depositors security due to a deposit insurance and a safe return. (Basel Commitee on Banking Supervision, 1997)

Under the current tax scenario in most of the countries, firms are able to deduct the costs for interest paid their on debt, but are not able to deduct the costs on the equity invested. This leads to the problem of a distortion of debt and equity in the financing decisions of the firms. To overcome this, the literature by Boadway and Bruce (1984) suggests an allowance for corporate equity (ACE). The ACE allows to deduct the costs for equity from the tax base. In this model, we show that the introduction of an ACE improves the financing problem of the startup (i.e. the firm with little equity). The introduction of the ACE incentivizes the established firm to decrease the debt to equity ratio more than the startup is able to. This increases the spread between the risk surcharges of the startup and the established firm and influences the bank’s investment decision in favor of the startup.

3.2 The default scenario without ACE

We investigate a startup and an established firm in the two-period framework $t = 0, 1$. At the beginning of period $t_0$, both firms have a certain level of
debt $B_0$ which is their borrowed capital by an external source. In this case, the venture capitalist is a bank. Additionally, the startup’s amount of equity is $X$. To enable a better comparison, the equity of the already established firm is denoted by $X + E_0$, where $E_0$ is the equity which the established firm managed to acquire before the startup was founded. The amount of equity a firm accumulates within period $t_0$ is $E_0^N$ which is true for both firms regardless of the period of establishment. The capital assets which include equity plus borrowed capital of the firms are denoted by $K_t$. Hence, $K_0$ is the capital asset in period $t_0$. The capital asset in the second period is the sum of the capital asset of the first period plus the investment from the first period. Therefore, the capital asset in period $t_1$ is $K_1 = K_0 + I_0$. Additionally, $K_2 = 0$ because the firms do not exist in the next third period $t_2$ so, they do no longer gain utility by a positive capital asset. Due to the fact, that startups do not issue shares, the model focuses on auto-financing. The firms’ investment $I_t$ therefore consists of the firms’ equity $E_t + E_t^N$ and the new debt capital in period which is $B_t^N$. Taking into consideration a corporate income tax, and following the ideas by Keuschnigg (2005), the dividends are

$$D_t = (1 - \tau)(\pi_t - (r + m_t(b_t))B_t) - E_t.$$ (1)

They consist of the after-tax profits of the firm where $\tau$ is the tax rate, $\pi_t$ the profit in period $t$, and $r_t + m_t(b_t)$ the interest rate plus a risk surcharge which is dependent on the rate of debt to equity $b_t$. The profits can either be distributed as dividends or accumulated, so the amount of equity $E_t$ diminishes the sum of dividends to be distributed. With capital assets of $K_t$, the total
amount of equity can be written as $K_t - B_t$ and, according to Keuschnigg (2005) the dividends are

$$D_0 = (1 - \tau)(\pi_0 - (r + m_0(b_0))B_0) - I_0 + B_0^N,$$

$$D_1 = (1 - \tau)(\pi_1 - (r + m_1(b_1))B_1) + K_1 - B_1.$$  

(2)     

(3)     

In this model, the startup and the established firm maximize their enterprise value

$$\max_{B_0^N} D_0 + \frac{D_1}{1 + r}$$  

(4)     

by choosing the optimal amount of new borrowed capital $B_0^N$ which they get by a bank in period $t_0$ given an investment $I$. Therefore, more specifically, the firms’ maximization problem is

$$\max_{B_0^N} (1 - \tau)(\pi_0 - (r + m_0(b_0))B_0) - I_0 + B_0^N$$

$$+ \frac{(1 - \tau)(\pi_1 - (r + m_1(b_1))(B_0 + B_0^N) + K_1 - B_1}{1 + r},$$

(5)     

where the risk surcharge $m_0(b_0)$ to be serviced to the bank depends on the ratio of debt capital and equity $b_0 = \frac{B_0}{X + E_0}$ with $X$ as the equity both firms have and $E_0$ the amount of the established firms equity above $X$. The debt in period $t_1$ consists of the debt already existing in period $t_0$ which is $B_0$ and of the borrowing in period $t_1$ which is $B_0^N$ such that $B_1 = B_0 + B_0^N$. The same is true for the equity in period $t_1$. Hence, $E_1 = X + E_0 + E_0^N$.  


