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Owner-Level Taxes and Business Activity

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Abstract: In some classes of models, taxes at the owner level are "neutral" and have no effect on firm activity. However, this tax neutrality is sensitive to assumptions and no longer holds in more complex models. We review recent research that incorporates greater complexity in studying the link between taxes and business activity – particularly entrepreneurship.

Dividend taxes on owners of large firms affect firm activity in models that include agency conflicts between owners and managers. Similarly, after incorporating entrepreneurs' occupational choice into the model, taxes are no longer neutral. By forsaking lucrative alternative careers, skilled entrepreneurs tend to have high opportunity costs, which make the choice of attempting to start a business of first order importance. Moreover, in models where it is assumed that capital flows across borders without cost, taxes on domestic business owners do not alter business activity because foreign capital seamlessly compensates for tax-induced declines in investments. This theoretical notion is contradicted by the strong "home bias" observed in business ownership, in particular for small firms and startups without easy access to international capital markets.

Recent empirical work has emphasized that taxes have heterogeneous effects on mature firms, entrepreneurial startups, and owner-managed small firms. Lowering dividend taxes on firms with dispersed ownership has been shown to shift capital from mature firms into rapidly growing firms. Moreover, capital gains taxation tends to reduce the number of innovative startups and diminish venture capital activity, while high owner-level taxes encourage small business activity and non-entrepreneurial self-employment because such firms have more opportunities to avoid or evade taxes.

To obtain efficient incentives in entrepreneurial startups, contractual terms are required that *ex ante* guarantee that all providers of critical inputs, especially equity constrained entrepreneurs, are entitled to a share of the resulting capital value firm. Unless properly designed, owner-level taxes prevent such *ex ante* contracting and thus lower the likelihood of eventual success.

Keywords: Business taxation; Capital income taxation; Corporate governance; Entrepreneurship; Institutions; Tax policy.

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Table of contents

Executive summary 2

Introduction 5

PART I: TAX EFFECTS ON INCUMBENT COMPANIES 10

1. Taxation of mature companies 11

1.1 The old view of firm taxation 11

1.2 The new view of firm taxation 12

1.3 The open economy view of firm taxation 14

1.4 Policy implications of the new view of firm taxation 15

1.5 The old or the new view of firm taxation: What does the empirical evidence suggest? 16

2. Corporate governance and taxation 22

2.1 The effects of taxation on the conflicts of interest between owners and management 23

2.2 Empirical research on corporate governance and taxation 24

3. The relevance of the small open economy model for owner-level taxation 28

3.1 Foreign and domestic owners are not perfect substitutes 28

3.2 Ownership taxes, ownership structure, and wealth accumulation 31

3.3 Firm size and access to foreign capital 33

4. Tax effects on existing firms – a summary of the different views 35

PART II: THE EFFECT OF TAXES ON STARTUPS AND ENTREPRENEURIAL FIRMS 38

5. Owner-level taxes and entrepreneurship 39

5.1 What does entrepreneurship mean and how is it measured? 39

5.2 The effects of taxation on different types of firms 41

5.3 Entrepreneurship and its support structure 43

5.4 Entrepreneurship as a factor of production 47

6. Taxation of stock options and innovative entrepreneurship 53

7. The effects of different taxes on debt and owners' equity 59

8. Conclusions 61

References 65

About the authors 73

Executive summary

In recent years, advances in both theoretical and empirical research have painted a clearer picture of the effects of owner-level taxation on business activity. Commonly used macroeconomic models tend to find that taxes at the owner level are "neutral" and have little or no effect on firm activity. However, the conclusion that ownership taxation has no effect on firm behavior – and, as a corollary, on entrepreneurship – is derived from models based on certain (unrealistic) simplifications. Thus, the internal behavior of firms in these models is often treated as a black box, which effectively abstracts from certain features of firm activity. In general, models whose assumptions are simplified to exclude a dimension of choice or complexity cannot identify the distortionary effects of taxation on this dimension. When complex and more realistic dimensions such as entrepreneurship and corporate governance are incorporated into these models, taxes can affect business activity through these channels.

Dividend taxes on owners of large firms are no longer neutral in models that incorporate agency conflicts between owners and managers. Similarly, taxes are no longer neutral after incorporating the entrepreneur's occupational choice into the model. Potentially innovative entrepreneurs are few and not easily replaced. They have typically left secure and high-paying jobs to start their own companies – a proposition that entails a high risk of failure. Taxes largely determine how lucrative these choices are, which makes occupational choice a central variable in taxation models that incorporate entrepreneurship.

Taxes on domestic business owners do not affect business activity in small open economies when capital is assumed to flow without cost across countries. However, this assumption is not consistent with the strong observed "home bias" in business ownership. Due to information costs, network effects, proximity advantages, corporate governance and other reasons, investors tend to prefer to invest in their home country. Such a persistent home bias indicates that the neutrality result for owner-level taxes in small open economies no longer holds because domestic business ownership can no longer be expected to be fully replaced by foreign ownership, in particular for those small firms and startups that do not have easy access to international capital markets.

Recent empirical research has emphasized the importance of distinguishing among various types of firms. Taxes do not have the same effect on mature firms, entrepreneurial startups, and small owner-managed firms. Although no robust link has been established empirically between the general tax rate and small business activity, studies consistently find that capital

gains taxation tends to be associated with fewer innovative startups and diminished venture capital activity.

Taxes are often found to affect mature and cash-constrained firms in different or even opposite ways. Lower taxes on dividends lead to increased dividend payouts – and reduced investments – by mature firms with substantial cash flows, which in turn makes capital available to credit-constrained firms; in other words, large and mature firms are less likely to hold cash, freeing it up for investment in smaller and rapidly growing firms. Consequently, the effect of the tax cut on investments is not uniform. Mature firms may react differently to taxes than entrepreneurial startups that rely on external capital. To the extent that new and growing firms have a role as radical innovators and prime contributors to creative destruction (Schumpeter 1934), this type of taxation hampers Schumpeterian creative destruction by favoring existing firms over new firms.

Similarly, small "mom-and-pop" businesses may differ significantly from high-tech startups in their behavioral responses to taxes. The group of firms that are ambitiously innovative and rapidly growing is far smaller and quite different from the broader group of firms. High levels of taxation may in fact promote small business activity and non-entrepreneurial self-employment because such firms have more opportunities to avoid or evade taxes. However, the potential for rapid growth and innovation is often low in business activities motivated by tax avoidance. By contrast, high tax rates tend to reduce the ability of new innovative startups to attract capital and entrepreneurial talent from competing sectors.

When the elasticity of taxable income is used as the relevant measure, virtually all studies find that business owners are more responsive to income tax than salaried employees, at least partly due to the greater flexibility in tax planning enjoyed by owners/entrepreneurs. There is also some evidence suggesting that entrepreneurs may be more responsive to taxation in real terms – perhaps because their efforts are rewarded with a greater share of firm profit than salaried employees.

Notably, the common notion that income emanates either from capital or from labor is derived from a simplified model of reality. In certain applications, it may be reasonable to consider entrepreneurship as a separate factor of production with unique features that make distinct contributions to value added. This clarifies that owner-level taxation is unlikely to be neutral with respect to allocating and utilizing entrepreneurial talent. When examining entrepreneurship, the return on labor cannot be distinguished from the return on capital because the value created emanates from the combination of entrepreneurial talent, labor

effort, human capital and financial capital. Likewise, the contribution that the capital from outside investors makes to value creation cannot be separated from the entrepreneurial insight, knowledge and effort supplied by the founder(s) and key employees.

Great value can be created if the concerted effort of this inseparable bundle of inputs results in the emergence of a successful firm. To obtain efficient incentives, contractual terms are required that *ex ante* guarantee that all providers of inputs to the inseparable bundle will receive a share of the capital value that may be created by building the firm. Unless properly designed, owner-level taxes prevent such *ex ante* contracting and lessen the likelihood of eventual success.

Startups funded by venture capital rely heavily on stock options and convertible equity to compensate owners and design contracts that harmonize incentives across agents – founders, financiers and key employees. These types of financial instruments are believed to be well suited for addressing the complex contractual problems characterizing venture capital–funded firms and are widely used when they are taxed at a low rate. We show that there is a strong cross-country association between the *de facto* tax on stock options and venture capital activity.

A key lesson from this essay is that the models used in economics are necessarily simplified. Moreover, it is important for political decision makers to be conscious of these simplifications when the conclusions derived from economic models motivate or are used to justify tax policy decisions. Conclusions from overly simplified models – such as the model that concludes that dividend taxes do not influence firm behavior – may thus change when additional factors are considered.

Introduction

Most countries tax business activity at both the firm and owner levels. Unlike corporations, which pay a tax on their profits, owners of corporations pay a tax on both *dividends* and *realized capital gains.* There is an extensive literature on the effects of ownership taxation on mature corporations with dispersed ownership. Although less extensive, the research on how dividend and capital gains taxation influences business creation and entrepreneurship is steadily growing.

There is no consensus on how ownership taxation influences the behavior of large public firms. Instead, various schools of thought – or "views" – have emerged and come to quite different conclusions regarding the effects of owner-level taxation. The school of thought known as the "new view" concludes that ownership taxation is relatively unimportant to firm and investment behavior, whereas the "traditional" or "old view" concludes that such taxes have significant distortionary effects on such behavior. The differences in these conclusions depend on how business activities are modeled theoretically and on the assumptions they make regarding the firm's source of finance.