Therefore, the ratio of debt and equity in period $t_1$ is

$$b_1 = \frac{B_1}{E_1} = \frac{B_0 + B_0^N}{X + E_0 + E_0^N}. \quad (6)$$

Additionally, the risk spread $m_t(b_t)$ increases proportionally to the ratio of debt and equity $b_t$ the firm holds ($m = \beta b_t$). The maximization problem

$$\frac{\partial (D_0 + D_1)}{\partial B_0^N} = 0 \quad (7)$$

leads to an optimal new borrowing of

$$B_0^N = \frac{\tau r (X + E_0 + E_0^N)}{2\beta(1 - \tau)} - B_0. \quad (8)$$

It is noteworthy to distinguish between the startup and the already established firm at his point as the startup was not able to accumulate equity before period $t_0$. This is modelled by $E_0 = 0$. Hence, the debt to equity ratios of the startup in periods $t_0$ and $t_1$ are

$$b_{S,0} = \frac{B_0}{X}, \quad (9)$$

$$b_{S,1} = \frac{B_0 + B_0^N}{X + E_0^N}, \quad (10)$$

whereas the debt to equity ratios of the already established firm are

$$b_{E,0} = \frac{B_0}{X + E_0}, \quad (11)$$

$$b_{E,1} = \frac{B_0 + B_0^N}{X + E_0 + E_0^N}. \quad (12)$$
The risk surcharges \( m_t = \beta b_t \) of the startup therefore are

\[
\begin{align*}
    m_{S,0} &= \beta \frac{B_0}{X}, \\
    m_{S,1} &= \beta \frac{B_0 + B_0^N}{X + E_0^N},
\end{align*}
\]

(13)

(14)

whereas the established firm pays

\[
\begin{align*}
    m_{E,0} &= \beta \frac{B_0}{X + E_0}, \\
    m_{E,1} &= \beta \frac{B_0 + B_0^N}{X + E_0 + E_0^N}.
\end{align*}
\]

(15)

(16)

As defined in the previous section, a potential source of capital is a financial institution, e.g. a bank or the depositors directly. However, the depositors are risk averse individuals who prefer to have a safe return. This is the return of a safe investment defined on the capital markets. Therefore, the individuals chose to lend their money to the bank. They benefit from the fact that first, the bank has a higher degree of information and second, according to the regulation there is certain level of guaranteed deposits. The bank is an intermediary between the depositors and the business, decreasing to highest degree the risk and offering a lower but safe return.

On the other hand, the bank is risk neutral. It chooses in which project to invest according to the profit maximization principle and discounts the profits in period 1 with a rate of \( \delta \). In case the startup is successful, the bank earns an interest rate \( r \) as well as a risk surcharge \( m_{S,t}(b_{S,t}) \) on each amount of capital invested in the startup. The risk surcharge is dependent on the rate of debt capital to equity the startup chose. Accordingly, the bank can receive
the interest rate $r$ plus a risk surcharge $m_{E,t}(b_{E,t})$ when investing in the firm already established on the market. Both, the startup and the established firm, have a certain risk of going bankrupt. As an assumption, the probability of the startup to be successful $\theta_S$ is smaller than the probability of an already established firm to continue on the market $\theta_E$. The bank realizes a profit due to the spread between the return of the investment and the interest rate $r$ payed to the depositors for every amount of deposits $\varphi$. Additionally, we take into consideration the bank’s opportunity costs $\rho$ for each amount of equity. The latter can be thought of as the difference between the capital invested in the firms and the deposits. Therefore, with a corporate income tax $t$, the after-tax profit $\pi_E$ of the bank when investing in the already established firm is