The conclusion that ownership taxation has no effect on firm behavior – and, as a corollary, on entrepreneurship – derives from macroeconomic models in which firms are modeled in a simplified manner or are simply absent. The internal behavior of firms is often treated as a black box, which effectively abstracts from certain features of firm activity. However, this class of taxation models ignores three particular and important factors: entrepreneurship, corporate governance, and the imperfect mobility of capital between countries. The effect of ownership taxation on new and entrepreneurial firms is shown to be sensitive to whether entrepreneurs are incorporated into the models. The predicted effects of owner-level taxation on public firms with dispersed ownership can, for example, be reversed by considering the effects on corporate governance. Another empirically questionable assumption that can lead to the conclusion that ownership taxation is unimportant for both large companies and entrepreneurship is that foreign capital is a perfect substitute for domestic capital.

In recent years, the pendulum has swung back in the sense that theoretical and empirical research has reverted to the position that ownership taxation does affect firm activity. New models that incorporate complex dimensions (such as entrepreneurship and corporate governance) find the effect of taxes operating through these dimensions. Meanwhile, in the wake of both major changes in capital taxation in the United States and methodological advances, many new empirical studies on ownership taxation have been published.

Most of the new empirical and theoretical work focuses on how dividend taxation affects the behavior of large public firms. Dividend taxes mainly affect large established firms with dispersed ownership but also impact entrepreneurial firms. The literature on dividend taxation has some direct relevance for entrepreneurs who also pay dividend taxes, but these taxes are generally of far greater indirect relevance for entrepreneurs. The small research field of entrepreneurial taxation has largely relied on the same class of theoretical models that study dividend taxation. One important purpose of this essay is to summarize the large body of work on dividend taxation and draw parallels to the smaller related literature on entrepreneurial firm taxation.

The most important development in empirical research related to dividend taxation is the consideration of firm heterogeneity. In this context, firm heterogeneity is relevant to the extent that different types of firms react differently to taxes. Notably, reductions in dividend taxes tend to reduce investments by mature, well-financed firms and increase investment by rapidly growing, cash-constrained firms. The importance of taking firm heterogeneity into account is at least as important in the study of taxation of entrepreneurial activity. Owner-level taxes do not appear to affect the self-employed and small "mom-and-pop" firms in the same manner in which they affect high-growth startups and other Schumpeterian entrepreneurial firms.

We divide firms into three broad categories to examine how they are influenced by taxation:

- *Established or mature large firms* tend to account for most of the value-added, exports, and research and development (R&D). These companies tend to have dispersed ownership and are largely controlled by management, at least in the United Kingdom and the United States.
- *Schumpeterian entrepreneurial firms* refer to firms that introduce a new technology or innovation and have the ambition to grow. Although these firms are relatively few in number, they are believed to be disproportionately important to economic growth and job creation. There is a (partly semantic) discussion on how to define entrepreneurship that we will not focus on.[1] Henceforth, the term entrepreneurship refers to Schumpeterian entrepreneurship as defined in this paragraph.
- *Small businesses* and the self-employed are here defined as companies that are not innovative and have little ambition to grow above a certain size. Small businesses or solitary self-employment (with no employees in addition to the owner) are often the optimal size in many sectors. This class of firms is particularly important for job

[1] This is discussed in more detail in Henrekson and Sanandaji (2014a).

creation in some industries and or some categories of workers, particularly the young and the foreign-born.

There are also several types of taxes:

- *Corporate tax:* The corporate tax is levied at the firm level as opposed to the owner level.
- *Owner-level taxes:* The two main owner-level taxes are *dividend taxes* and *capital gains taxes.*
- *Income taxes of business owners*: In many countries, the incomes of the self-employed and sole proprietors are taxed as a type of labor income.

Our focus is on owner-level taxes, notably capital gains taxes, dividend taxes, and income taxes. We show that the importance of these taxes varies with the type of firm. In general, capital gains taxes are more important for Schumpeterian startups, dividend taxes are more important to mature firms, and income taxes are more important to small firms and sole proprietors. Notably, we are not concerned with corporate taxes, as there is relative agreement on their effects.

This essay is organized as follows. Part I (sections 1–4) addresses the effects of owner-level taxes on mature companies. In section 1, we survey and evaluate the research on the effects of owner-level taxes for mature, large companies. Until recently there were three schools of thought or "views" on this matter. According to the old view, taxing corporate owners reduces incentives to save and invest, whereas the new view arrives at the same conclusion with regard to the capital gains tax. According to the new view, however, dividend taxes do not affect investment behavior. The conclusions of the more recent open economy analyses are more far-reaching: Capital gains taxes (and other taxes on capital) that reduce domestic capital supply do not affect firm finance in small open economies because capital can be imported from abroad.

In section 2, we present the new agency view, which incorporates principal-agent problems between owners and management regarding owner-level taxes. This view notes that when ownership and management are separated, a conflict of interest emerges regarding the use of firm cash flow. Managerial incentives to pay low dividends to shareholders and overinvest in existing businesses are amplified by owner-level taxes, thus exacerbating the inherent principal-agent problem.

In section 3, we discuss the empirical validity of the strong capital mobility assumption underlying the open economy view. Empirical evidence has documented a strong propensity to invest in one's home country, indicating that international capital is far from perfectly mobile across borders. It is thus misguided to presume that foreign capital can or will fully substitute for domestic capital. Moreover, it is more difficult for small and new firms to access international capital markets for a host of reasons that we discuss at some length.

In section 4, we summarize the different views. We conclude that tax theorists have relied historically on relatively simple black-box models of the inside of the firm. However, more complex models of firm activity have recently produced different results than previous models. Both recent theoretical and empirical studies support the view that owner-level taxes are likely to have sizable effects on business activity.

In Part II of this essay (sections 5–7), we address the effects of owner-level taxes on startups and entrepreneurial firms. In section 5, we discuss the effects of such taxes on entrepreneurship. Innovative startups are increasingly dependent on venture capitalists that provide both external financing and complementary skills. Entrepreneurship is a unique activity characterized by relation-specific assets, conflicts of interest, low liquidity, weak cash flow in early stages, and high levels of uncertainty. All these features make it particularly difficult to write contracts that cover all contingencies. In such cases, owner-level taxes cause distortions by reducing the returns on the cooperative efforts of entrepreneurs and external financiers that target mutual goals. Owner-level taxes also affect the occupational choice margin, making it less lucrative to leave a salaried position to attempt to create a firm.

In section 6, we explain and analyze the importance of stock options as an instrument to overcome agency conflicts and harmonize incentives across agents – founders, financiers and key employees. Complex contracts, which themselves can be regarded as organizational innovations, have evolved to facilitate cooperation and reduce conflicts of interest. We show that in countries in which the taxation of stock options is low or moderate, a spectrum of option contracts are frequently used in agreements among founders, financiers and key employees of startups, whereas such contracts are rarely used in countries in which gains on stock options are taxed at high labor income rates. In the latter countries, venture capital investments are also low.

In section 7, we discuss the fact that virtually all national tax systems favor debt over equity financing. This factor increases the debt-equity ratio of firms and makes the economy more

vulnerable, while penalizing early stage ventures relative to mature companies. In addition, it penalizes technological or human capital relative to physical capital and real estate.

In the eighth and final section, we present our main conclusions. Most importantly, our interpretation of the new empirical research is that owner-level taxes – on both dividends and capital gains – have economically significant effects on key aspects of firm activity, including innovative start-up activity, allocation of investments, capital structure and ownership structure. Our findings on the behavioral effects of such taxes are more consistent than in the earlier literature.

PART I: TAX EFFECTS ON INCUMBENT COMPANIES

1. Taxation of mature companies

The research on corporate taxation is remarkably consistent: corporate taxes reduce investments and increase the debt-equity ratio. The discussion mainly involves the size of the effect and the optimal design of the corporate tax system (see, e.g., Auerbach et al., 2010).

There is no corresponding consensus on the effects of owner-level taxes, particularly regarding the dividend tax. Thus, several schools of thought have developed with different views on how ownership taxes influence behavior. The decade-long debate on dividend taxes has produced valuable methodological insights that are also indirectly relevant to other taxes.

In this section, we will review the three major views on the effect of owner-level taxation: the old view, the new view and the open economy view. For each of the three views, we will identify the basic assumptions and policy conclusions regarding dividend and capital gains taxation. In subsequent sections, we review more recent studies that directly examine previously ignored topics, such as corporate governance and entrepreneurship.

1.1 The old view of firm taxation

The theory of corporate income tax developed by Harberger (1962) is considered the pioneering work in this field. By analyzing corporate taxes using a general equilibrium model that considers the entire economy rather than only a single market, he divided the economy into two sectors: the formal and informal sectors. Companies are taxed in the formal sector but not in the informal sector. The tax system distorts the allocation of resources because it causes investments to be diverted from the taxed (formal) sector to the untaxed (informal) sector. Harberger's study also showed that the tax incidence is not necessarily borne by those who are formally obligated to pay the taxes. Instead, the incidence is determined by how taxes affect different prices in the economy. For example, the incidence of the corporate tax is borne by employees to the extent that reduced demand for labor lowers their salaries. In this context, it is notable that Harberger ignored any potential effect on total savings as a result of taxation. Total savings in the economy is taken as given, and the analysis only examines how savings are allocated between the two sectors. However, Harberger notes that the distortions would likely have been greater if his model had also considered the effects on savings behavior.

The Harberger (1962) model consists only of economic sectors. There are no firms and no entrepreneurs in the model. As a result, a number of fundamental issues cannot be analyzed within the model's framework. For example, the model does not distinguish between

corporate income taxes and taxes on owners' dividends and capital gains. The model also assumes that companies finance their investments with new share issues and distribute all profits to their owners. Thus, the model does not analyze debt financing compared with financing with retained earnings. Entrepreneurship is not included as a factor of production; in fact, entrepreneurship is simply not considered. Thus, investment decisions and new firm entries that emanate from market disequilibria and that push the economy toward equilibrium occur automatically or in ways that remain outside the model framework.