$$
\pi_E = (1 - t) \left( \theta_E \left( \left( r + \beta \frac{B_0}{X + E_0} \right) B_0 - r \varphi_{E,0} \right) - \rho (B_0 - \varphi_{E,0}) \right) (17) \\
+ \frac{(1 - t) \left( \theta_E \left( \left( r + \beta \frac{B_0 + B_0^N}{X + E_0 + E_0^N} \right) (B_0 + B_0^N) - r \varphi_{E,1} \right) \right)}{1 + \delta} \\
- \frac{\rho (B_0 + B_0^N - \varphi_{E,1})}{1 + \delta},
$$

whereas the profit when investing in the startup is

$$
\pi_S = (1 - t) \left( \theta_S \left( \left( r + \beta \frac{B_0}{X} \right) B_0 - r \varphi_{S,0} \right) \right) - \rho (B_0 - \varphi_{S,0}) (18) \\
+ \frac{(1 - t) \left( \theta_S \left( \left( r + \beta \frac{B_0 + B_0^N}{X + E_0} \right) (B_0 + B_0^N) - r \varphi_{S,1} \right) \right)}{1 + \delta} \\
- \frac{\rho (B_0 + B_0^N - \varphi_{S,1})}{1 + \delta}.
$$
Following Hellmann et al. (2000), we assume the bank’s opportunity cost of capital to be larger than the expected return of the prudent asset ($\rho > r$). Calculating the optimal amount of borrowed capital of the bank, one finds that financing through debt capital will always increase the bank’s profits due to

$$\frac{\partial \pi_E}{\partial \varphi} = (1 - t)(\rho - r\theta_E) + \frac{(1 - t)(\rho - r\theta_E)}{1 + \delta} > 0,$$

(19)

$$\frac{\partial \pi_S}{\partial \varphi} = (1 - t)(\rho - r\theta_S) + \frac{(1 - t)(\rho - r\theta_S)}{1 + \delta} > 0,$$

(20)

which means that the bank will only invest debt capital. Thus, the bank’s profit when investing in the established firm is

$$\pi_E = (1 - t) \left( \theta_E \left( \left( r + \beta \frac{B_0}{X + E_0} \right) B_0 - r\varphi_{E,0} \right) \right)$$

$$+ \frac{(1 - t) \left( \theta_E \left( \left( r + \beta \frac{B_0 + B_N^N}{X + E_0 + E_N^N} \right) (B_0 + B_N^N) - r\varphi_{E,1} \right) \right)}{1 + \delta}.$$ 

(21)

Applying the same logic on the after-tax profits when investing in the startup leads to

$$\pi_S = (1 - t) \left( \theta_S \left( \left( r + \beta \frac{B_0}{X} \right) B_0 - r\varphi_{S,0} \right) \right)$$

$$+ \frac{(1 - t) \left( \theta_S \left( \left( r + \beta \frac{B_0 + B_N^N}{X + E_0} \right) (B_0 + B_N^N) - r\varphi_{S,1} \right) \right)}{1 + \delta}.$$ 

(22)
Due to the fact, that the bank is only investing the depositors’ capital, we know that the deposits invested by the bank equal the amounts of debt capital chosen by the firms

\[
\varphi_{E,0} = B_0, \quad (23)
\]

\[
\varphi_{E,1} = B_0 + B_0^N, \quad (24)
\]

\[
\varphi_{S,0} = B_0, \quad (25)
\]

\[
\varphi_{S,1} = B_0 + B_0^N. \quad (26)
\]

The bank will invest in the established firm as long as it can earn higher profits than investing in the startup (i.e. \( \pi_E \geq \pi_S \)), which is true for

\[
\frac{\theta_E}{\theta_S} \geq T^{DEF} = \frac{\beta B_0^2}{X} + \beta \left[ \frac{1}{1+\delta} \right] \frac{(B_0 + B_0^N)^2}{X + E_0^N}.
\]

One can see that the bank’s decision is not dependent on the capital market’s interest rate because it simply acts as an intermediary carrying the investment risk.

### 3.3 Introduction of ACE

In this section, we investigate how the introduction of an ACE affects the investment decisions of the agents. The ACE diminishes the incentives to
use debt capital and leads to a maximization problem of

$$\max_{B_0^N} \quad (1 - \tau)(\pi_0 - (r + m_0(b_0))B_0) + \tau r(K_0 - B_0) - I_0 + B_0^N$$

$$+ \frac{(1 - \tau)(\pi_1 - (r + m_1(b_1))(B_0 + B_0^N)) + (1 + \tau r)(K_1 - B_1)}{1 + r}$$

on the firms' level. The optimal new borrowing therefore is

$$B_0^N = -B_0$$

(29)

which means the firm will try to amortize the existing debt $B_0$ in the second period. Therefore, the debt to equity ratios of the established firm are

$$b_{E,0} = \frac{B_0}{X + E_0},$$

(30)

$$b_{E,1} = 0.$$  

(31)

Hence, it has a to pay risk surcharges of

$$m_{E,0} = \beta \frac{B_0}{X + E_0},$$

(32)

$$m_{E,1} = 0.$$  

(33)

As opposed to this, the startup is not able to pay back the full amount of its debt because the debt exceeds its equity (i.e. $X + E_0^N < B_0$). The startup will amortize the debt to the highest possible degree. Hence, its debt
to equity ratios and risk surcharges are

\begin{align*}
    b_{S,0} &= \frac{B_0}{X}, \\
    b_{S,1} &= \frac{B_0 - E_0 - X}{X + E_0^N}, \\
    m_{S,0} &= \beta \frac{B_0}{X}, \\
    m_{S,1} &= \beta \frac{B_0 - E_0 - X}{X + E_0^N}.
\end{align*}

(34) \quad (35) \quad (36) \quad (37)

The introduction of the ACE also influences the banks profits directly through the lower tax base and, more importantly, indirectly due to the firm’s choices which influence the risk surcharges. Hence, they can be calculated as

\begin{align*}
    \pi_E &= (1 - t) \left( \theta_E \left( \left( r + \beta \frac{B_0}{X + E_0} \right) B_0 - r \varphi_{E,0} \right) - \rho (B_0 - \varphi_{E,0}) \right) \\
    &\quad + \frac{(1 - t) \left( \theta_E \left( r(B_0 + B_0^N) - r \varphi_{E,1} \right) - \rho \left( B_0 + B_0^N - \varphi_{E,1} \right) \right)}{1 + \delta}
\end{align*}

(38)

and

\begin{align*}
    \pi_S &= (1 - t) \left( \theta_S \left( \left( r + \beta \frac{B_0}{X} \right) B_0 - r \varphi_{S,0} \right) - \rho (B_0 - \varphi_{S,0}) \right) \\
    &\quad + \frac{(1 - t) \left( \theta_S \left( \left( r + \beta \frac{B_0 - X - E_0^N}{X + E_0^N} \right) (B_0 - X - E_0^N) - r \varphi_{S,1} \right) \right)}{1 + \delta} \\
    &\quad - \frac{\rho \left( B_0 - X - E_0^N - \varphi_{S,1} \right)}{1 + \delta}.
\end{align*}

(39)
Again, due to

\[
\frac{\partial \pi_E}{\partial \varphi} = (1 - t)(\rho - r\theta_E) + \frac{(1 - t)(\rho - r\theta_E)}{1 + \delta} > 0 
\]  
(40)

\[
\frac{\partial \pi_S}{\partial \varphi} = (1 - t)(\rho - r\theta_S) + \frac{(1 - t)(\rho - r\theta_S)}{1 + \delta} > 0 
\]  
(41)

the bank will only invest the depositors’ money which leads to after-tax profits of

\[
\pi_E = (1 - t)\theta_E \left( \left( r + \beta \frac{B_0}{X + E_0} \right) B_0 - r\varphi_{E,0} \right) 
\]  
\[ + \frac{(1 - t) \left( \theta_E \left( r(B_0 + B_0^N) - r\varphi_{E,1} \right) \right)}{1 + \delta} \]  
(42)

when investing in the established firm. With an investment in the startup the bank realizes profits of

\[
\pi_S = (1 - t)\theta_S \left( \left( r + \beta \frac{B_0}{X} \right) B_0 - r\varphi_{S,0} \right) 
\]  
\[ + \frac{(1 - t) \theta_S \left( \left( r + \beta \frac{B_0 - X - E_0^N}{X + E_0^N} \right) (B_0 - X - E_0^N) - r\varphi_{S,1} \right)}{1 + \delta} \]  
(43)