Harberger (1962) laid the foundation for what is now commonly referred to as the old or traditional view of firm taxation. Poterba and Summers (1983, 1985) developed the old view further with more advanced models that assume that mature companies favor paying dividends to owners despite sizable taxes on dividends. This preference for paying dividends is exogenous in Poterba and Summers' model, i.e., it is assumed rather than derived. In other words, although the model does not explain why companies tend to maintain a steady stream of dividends, it assumes that this tendency exists in a black-box setting, i.e., for reasons that are excluded from the analysis. The strong tendency toward paying dividends assumed by Poterba and Summers is consistent with actual firm behavior. If this preference exists, cutting dividends to finance marginal investments is costly for the firm, making tax-induced changes in behavior distortive.

More recent studies develop these ideas further and take substantial steps toward developing a more realistic and complete model of the firm rather than treating it as a black box. In particular, Chetty and Saez (2005, 2010) derive the preference for paying dividends with reference to information costs and conflicts of interest between owners and management. Because a company is expected to distribute a stable flow of dividends in the foreseeable future, its cash flow is partially or completely committed to dividends and previous investment programs. Therefore, even mature firms with positive cash flow tend to finance new investments at the margin by issuing new equity rather than using retained earnings. When this is the case, the dividend tax is distortive.

1.2 The new view of firm taxation

A central concept in theories of corporate taxation is the firm's marginal cost of capital (Jorgenson, 1963, 1967), which equals the risk- and liquidity-adjusted cost of financing new investments. According to the old view, two-tier taxation – taxation at both the firm and the owner levels – leads to distorted financial decisions, among other types of distortions. The distortion arises because two-tier taxation incentivizes debt financing over equity financing,

favors using retained earnings for investments rather than distributing them as dividends, and discourages firms from raising capital through new equity issues.

To conclude that such distortions have negative welfare effects, it is typically assumed that companies' financial decisions also have real effects. However, this need not be the case, at least in theory. Modigliani and Miller (1958) demonstrated that a company's value in a frictionless economy should be unaffected by how the company finances itself. Their explanation is that owners can manage their investment portfolios to offset the tax effects of the company's financing structure. Theoretically, if some forms of financing are tax-favored, then, *ceteris paribus*, companies will use only these sources of finance.

In most countries, debt financing provides firms with a tax advantage compared with equity financing, such that rational firms should rely exclusively on debt financing. In that case, taxes have no effect on investment decisions because the firm's marginal cost of capital would equal the market rate of interest (Stiglitz, 1973). However, Stiglitz's "neutrality view" is not consistent with observed behavior. Firms finance their operations using a mixture of debt and equity. In particular, significant costs seem to be associated with a high debt-equity ratio, including a sharply increased risk of bankruptcy. Another problem with a high debt-equity ratio relates to the disincentive for external financiers to grant loans to firms whose owners' own financial risk-taking levels are low or negligible. Unless owners assume a substantial financial risk themselves, lenders may suspect that the firm is engaging in activities that are overly risky and may be less willing to extend credit, as a result. Such costs limit debt financing even when it is heavily tax-subsidized.

In contrast with the old view, King (1974, 1977), Auerbach (1979), Bradford (1981), and Sinn (1987) developed what is now called the new view of company taxation. The new view accepts the fundamental idea that owners' equity should be used to finance investments and that firms should pay dividends. The models also assume that companies can obtain the capital they need by reinvesting their earnings rather than relying on external sources of capital. A company has three main sources of finance for new investments: new share issues, retained earnings, and debt. The relative advantages of these three financing options substantially depend on the applicable tax rules and, in particular, on the extent to which interest payments are tax-deductible for firms.

A tenet of the new view is the presumption that retained earnings are the most important or even the only source of finance for marginal investments. In contrast to the old view, the new view holds that the company's marginal cost of capital under certain assumptions is

independent of dividend taxes, i.e., dividend taxes (however high) do not affect investments. This conclusion hinges on the assumption that retained earnings – as opposed to funds raised from share issues or debt – are preferred for financing marginal investments.

According to the new view, the company's cost of capital, although independent of dividend taxes, is not independent of capital gains taxation. This characteristic follows because the use of retained earnings for investment increases the market value of the company and hence the price of its shares, which leads to a latent tax obligation that is realized when the shares are sold.

The key difference between the new and the old views is their alternative assumptions regarding how marginal investments are financed (Auerbach, 2002). On one hand, the old view assumes that such investments are financed entirely by newly issued shares. To compensate for the tax incurred at the owner level, whether on dividends or capital gains, investors demand a higher rate of return, which increases the cost of capital for the firm and makes fewer investment projects profitable. On the other hand, the new view assumes that marginal investments are financed by retained earnings. Retained earnings are equity, the value of which has previously been discounted by shareholders to account for the dividend tax. According to the new view, companies pay dividends only if there are no profitable investment alternatives. Because shareholders have previously discounted funds that were "trapped" within the company when the tax on dividends was first introduced, such taxes do not affect the company's investment behavior. The new view is therefore sometimes called "the trapped equity" view.

1.3 The open economy view of firm taxation

The commonality of the old and new views of taxation is that both operate under the assumption of a closed economy, i.e., that the economy's required rate of return on equity is determined domestically. In the open economy view of taxation, the analysis addresses the same issues given the assumption that capital flows freely across borders and that domestic investors expect a return that is equal to the international market rate of interest. See, e.g., Apel and Södersten (1999).

In a small open economy, the dividend tax is neutral because firms have access to foreign capital at the international market rate of interest, which means that foreign investors can fully substitute for the supply of domestic capital to the extent that it is reduced by taxation. Notably, this relationship in the basic model applies even when companies are small and

have no access to the international capital markets. But as shown formally by Sinn (1991b) the dividend tax is still distortionary for small firms with limited access to external finance.

One implication of this view regarding the effects of taxation with respect to investment volume is that owner-level taxes on a country's domestic investors are of no consequence. Similarly, high owner-level taxes in other countries may lead to lower global savings and to a higher international cost of capital. Another implication is that firm level taxes, such as the corporate tax, are distortive (Agell et al., 1998), whereas taxes on firm owners are completely neutral. Higher corporate taxes thus have a negative effect on investment because the required rate of return is assumed to be determined internationally. Thus, if a country raises its corporate tax rate, the expected return on investments before corporate tax must be raised to attain the same rate of return after tax as before.

1.4 Policy implications of the new view of firm taxation

The policy conclusion from the analysis in the previous sections on the new view and the open economy view of taxation is striking: There may be a large tax base in which taxation does not cause welfare losses. Sinn (1991a, p. 35) posits as follows: “Many economists believe that such taxes [on dividends] are among the most neutral ones available.”

To continue the analysis, it is important to understand how this unexpected conclusion is reached. From this perspective, the dividend tax is basically a lump sum tax that transfers part of the investors’ wealth to the state once and for all. The only effect of the tax is the capitalization of the tax rate that occurs at its inception, i.e., when the stock value is adjusted downwards by expected future tax payments. Therefore, the tax causes no change in the optimal decisions the company takes with regard to its existing capital.

As Sinn (1991a) explains, the dividend tax is both a tax on savings and a subsidy for internally financed corporate investments. For such investments, the subsidy exactly offsets the tax and thereby provides the exact same incentive as in cases without tax.

An illustrative example may be useful here. Suppose that a potential investor is satisfied with an after-tax return of ten percent but would not make an investment if the return were lower. Suppose also that an investment with an expected return of ten percent is available. The best outcome for the economy is that the investor makes the new investment. A tax system that discourages this investment is thus distortionary. If the dividend tax rate is 30 percent, the

investor will be unwilling to make the investment irrespective of the form of the investment. According to the old view of taxation, a tax wedge has emerged.

Now suppose instead that the investor owns shares in a company with enough retained earnings available to make the same investment. Would the investor then favor this investment? The answer is yes. In fact, the external investors have previously discounted the company's funds; thus, every dollar in the company is worth only 70 cents to its shareholders. Each dollar of the company's capital that is invested will produce an after-tax profit of seven cents for the shareholders. Because of the tax, the return is actually 7/70, or the ten percent demanded by the investor. This example provides an intuitive explanation for why the company's marginal propensity to investment or cost of capital is unaffected by the tax. The dividend tax can be regarded as the state becoming a partner of sorts in the company. As a rule, when a company takes on new partners, its investment decisions are unaffected.

This discussion on this new theory of taxation is relevant not only in terms of scholarly research but also in terms of economic policy. The theoretical conclusion that ownership taxes are neutral has played an important role in various tax reforms. According to Sinn (1991a), the neutrality hypothesis contributed to the retention of double taxation in the United States when the tax system was extensively reformed in 1986, as discussed immediately below. Although it is fair to say that not all insiders are in agreement with Sinn's view when it comes to the U.S. 1986 tax reform, the case is much more clear-cut when it comes to the Scandinavian countries (Agell et al., 1998). One likely reason is that the conclusions from the new view resonated so well with the prevailing egalitarian ideology that was more inclined to accept low effective corporate taxes than low taxes on firm ownership (Henrekson and Jakobsson, 2001; Lindbeck, 1997).

1.5 The old or the new view of firm taxation: What does the empirical evidence suggest?

Empirical studies have examined which of the two "views" of firm taxation that better explains companies' actual behavior. In this section we review the most important empirical studies. More recent studies focus on the effects on corporate governance and innovative entrepreneurship (see sections 2, 5 and 6). Many studies have focused on the financing of new investments, which suggests that this is the most controversial area.

Poterba and Summers (1985) used data from Great Britain – where ownership taxation has undergone several changes – and concluded that the old view is more consistent with how companies behave because the dividend tax and the level of dividends are negatively correlated (among other things), which is in accordance with the old view but incompatible with the new view. Gentry (1994) exploited interesting quasi-experimental variation to examine the effects of taxes on financing and dividend choices by comparing publicly traded partnerships (PTPs) in the oil sector with other companies. Although exempt from taxes, PTPs are generally similar to other companies. Gentry's findings support the old view that PTPs tend to pay higher dividends and are less likely to use debt financing than the typical limited liability company, all other things equal.

The capital gains tax likely has the greatest effect on rapidly growing startups and innovative entrepreneurship. Poterba (1989a, 1989b) was the first researcher to demonstrate the effects of this tax in a theoretical model on an individual's choice of occupation (employee or entrepreneur). The bulk of the return from successful entrepreneurship comes from the sharp growth in the equity value of the company. As a rule, this increase in value is realized at some future date when the company is sold, in whole or in part, to other owners in an initial public offering, by sales of shares to a new external party, or by selling the entire company. A potential entrepreneur may choose to either remain as an employee or to start a new company. Poterba shows that high taxes on labor income encourage – and high capital gains taxes discourage – entrepreneurship.

Poterba (1989a, 1989b) also shows that the level of venture capital (VC) activity in the United States is negatively correlated with capital gains taxes over time, in that VC activity tends to increase when capital gains taxes are reduced. However, Poterba notes that the general reduction of capital gains taxes is a blunt instrument for those who want to encourage innovative entrepreneurship and explains that most capital gains taxes are not paid by entrepreneurs or by owners of unlisted shares. Thus, capital gains taxes are levied largely on sales of private homes and on sales of stock in publicly owned firms.

There are also several policy-oriented analyses of the effect of ownership taxes on growth and economic efficiency. For example, when the Swiss government planned to reform its system of capital taxation, a research assessment was undertaken to evaluate how dividend taxes affected the general welfare (Dietz and Keuschnigg, 2003). The authors concluded that a moderate reduction in double taxation might potentially lead to welfare gains.

Empirical studies preceding tax reform acts in the United States have not settled which of the two views is more accurate. Instead, a number of studies have concluded that the truth remains somewhere between the two views. Contrary to the predictions of the new view, dividend taxes were deemed to influence investment decisions but less so than if the old view were completely applicable (e.g., Auerbach and Hassett, 2003; Dietz and Keuschnigg, 2003). Morck and Yeung (2005, p. 167) summarized these studies as follows: "The evidence suggests that cutting taxes on individual's dividends, all else equal, reduces the cost of external investment funds." In summary, the empirical literature thus concludes that dividend taxation, despite other factors, reduces investments by increasing companies' costs of capital.

In recent years, other researchers have tried to decide whether the new view or the old view better explains the effects of taxes on corporate investments, and if dividend taxes influence such investments. One important reason for this research is the discovery of major methodological difficulties in estimating the effect of dividend taxes on investment levels. Becker et al. (2013) constructed a detailed and comprehensive dataset from a panel of firms in 25 countries over the 1990–2008 period and found that dividend taxes and capital gains taxes significantly affect how capital is allocated and how companies behave with respect to investment.

Becker et al. (2013) divided the firms from the 25 countries into two groups: firms in the first group were similar to the stylized firms that are analyzed in the new view, and firms in the second group were more closely related to the assumptions of the old view. Taxation seemed to have a smaller influence on investments for those firms in the new view group that financed their investments from their internal cash flows. However, for firms in the old view group that depended on external equity capital for investments, taxes had a larger influence. A higher dividend tax in this case had a significantly negative effect on company investments. The study also found that when a company's internal cash flow is low, the company will raise additional external equity capital, provided the dividend tax is low. These authors concluded that dividend taxes and capital gains taxes lock in capital in companies with large internal cash flows. As a result, capital is not reallocated to new and young companies and to new industries with better growth opportunities.

In a study of a group of U.S. companies, Frank et al. (2010) found that reducing dividend taxes led to the reallocation of capital to companies with large capital requirements that were unable to finance their investments internally. These authors found that lower dividend taxes increased investments in "capital constrained" (companies that required additional external equity infusions for growth) but reduced investments in more mature companies with large

cash reserves. Companies in the latter group instead increased their dividend payouts when dividend taxes decreased. Thus, the aggregate dividend tax effects on investments are positive, but only slightly. Therefore, these authors argue that the aggregate tax effects on companies' investments can provide a misleading measure of the dividend tax effect regarding how capital is allocated among companies; thus, lower dividend taxes facilitate the flow of funds from mature companies with poorer growth prospects to new companies and sectors with more profitable investment opportunities.

In an influential study of the effects of the 2003 dividend tax cut in the United States, Yagan (2015) reaches the opposite conclusion. Yagan compared unlisted, medium-sized companies that were affected by reduced dividend taxes with S Corporations, a special type of U.S. unlisted firms from which profits to shareholders are not distributed through dividends. Instead, S corporations' income is "passed through" to its owners, who simply pay regular income tax on their share of firm income. Because the number of shareholders in an S Corporation is limited, these companies are typically small or medium-sized. Thus, Yagan's study includes no large, listed or unlisted companies. Despite precise estimates, Yagan found no effects from lower dividend taxes on investments, either for financially strong or for financially weak companies. Yagan (2015) also found no effects on the salary levels of the companies. Yagan's results showing that the dividend tax cut in 2003 led to increased dividends but not to increased investments are thus consistent with the new view.

Alstadsæter et al. (2014) applied the method used by Becker et al. (2013) to study a 2006 tax reform in Sweden regarding the taxation of often small, closely held firms. The authors compared the development of a firm with high liquidity (a low debt-equity ratio) and good possibilities for internal financing of their investments with liquidity-constrained firms with high debt-equity ratios. These authors found that the reform resulted in greater investment increases in the liquidity-constrained firms than in firms with ample cash reserves and retained earnings. Thus, to some extent, investments were shifted to companies with better investment opportunities but less internal funding. However, the authors detected no increase in either employment or the formation of new closely held production firms as a result of the tax reduction. Employees at the closely held firms received higher salaries after the reform, and the total wage sum increased more in weak-liquidity firms.

Campbell et al. (2011) also studied the effect on capital investments after the U.S. tax reform of 2003. Their findings are similar to Alstadsæter et al. (2014), namely that investments increased overall but with heterogeneous effects depending on company type. Older, mature companies with large cash reserves that normally financed their investments internally

tended to increase dividend payouts and reduce investments. The companies that relied more on the capital markets for financing instead increased their investments. The study concluded that the total effect of the tax reduction on capital investments was positive.

Rydqvist et al. (2014) examined the long-term significance of taxation on development in eight countries and found that high ownership taxes caused a shift in savings to pension funds and other tax-deferred, institutional investments. These authors concluded that individuals made these investment shifts – which produced lower or tax-deferred returns – to reduce or delay their tax obligations. The authors posited:

> The response to the higher effective income taxation, implemented in the developed world in search of higher tax revenues since World War II, has been the precipitous decline in taxable direct household ownership transferred into various tax-deferred plans (p. 84).

Rydqvist et al. (2014) revealed that dividend taxation relative to other ownership taxation exerts a stronger influence on the shift toward institutional ownership. These authors did not analyze the significance of ownership taxation in terms of increased foreign ownership separately, but they did note that investment in shares shifted from natural persons to both domestic and foreign institutional investors. Of course, there are reasons other than taxes that explain why people shift from individual investments to institutional funds, including the general investment trend toward investment diversification. However, Rydqvist et al. show that the taxation of individual asset holdings relative to the taxation of institutionally owned assets was an independent force toward greater institutionalization of business ownership.

Graham (2003, 2008) summarized the research on the importance of ownership taxes for firms' capital structure in terms of the degree of leverage. Although the literature generally suggests that taxes influence companies' capital structures, the findings are nevertheless inconclusive, and more research is needed. Several of the studies cited conclude that taxes affect capital structure but that the effect is not significant. More recent studies have found a clearer connection – possibly because of methodological improvements.

In a study of a panel of 29 OECD countries from 1981 to 2009, Faccio and Xu (2014) examined how the debt-equity ratio was affected by corporate and dividend taxes. These authors identified almost 500 tax changes in the 29 countries during the 1981–2009 period. Their results are consistent with what might be expected from theory: both a higher corporate tax and a higher dividend tax result in greater debt financing. The effect is largest for companies paying high dividends and where the marginal investor tends to be a natural person.

Forsberg (2012) and Lin and Flannery (2012) studied the connection between dividend taxation and the capital structure of firms following the dividend tax cut in the United States in 2003. Both studies concluded that reducing dividend taxes lowered the use of debt relative to equity financing. Lin and Flannery estimated that the tax reduction lowered the firm's debt-equity ratio by about five percentage points, on average.

Jacob and Jacob (2013) examined the effect of owner-level taxes in 25 countries between 1990 and 2008 and also found that higher dividend taxes are associated with a lower rate of dividend payouts.

Dackehag and Hansson (2015) find a negative effect of dividend taxes on economic growth for a panel of 18 European countries in the 1990–2008 period.

Finally, it should be noted that increased dividends following the 2003 tax does not *per se* disprove the new view. This theory predicts that dividends should increase following a tax cut that is expected to be temporary. The 2003 dividend tax cut was politically controversial, and it is reasonable to assume that the market assigned some probability that it would be reversed. The argument against the simple version of the new view is rather based on comparing which firms that increased dividends the most, thus exploiting the tax cut as a quasi-exogenous source of variation.