Again, the bank only investing the depositors’ money means that the bank’s deposits invested equal the debt capital chosen by the firms

\[
\varphi_{E,0} = B_0, 
\]  
(44)

\[
\varphi_{E,1} = 0, 
\]  
(45)

\[
\varphi_{S,0} = B_0, 
\]  
(46)

\[
\varphi_{S,1} = B_0 - X - E_0^N. 
\]  
(47)
The bank will invest in the already established firm as long as the profits of this investment exceed the profits of investing in the startup (i.e. \( \pi_E \geq \pi_S \)). This is satisfied as long as

\[
\frac{\frac{\partial \pi_{ACE}}{\partial \theta_{ACE}}}{\frac{\partial \pi_{ACE}}{\partial \theta_{ACE}}} \geq T_{ACE} = \frac{\frac{3B_0^2}{X} + \frac{1}{1+\delta} (B_0 - X - E_N^0)^2}{\frac{3B_0^2}{X + E_0^N}}.
\]

Observing the conditions under which the bank will invest in the different alternatives, one can see that the bank invests in the established firm as long as the threshold value given by the ratio of the probabilities for the established firm and the startup is sufficiently low. Whenever this condition is not satisfied, the bank will invest in the startup. Therefore, in case the threshold value under ACE decreases, the bank will have an incentive to invest in the old firm. Accordingly, an increase in the threshold value influences the bank’s investment decision in favor of the startup. The introduction of an ACE will improve the startups position if

\[
T_{ACE} > T_{DEF},
\]

which is true for any

\[
\beta > \frac{(1 - B_0 + E_0^N)^2 \left( \frac{1 + E_0 + E_0^N}{(1 + B_0 + B_0^N)^2} - \frac{1 + E_0}{B_0^2(1 - \delta)} \right)}{E_0 E_0^N}.
\]

This condition is always satisfied because the risk surcharge is positive. Therefore, the introduction of an ACE eases the startups problem of finding investors. Additionally, it incentivizes the bank to choose the riskier
alternative.

4 Conclusion

This paper investigates a promising proposition for an improvement of the corporate income tax system through public policy which we also believe will improve the possibilities for financing entrepreneurship. As we defined above, the existing system treats returns to equity and debt differently, which is often appointed as discrimination against equity finance. Therefore, model the existing default scenario and present the process of investment decision making. We show that firms obtain debt capital by financial institutions. On the other hand, the bank, as a representative of the financial institutions in our model, invests only the accumulated funds by the depositors. The investment decision is made according to its profit maximization problem based on the debt to equity ratios of the firms and their probabilities of success on the market. In the second part of the model, we simulate how an introduction of an ACE influences the whole tax environment which means that it affects the financial institutions and the firms. The bank serves as intermediary between depositors and firms investing debt capital only. Therefore, the introduction of an ACE did not change the ratio between owned and borrowed capital of the bank. The ACE affects the two types of firms in a different manner. The established firm pays back debt capital from period $t_0$ which decreases its debt to equity ratio in the second period. In this manner, the ACE decreases the risk surcharge, which the established firm needs to pay. In contrast, the startup cannot pay back the whole borrowed capital from period $t_0$ and thus
decreases its debt to equity ratio only to a certain degree. On its turn, the bank recognizes an increase in the spread between the risk surcharges of the two firms, while the probabilities of success of the startup and established firm stay unaffected. Our key finding states that the introduction of an ACE incentivizes the bank to invest in startups. Thus, ACE can be shown as an example not only for a solution of the problem discrimination against equity finance, but also as a public policy product which supports entrepreneurship.

References