The overall conclusion is that dividend taxes appear to affect firm behavior, but that the effect depends on firm type. Dividend taxes tend to reduce investments in capital-constrained firms which depend on external capital for growth, while encouraging investments in mature firm with strong cash flow. Methodologically, it is important to take firm heterogeneity into account when attempting to estimate the effects of dividend taxes.

2. Corporate governance and taxation

Owners who actively manage their firms are assumed to make decisions that maximize their own utility, but such maximization does not necessarily imply profit maximization (or, more accurately, maximization of firm value). In addition to financial returns, the owners may – and are indeed likely to – care about various non-pecuniary benefits, such as personal freedom, satisfying employee relationships, support for charitable causes, attractive business facilities, social status and employment for friends and relatives. If the owner of a firm is also its manager, these costs and benefits are internalized. In that case, it is fair to assume that a rational owner-manager optimally balances the costs and benefits.

Managers' incentives to make costly and uncomfortable, although ultimately profitable, decisions are weakened when management bears the costs, but the owners receive the benefits. Similarly, there are incentives to "consume" at work, which means that managers and perhaps other employees receive benefits at the expense of owners. Thus, when ownership and control do not concur, conflicts of interest between owners and management can emerge. This conflict is likely to be more severe if ownership is widely dispersed. It is costly for owners to control management. In particular, when ownership is dispersed, owners who take an active role must bear the cost alone, although non-active owners benefit in proportion to their equity share.

Jensen (1986) discusses the principal-agent problem with respect to dividend policy, which he refers to as the "the free cash flow problem". A firm with free cash flow has more cash reserves than investment opportunities. Owners would normally benefit from high dividends because they can then invest the dividends received in other companies with more profitable investment opportunities. By contrast, managers have strong incentives to use the free cash flow to make investments. Although the returns may be lower, management tends to benefit if the firm they lead grows.[2] The conflict of interest between managers and owners tends to be greater when ownership is dispersed, i.e., when no entity or individual has a substantial ownership interest or controlling bloc.

[2] In a model of imperfect corporate governance Kanniainen (1999) shows that owner-level taxes give risk-averse management incentives to overinvest, using the firm as a vehicle to enjoy private benefits and to insure against income risks.

2.1 The effects of taxation on the conflicts of interest between owners and management

The basic assumptions in both the old and new view models are most suitable to analyze situations in which owners are passive and when it is reasonable to abstract from corporate governance problems. This assumption is logical because these models contain neither firms nor agents (managers and boards of directors) who are making operational/investment decisions. The implicit assumption is that these firms are efficiently managed. Therefore, studying the effects of taxation involves only the analysis of optimal financing structures and investment decisions.

However, a high dividend tax rate that makes it more expensive for owners to exercise effective corporate governance increases the risk of principal-agent problems. The conflict of interest between owners and management is central to understanding why many companies pay dividends despite a high tax at the owners' level. This phenomenon requires further explanation because both debt and capital gains receive preferential tax treatment. Incorporating the principal-agent problem into capital taxation theory yields a better understanding of how companies respond to tax reforms.

The risk of a hostile takeover in which a third party takes control of a firm against the will of management serves as an important check on management (Jensen, 1986). When investors perceive that a company is mismanaged and believe that they can manage the company more competently, they may be willing to pay a premium either to acquire the entire company or a controlling bloc. Because of this latent threat, current management has an incentive to act in the owners' best interests even if no single owner has an ownership share sufficiently large to warrant costly monitoring. Ownership taxes are not neutral in this context because they impose a tax on the additional value that might be created by a new competent owner. The value that the new management can create within the company will be subject to taxation. A change of management will therefore be less attractive to new owners, particularly because the hostile takeover purchase price typically involves a substantial premium over the prevailing market price of the shares.

By including an agency cost variable in his model of capital gains taxes and investment, McGee (1998) is the first theoretical study of the effects of taxation on firm behavior, to our knowledge, that considers agency aspects. In this model, taxes distort the financing structure.

As discussed above, the 2003 tax reform in the United States dramatically reduced the tax on certain ("qualified") dividends from 35 percent to 15 percent for most taxpayers. Following

this change in dividend taxation, a number of new empirical studies were published. In addition, a related, and more theoretically advanced, literature developed that presented a new perspective on dividend taxation. This perspective is sometimes referred to as the *agency view*.

According to the new view, permanent changes in the tax rates should not influence a firm's dividend behavior. However, a number of influential studies conducted in connection with the 2003 dividend tax cut in the United States conclude that the change in dividend taxes increased dividend payouts, particularly for companies with a controlling shareholder (Brown et al., 2007; Chetty and Saez, 2005, 2006; Nam et al., 2010; Poterba, 2004). For some years before the new law was passed, dividends had been declining; following the passage of the new law they increased by 20 percent. Chetty and Saez (2010) estimated the elasticity of dividends to be around at around −0.75 (i.e., if the dividend tax is lowered by one percent, such as from 33.3 percent to 33 percent, dividends will increase by 0.75 percent).

2.2 Empirical research on corporate governance and taxation

New studies lend support to the notion that principal-agent problems and corporate governance greatly impact how taxes affect companies' dividend policies. Research on the agency view concludes that dividend taxes are harmful to the economy, although for different reasons than those offered by the old and new views of corporate taxation. As this new perspective has resonated with various researchers, we will review some of these studies. Chetty and Saez (2005, p. 829) offer the following summary:

> Existing "old view" and "new view" models of corporate taxation in the public finance literature may fail to incorporate explicitly an important element of the behavioral response to taxation by abstracting from agency problems.

According to the agency view, the dividend tax does not affect behavior primarily through its effect on companies' cost of capital and the resulting investment volume. Instead, dividend taxes trap financial resources in older, mature companies, hindering their transfer to new companies with greater growth potential. Taxes lower returns on investments even further by reducing the incentives for active ownership such as monitoring of management. The managerial costs of empire building or purchasing executive jets and other perks and pet projects are tax-deductible for companies, whereas dividends paid to the owners are taxed both at the corporate and owner levels.

Chetty and Saez (2006, p. 128) also find empirical support for the agency view:

> These results suggest that the dividend tax cut made the capital market reshuffle funds out of lower-growth firms. Several studies in the corporate finance literature have argued that free cash flow within such firms is not always put toward value-maximizing ventures because of principal–agent problems. Since the *reduction* in dividend taxes reduced executives' incentives to hoard earnings, the funds released from these lower-growth firms might have been redirected through the external capital market toward other ventures with greater expected value. [Emphasis added]

In the frameworks of both the new and old views, the effects of dividend taxation are analyzed almost completely in terms of companies' cost of capital. The old view concludes that the tax is harmful because it increases the cost of capital, but the new view concludes that the tax does not increase the cost of capital and is therefore neutral. By contrast, the agency view concludes that dividend taxation is harmful even when the cost of capital is unaffected because the tax exacerbates the principal-agent problem both by reducing the return on active ownership and by locking in funds in older companies with less growth potential (Chetty and Saez, 2005).

Maintaining high and stable dividends is a way to alleviate the conflict of interest problem between managers and owners when companies have free cash flows (Tirole, 2001). By distributing a large portion of the cash flow as dividends, management insulates itself from the charge of mismanaging the company's capital resources (Easterbrook, 1984; Jensen, 1986). Thus, dividends send a positive signal that management is competent. Dividend taxes, however, make dividends more costly and create a wedge between funds inside and outside the company.

Based on new empirical evidence, the agency view has recently become increasingly influential (Morck and Yeung, 2005). Companies with powerful owners seem most affected by changes in dividend taxes; at such companies, reducing dividend taxes has resulted in the reallocation of capital from mature and highly capitalized companies with few investment opportunities to firms with better growth prospects and higher expected returns. Dividend taxes thus affect both the allocation of capital across companies and the rate of return on investments within companies because it lowers the rate of return on costly monitoring by owners (active ownership).

One criticism of the new view is that it cannot explain why companies still pay dividends as a way to provide owners with a return on their investment despite obvious tax disadvantages. Black (1976) coined the term "the dividend puzzle" to describe this phenomenon.

The corporate finance literature offers theories that explain dividends as resulting from corporate governance conflicts (Jensen and Meckling, 1976). Numerous studies have documented the empirical relevance of the free cash flow problem, including Shleifer and Vishny (1997), Denis and McConnell (2003), and Durnev et al. (2004). In their survey of studies on the effects of dividend taxes, Morck and Yeung (2005, p. 170) conclude: "[F]ree cash flow agency problems are of first order importance in the United States and elsewhere."

The empirical relevance of the principal-agent conflict for dividends was clarified by the experiences following the 2003 reduction of dividend taxes in the United States. The extent of ownership control was central to the analysis of which companies reacted strongest to the tax reduction. Chetty and Saez (2010) analyzed dividend taxes using a more sophisticated theoretical model that considers agency problems in the form of conflicts of interest between managers and owners. Management tends to overinvest in the company – instead of distributing its surplus to owners – and to invest in less profitable, self-aggrandizing projects, i.e., their "pet projects." By collectively exerting their control rights, owners can reduce these tendencies. However, because such action is costly, it will be undertaken only if it is economically advantageous for the owners. This analysis represents the first instance where this important aspect of business reality has been added to the theoretical discussion of dividend taxation.

These findings contrast sharply with previous theories – under both the old and new views. Chetty and Saez (2010, p. 2; p. 27) conclude:

> …dividend taxes create a deadweight cost, even if the marginal source of investment is retained earnings … the main source of inefficiency from increasing the dividend tax rate is the misallocation of capital by managers because of reduced monitoring, and not the distortion to the overall level of investment emphasized in the "old view" model.

Contrary to the position of the new view, dividend taxes in this model have a first order, deadweight cost in which the taxes intensify an existing problem, i.e., that management pay dividends that are too low to owners of listed companies, who exercise too little control over management. Chetty and Saez (2010, p. 27) conclude their analysis with the following statement:

> Dividend taxation has first-order efficiency costs when managers' interests differ from shareholders and companies are owned by diffuse shareholders – which is perhaps the most plausible description of modern corporations.

Koethenbuerger and Stimmelmayr (2014, p. 21) arrive at a similar result in an agency model of firm behavior where they analyze whether the cost of investment should be exempted from taxation. They find that

> when retained earnings are the marginal source of finance, a lower dividend tax reduces perk investments and leaves the amount of productive investments constant. As such, a higher deductibility rate in combination with a lower dividend tax, which is set so as to leave perk investments constant, increases welfare.

Until recently, there were no firms in the models that analyzed the effects of taxation on investments and business activities. Thus, the potential effects on the incentives of various actors (owners, management, and boards of directors) to govern companies efficiently were disregarded. Only recently has agency been introduced into models aimed at explaining the effects of taxation on firm behavior.

As a result of incorporating the incentives to and the effects of active monitoring and control by owners into the capital taxation models, conclusions about neutrality are severely undermined. Taxes reinforce the tendency of management to pursue interests that differ from the owners' interests in maximizing firm value.

3. The relevance of the small open economy model for owner-level taxation

As discussed in section 1, it is frequently argued in policy discussions that dividend taxation is neutral and has no effect on companies' investments because capital markets are internationally integrated. In open economies, capital flows across national borders. Therefore, profitable investment opportunities may obtain funding even with a shortage of domestic capital. The notion is that taxes on domestic owners do not influence investments if a country is too small to materially influence aggregate savings in the world (Boadway and Bruce, 1992). Thus, if ownership taxes reduce the supply of domestic savings, an equally large increase in investments from foreign investors will fully compensate for that reduction.

The OECD (2007, p. 69) summarizes this perspective and identifies it as the "new new view", which we refer to as the open economy view:

> …capital income taxes that are levied on the personal level (residence-based taxes) will not affect the corporation's finance and investment decisions. … Personal level taxes on capital will then only affect the amount of domestic savings but not domestic investment. The difference between domestic savings and investment then equals net capital imports/exports.

Several studies have broadened the theoretical framework to include the case of open economies (e.g., Bovenberg et al., 1990 and Kristofferson, 2002).

The purpose of this section is to discuss and evaluate the empirical evidence related to the open economy view.

3.1 Foreign and domestic owners are not perfect substitutes

The models used within the framework of the open economy view assume that the international mobility of capital is perfect, or at least very close to perfect. Empirically, it has been shown that this is not the case, perhaps because the models that predict otherwise ignore crucial elements such as information costs, entrepreneurship and corporate governance.

Even when foreign financing offsets a shortage of domestic equity capital, this compensatory equity flow is not free of charge. The conclusion that the international integration of financial markets renders domestic savings superfluous as a source of domestic business investment emanates from the extreme assumption that capital flows costlessly across borders. This assumption is however a poor approximation of reality (Lewis, 1999; Obstfeld

and Taylor, 2003). The bulk of economic transactions in the world occur within national borders, which indicates that there are major advantages to investing domestically.

It may be useful to briefly review some of the literature in both the fields of international trade, finance and macroeconomics that points to the continued importance of national borders for investment behavior. Empirical research in the fields of trade, finance as well as macroeconomics have demonstrated strong evidence that people invest domestically because it is costly to move funds across borders.

Examples from trade include Obstfeld and Rogoff (2000), whio present extensive evidence of significant "home bias" in economic exchange. In an article discussing variation in prices in different U.S. and Canadian cities, Engel and Rogers (1996) note that the border between the United States and Canada – adjacent and highly similar market economies with goods flowing freely across the borders in both directions – corresponds to a geographic distance of approximately 2,500 miles within a country in terms of transportation and transaction costs. Engels and Rogers (2001) found similar results for Europe, and Portes and Rey (2000) found similar results in cross-border financial flows. In conjunction with increased cooperation in the European Union, the impact of borders may have weakened somewhat. Nonetheless, some research contends that most of the border effect still appears to persist within Europe (Balta and Delgado, 2009).

Empirical research in international finance similarly shows that there is a strong propensity among investors to invest domestically (e.g., French and Poterba, 1991; Gordon and Bovenberg, 1996; Tesar and Werner, 1995). For instance, the Swedish stock market represents approximately one percent of the global market capitalization of publicly traded firms. In a world in which capital is perfectly homogeneous and in which investors want to diversify to reduce their risk, it would be expected that Swedish investors would own approximately one percent of the market capitalization of their domestic stock exchange. However, in actuality, Swedish investors own approximately 60 percent of the equity shares listed on the Stockholm stock exchange. Similarly, Japanese investors own almost 90 percent of Japan's publicly traded equity, and American investors own more than 80 percent of publicly traded U.S. equity (Cooper et al., 2013; Jackson, 2013; Zucman, 2013).

Feldstein and Horioka (1980) demonstrate that there is a strong correlation between savings and investment within a country and persistent cross-country differences in real interest rates. Obstfeld and Rogoff (2000) have identified the savings-investment puzzle as one of the six most important unresolved research issues in international macroeconomics. Although the international capital markets are integrated, more recent studies continue to confirm Feldstein

and Horioka's findings, although in a somewhat weaker form (Bai and Zhang, 2010). The most important reason is a home bias even when there are no regulations that restrict cross-border capital flows. Foreign capital is simply not a perfect substitute for domestic capital. It is not fully understood why this is the case, although information costs and corporate governance may offer an explanation (e.g., Dahlquist et al., 2003). Wealthy domestic shareholders and shareholder groups seem to have an advantage when they invest in their own countries; passive equity investors and even powerful foreign owners seem to lack this advantage. The fact that powerful business owners tend to control companies headquartered in their home countries may also partly explain why ownership is not as internationally diversified as it would otherwise be in a world in which it is irrelevant who owns companies.

Even for self-employed individuals, savings and investment decisions can rarely be separated from one another (Gentry and Hubbard, 2004; Quadrini, 1999). Even small open economies cannot rely on foreign capital to fully substitute for a shortfall in domestic investments when taxes reduce the supply of domestic capital.

If there is a persistent home bias due to the factors discussed above, the neutrality result for owner-level taxes in small open economies no longer holds, and domestic business ownership can no longer be expected to be costlessly replaced by foreign ownership.[3] Domestic owners often have a comparative advantage relative to foreign owners, such as having access to superior information and knowledge about business conditions. Domestic investors, who invest in their own country or even in their own region, city or local community, thus have significant advantages connected with geographic and cultural proximity. These advantages are particularly relevant for investors who aim to exploit a local business idea or business opportunity rather than to merely diversify risk.

This discussion does not imply that domestic owners should be favored relative to foreign owners. To the extent that domestic ownership implies advantages, market forces can be expected to lead to an optimal tradeoff between international diversification and home advantages. Nonetheless, it is important to take home bias into account in tax policy. The assumption that foreign ownership is a costless substitute for domestic ownership is not empirically valid, nullifying the tax neutrality result even in small open economies.

[3] Norbäck, Persson and Vlachos (2009) show theoretically that if domestic owners are taxed at a higher rate than foreign owners this may result in the transfer of ownership of domestic firms to less efficient foreign owners.

An interesting effect of capital taxation in open economies is that small countries tend to have lower tax rates on capital. Many countries attempt to attract capital through lower tax rates at the corporate and/or the owners' level. Countries such as Ireland and Estonia have attracted foreign firms through exceptionally low tax rates on undistributed profits. When determining capital tax rates, there is a tradeoff between losing revenue through lower rates on existing capital and attracting more foreign capital. Countries with a smaller share of the world capital stock have stronger incentives to pick a low tax rate because their existing tax base is relatively smaller, while lower rates can attract capital from the rest of the world (Keen and Konrad 2013).

3.2 Ownership taxes, ownership structure, and wealth accumulation

Taxing domestic owners at higher rates than foreign owners are taxed in their respective home countries can offer advantages to foreign owners. If differences are sufficiently high in favor of the foreign country, capital taxes can shift the ownership of the business sector more toward foreign owners or to domestic owners who hide their assets abroad and appear to be foreign owners (Zucman, 2013). In their study of international taxation and cross-border mergers and acquisitions, Huizinga and Voget (2009, p. 1217) describe how the presence of international double taxation influences the ownership structure of multinational corporations:

> [T]he likelihood of parent firm location in a country following a cross-border takeover is reduced by high international double taxation of foreign-source income. At the same time, countries with high international double taxation attract smaller numbers of parent firms.

Huizinga and Nicodeme (2006) analyzed company ownership and company taxation in a comparison of listed companies in various European countries and found that "company tax burdens are positively related to foreign ownership at the country level." Similarly, in his contribution to the Mirrlees Report, Huizinga (2010, p. 901) concludes:

> There is an overall positive relationship between the foreign ownership share of corporate assets and the average tax burden.

This causal relationship may be bi-directional. Higher taxes can drive corporate ownership abroad, whereas a large foreign ownership share can lead to higher taxes on domestic factors of production.

Poterba (2002) noted that the results are mixed in the empirical studies on the effect of taxes on investors' portfolio selection. There are significant methodological problems involved with isolating this relationship. Desai and Dharmapala (2011) studied the change in the U.S.

tax law in 2003 as the source of exogenous variation. Among other things, if the United States has tax treaties with the countries in which these dividends originate, the 2003 tax reform reduced the dividend tax that American investors paid on overseas assets. As expected, some American investors shifted some of their investments to tax-advantaged countries in order to take advantage of the lowered tax on dividends received on assets invested in those countries.

In addition to creating incentives to move assets abroad, high owner-level taxes may lead owners themselves to move to another country to lower their tax burden. There are as yet few empirical studies on the linkage between taxation and migration. Nonetheless, Sanandaji (2014) found that billionaires are the most likely people to move from countries with higher capital gains taxes to countries with lower capital gains taxes, whereas Kleven et al. (2013) and Kleven et al. (2014) find that tax breaks attract high-income earners.

A change in the tax law in Great Britain in 1997 provided the basis for several studies on the significance of dividend taxation. Before the new law was enacted, UK pensions and pension insurance funds received preferential tax treatment on dividends from British companies. Thus, these pension funds owned a large share of all publicly listed stock in the UK. Bell and Jenkinson (2002) assert that the new law reduced the market value of the companies that paid dividends, and led to a decline in the so called drop-off ratio. This ratio measures how much stock prices are affected by the value of the dividend entitled to the owner.

Bond et al. (2007) acknowledge the decline in the drop-off ratio, but question whether this can be conclusively tied to the tax law change as argued by Bell and Jenkinson (2002). Bond et al. instead argue that the reduction in the equity holdings of UK pension funds was compensated by a commensurate increase in the foreign ownership share of British firms.

The fact that reduced ownership by one party was replaced by others is not surprising since any decline in one party's ownership share of publicly traded firms must by definition be matched by an equally large increase by the share of other owners. The fact that more highly taxed UK pension funds were replaced by foreign owners is interesting and indicates that owner-level taxes can shift domestic ownership of assets abroad. However, the experiment does not tell us whether this is costly for the home country. Bond et al. (2007) argue that the "absence of a crash in the UK stock market" shows that foreign owners are a close substitute for domestic owners, but do not rule out that this may have resulted in a higher risk premium. Nor do they estimate the potential cost

incurred because of a higher risk premium and from the fact that the future return as well as the tax base of the assets moved abroad.

Taxation of domestic capital also distorts households' intertemporal savings and investment decisions and reduces their welfare regardless of whether the reduction in domestic savings for investment purposes is offset by an equally large increase in foreign financing. Higher ownership taxes affect companies, and domestic capital taxes influence household decisions and wealth accumulation when such taxes result in lower savings.

Suppose that high capital taxes reduce domestic business ownership and that this shortfall is replaced by increased foreign ownership. As domestic savings decrease, average domestic household wealth relative to GDP declines over the long term. As household wealth declines relative to GDP, the scope of private consumption decreases. Another and related consequence of lower domestic wealth accumulation is that a growing share of business sector returns flow abroad. Historically, the return on equity has been far higher than on bonds and other types of assets (Mehra, 2006). Therefore, if domestic capital taxes are high relative to other countries, ownership of the business sector and the concomitant returns shifts to foreign investors. As a result, GNI will become smaller and smaller and smaller relative to GDP, which is currently the situation in Ireland, where net payments to foreign owners in 2013 corresponded to 16 percent of GDP (Cavanagh, 2015).

3.3 Firm size and access to foreign capital

There are few studies that examine the difference between small and large firms' access to the international capital markets. An exception in this regard is Norrman (1997), which models a small open economy with both small and large firms. Both types of firms have access to the international credit market, but only large firms can raise equity by issuing shares in the international market. In this model, a reduction in owner-level taxes leads to welfare gains through increased capital formation (firm entry and firm growth) in the small business sector, whereas the large firm sector is unaffected).

In contrast to Norrman (1997), Apel and Södersten (1999) maintain that the cost of capital for small firms is also determined in the international market and that domestic ownership taxes thus do not influence the level of their investments. These authors argue that small business owners' opportunity costs are equal to the global market rate of interest because they could be holding foreign shares in their investment portfolios in lieu of their investment.

Their model, however, does not to take into account that small business owners' investment portfolios are constructed to mitigate incentive problems, conflicts of interest, and information asymmetries that are an ever-present and inescapable part of business life. Typically, small business owners who have founded their companies with most of their own savings (and perhaps mortgaged other assets in addition) have limited opportunities, at least initially, to finance their activities by means of external capital. It is therefore not accurate to compare, let alone to equate, these founders' investments in their own companies to passive investments in global index funds and similarly liquid and highly diversified financial instruments.

4. Tax effects on existing firms – a summary of the different views

In Part I (sections 1–3), we have surveyed in some depth the different schools of thought or "views" regarding owner-level taxation's effect on firm behavior. There is broad agreement that corporate taxes reduce business investments (Auerbach et al., 2010). However, there is no corresponding consensus regarding the effects of owner-level taxes, particularly with respect to the dividend tax. Several schools of thought have emerged with different views on how ownership taxes influence behavior. The traditional or old view argues that dividend taxation has a distortionary effect on behavior. The new view concludes that dividend taxation generally has little effect on behavior because dividend taxes do not impact a company's marginal cost of capital. As a result, investment decisions are unaffected by dividend taxes in new view models. Thus, it is sometimes said that taxes at the owner level under the new view are *neutral* with respect to business investments.

In a model in which it is assumed that capital markets are internationally integrated, the cost of capital is determined internationally. If high taxes reduce a country's savings and investments, international capital will flow in to replace domestic capital and finance investments; thus, national savings behavior does not influence companies' investments or production. This analysis constitutes the core of the so-called open economy view, which is closely related to the new view; the open economy view posits that owner-level taxes do not influence investments if international capital markets are integrated. The predictions of the open economy view and the new view differ in that the former concludes that both dividend taxes and capital gains taxes on domestic investors are unimportant for business activity because foreign investors will completely replace any shortfall in domestic investments and business activity resulting from increased capital gains taxes in a country.

By contrast, the agency view concludes that owner-level taxes are harmful even when the cost of capital is unaffected. Such taxes exacerbate the principal-agent problem by both reducing the return on active ownership and trapping funds in older companies with less growth potential.

In *Table 1*, we summarize the different views and articulate their fundamental assumptions and their main conclusions regarding the effects of taxation of dividends and capital gains on investment, firm growth and new firm formation. The table also provides two examples of important studies in each tradition.

In our judgement, all four “views” point to some aspect of reality and have some predictive power. At the same time, all views are overly simplified accounts of a complex reality and exaggerate the mechanism that is modelled. For example, it is true that owner-level taxes are less important in an open economy where foreign capital can substitute for domestic savings, but it is a major oversimplification to assume that foreign capital can fully replace investments by domestic parties. More recent models add complexity when theorists attempt to reconcile the various explanations by incorporating several mechanisms into a coherent framework.

On balance, we deem that the agency view augmented with the occupational choice of founders has the greatest explanatory power for assessing the real effects of owner-level taxes. However, there is some explanatory power in all theories, and the most appropriate modelling approach depends on the situation analyzed.

Table 1 A summary of the different views on the effects of owner-level taxation.

	Old view	**New view**	**Open economy view**	**Agency view**
Simplified summary	Owner-level taxation makes it less profitable to invest and reduces investments.	Mature firms finance investments with retained earnings; dividend taxes therefore do not influence investments.	In small open economies, foreign inflow of capital can finance investments. If taxes reduce the supply of domestic capital, foreign capital offsets the deficiency.	Dispersed ownership creates a conflict of interest between owners and management. Management prefers lower dividends than owners. Dividend taxes reinforce the tendency to lock in capital at mature firms.
Fundamental assumptions	New investments are financed at the margin by owners.	New investments are financed at the margin with retained earnings.	Foreign capital is a perfect substitute for domestic capital; capital flows freely across international boundaries.	Agency conflict between owners and managers. Management has a systematic bias against dividends.
Conclusions regarding dividend taxation	Taxes are distortive for new and mature companies, resulting in reduced investments.	Taxes not distortive for mature companies but inhibit the growth of startups.	No distortions for either large, mature companies or for smaller companies that have direct access to international capital markets.	Distortive for mature companies with dispersed ownership and for startups.
Conclusions regarding capital gains taxation	Distortions for new and mature companies, reduced investments.	Distortions for new and mature companies, reduced investments. .	No distortions for either large, mature companies or for smaller companies that have direct access to international capital markets.	Distortive for mature companies with dispersed ownership and for startups.
Two key studies within each view	Feldstein (1970); Poterba and Summers (1985).	Auerbach (1979); Bradford (1981).	Boadway and Bruce (1992); Sørensen (1995).	Chetty and Saez (2005, 2010).

PART II: THE EFFECT OF TAXES ON STARTUPS AND ENTREPRENEURIAL FIRMS

5. Owner-level taxes and entrepreneurship

Both research and historical experience point to entrepreneurship as an important factor for innovation and job creation. Since the Industrial Revolution and reaching into modern times, entrepreneurs have accounted for a large share of revolutionary innovations (Acs and Audretsch, 1988; Kortum and Lerner, 2000).

The growth of startups and small businesses is the key driver of job creation, but the relationship is more complex than is commonly understood (Davis et al., 1996; Henrekson and Johansson, 2010; Coad et al., 2014). Although small companies certainly create many new jobs, the likelihood is greater that these jobs may quickly vanish as these companies downsize or exit, particularly in depressed economic conditions. In a study on job creation in the United States, Haltiwanger et al. (2013) conclude that the most important factor in job creation is not the size of a company but its age. Once age is accounted for, they find no systematic relationship between size and the number of jobs created. Newly established growth companies are both young and initially small. Two categories of companies create most of the new jobs: startups and young companies, both of which begin small and grow with age. Small companies that remain small create few jobs, and many of these jobs eventually disappear. Almost half of all jobs created by new companies disappear within five years due to company closures; companies that grow quickly and survive are more likely to retain as well as create additional jobs. The trend for smaller, younger companies can be described as "up-or-out".

5.1 What does entrepreneurship mean and how is it measured?

Some confusion is evident in the field of entrepreneurship because no distinction is made between different types of business owners, which leads to inconsistency in research results and in policy recommendations. Therefore, the self-employed as a group should be distinguished from the small number of owners of potentially fast-growing companies. According to Schumpeter's (1934) definition, most self-employed are neither growth-oriented nor innovative.[4] Hurst and Pugsley (2010) and Sanandaji (2010) argue that most self-employed have neither the ambition to grow nor to be innovative. In the United States, those industries with the largest concentrations of self-employed men are construction,

[4] Sanandaji (2010) and Henrekson and Sanandaji (2014a) address this discussion. The latter study identified 996 "superentrepreneurs" from *Forbes Magazine's* list of billionaires, who were defined as people who had created their fortune by starting and developing their own companies. The number of superentrepreneurs per capita was used to measure the national rate of entrepreneurial activity. The study shows that this measure of entrepreneurship is negatively correlated with the self-employment rate and with the business ownership rate.

landscaping services, auto repair, restaurants, truck transportation, and farming. For women, the corresponding industries are private households (cooks, maids), child day-care services, services to buildings (janitors and cleaners), restaurants and beauty salons. The majority of the self-employed in the U.S. have no employees – and do not expect to have employees – other than the owner.

These non-entrepreneurial self-employed or sole proprietors – either working alone or with only a few employees – are motivated by other factors. One factor is to avoid the principal-agent problems that inevitably arise between employees and owners in certain occupations and industries. For example, self-employed taxi drivers may have more incentive to work long hours and to maintain their taxis in better condition than taxi drivers who are employees of cab companies. A second factor is that self-employment makes it possible to circumvent certain wage and work hour restrictions imposed by collective bargaining agreements and employment protection legislation. Other factors may relate to the desire to escape company workplace discrimination, to be one's own boss, and to more easily evade taxation. In many industries, a small size appears to be optimal. Non-entrepreneurial self-employed play an essential role in the economy by providing goods and services and facilitating employment. However, it is potentially misleading to analyze this type of business activity together in a group with innovative, growth-oriented entrepreneurship.

It is essential to distinguish between the different types of firms when discussing innovative, growth-oriented entrepreneurship. The distinction is important both in empirical analyses and for theoretical development. The group of firms with the ambition for innovation and rapid growth is far smaller and quite different from the broader group of firms. High taxes, for example, can lead to more self-employment, even if taxes on alternative employment options are also high. In some respects, the self-employed may more easily minimize and avoid taxes (Engström and Holmlund, 2009; Hurst et al., 2014). The ambition and potential for rapid growth and innovation is often low in business activities motivated by tax avoidance. Countries with high tax rates do not have fewer self-employed business owners; in fact, the opposite is the case. However, such countries also tend to have fewer exceptionally successful entrepreneurs (Henrekson and Sanandaji, 2014a).

It is sometimes implicitly assumed that entrepreneurship is a homogenous activity and that chance determines those businesses that succeed and those that do not. Of course, there is a large gray area when such concepts are delineated. For example, some companies that may have had little ambition to grow revise that ambition sharply upwards as they experience more success than expected. However, we would argue that even *ex ante* there are

fundamental differences between different types of entrepreneurs. When researchers and policymakers equate entrepreneurship with self-employment, it is easy to forget how rare the particular personal traits necessary for innovative entrepreneurship are. Potentially innovative entrepreneurs are few, are not easily replaced, and typically have left secure and well-paid jobs before starting their own companies.

5.2 The effects of taxation on different types of firms

Taxation is an area in which it is important to distinguish between types of companies. In certain circumstances, high taxes may simultaneously increase the number of small and inhibit the growth of more entrepreneurial companies. Both in theory and in practice, taxes affect different types of firms in different ways (Asoni and Sanandaji, 2014).

If the effective tax rate is high both on employee salaries and company income, then self-employment may be more attractive than salaried employment because sole proprietors may have more opportunities to minimize or avoid taxes (e.g., Engström and Holmlund, 2009; Slemrod and Bakija, 2008). Tax can be evaded, for example, by not reporting all revenues and by claiming tax deductions for personal (non-business related) expenses. Entrepreneurial companies that have increased in size have less opportunity to use such tax evasion schemes. According to Chen et al. (2010), large family-owned companies and owner-manager companies that are successful enough to be listed are no more likely to evade taxes than listed companies with dispersed ownership. In fact, they are rather less aggressive in regard to tax planning.

In addition, high taxes can make small-scale entrepreneurship attractive because high taxes cause owners to weigh non-monetary motives more heavily. Such motives are important driving forces behind self-employment entrepreneurship (Blanchflower and Oswald, 1998; Hurst and Pugsley, 2011) and include managerial independence, control of work tasks and time, and the satisfaction that derives from self-fulfillment.

Moreover, high tax rates, which reduce the financial returns from entrepreneurship, may impede access to the financing needed for growth. However, small-scale entrepreneurship, not primarily driven by pecuniary motives, is not normally as influenced by tax considerations. In such cases, the concept of business-oriented and growth-oriented entrepreneurship cedes ground to more hobby-oriented entrepreneurship that is personally satisfying for the owner but does not necessarily contribute to innovation and growth for the economy at large.

The receipt of VC funding is sometimes understood as a proxy for innovative entrepreneurial companies. Clearly, not all such entrepreneurial companies are funded by VC, but professional third party evaluations indicate that it is generally assumed that companies with original business ideas are those that receive such funding. Several studies have found that high capital gains taxes reduce the incidence of VC-funded entrepreneurial activity (e.g., Da Rin et al., 2006; Gompers and Lerner, 1998; Poterba, 1989a, 1989b). In other words, the consensus is that high-quality entrepreneurship is hampered by high ownership taxes on company founders and financiers.

We should expect, *a priori*, to identify this effect because the cost of capital in VC-financed companies is primarily based on how external investors value the company. Thus, both the dividend tax and the capital gains tax are immediately capitalized in the form of reduced value for a VC-financed company, which increases the cost of capital as the owners must give up a greater percentage of their ownership to obtain the desired capital. This result ensues despite the fact that owners may not expect to realize dividends (and returns from sales of shares) for many years.

By contrast, the effect of taxes on small firms is less clear. Schuetze and Bruce (2004) summarize the empirical research on the effects of the income tax on self-employed, often small companies.[5] In their analysis, these authors focus primarily on the income tax situation of founders rather than with owner-level taxes on company returns. Moreover, these authors are unable to identify a clear pattern, which is consistent with the prior literature in which some studies report a positive association between business owners' income tax and the prevalence of small companies, whereas other studies report a negative association.

The self-employment rate is not the only variable affected by taxes. A conceptually separate issue is how the income and factor supply of the self-employed react to taxes. Here, the literature has consistently found that the self-employed are more responsive to taxes than employees. (e.g., Carroll et al., 2000a, 2000b, 2001; Heim, 2010; Chetty et al., 2011; Harju and Kosonen, 2013; Kleven and Schultz, 2011; Rosen, 2003; Saez, 2010). The so-called elasticity of taxable income is far higher for the self-employed than for employees, which implies that higher taxes reduce the supply of taxable income due to a combination of real effects and tax reporting.

[5] For a more recent study surveying some of the newer studies of the effect of taxes on self-employment, see, e.g., Bruce and Deskins (2012).

5.3 Entrepreneurship and its support structure

Before we further analyze the effect of taxes, it may be useful to discuss our theoretical understanding of modern entrepreneurship. Rapid growth primarily derives from applying new knowledge in value-creating ways. Yet it is insufficient to simply search for new knowledge. Much new knowledge is not economically valuable in itself; it must be incorporated into an innovation, which is then produced and distributed efficiently. Thus, a "knowledge filter" is needed to separate economically relevant knowledge from the total body of knowledge. When valuable knowledge is identified, the entrepreneurial firm can transform this knowledge into activities with financial worth (Bhidé, 2008; Braunerhjelm et al., 2010; Carlsson et al., 2009).

Venture capital (VC) firms supply equity capital to firms in early phases of their life cycle. This includes identifying entrepreneurs and projects, assessing the value of potential investments, supervising management and evaluating investments. Business angels carry out a similar function, generally in earlier phases. In case of sustained mismanagement, venture capitalists can enforce a change in management.[6]

Rapidly growing, innovative firms – those we call entrepreneurial firms – are not only few in number but also different in nature from other firms. Non-innovative, owner-manager firms generally do not use support structures to the extent that true entrepreneurial firms do. In the United States, on average, approximately 0.2 percent of all firms receive VC funding, whereas nearly two-thirds of all firms successfully introduced onto the stock market have received such funding. Entrepreneurial firms are, on average, also more knowledge-intensive than owner-manager firms. With respect to education, owner-managers are not much different from employees in general. However, entrepreneurs in the United States who have received VC funding are almost 20 times more likely to hold a doctorate degree as the average American (Bengtsson and Hsu, 2010). These entrepreneurs typically have left a lucrative career position at another organization. Thus, it is crucial to understand that transition to entrepreneurship often involves significant opportunity costs.

[6] This function is often performed by individuals with long experience of the industry in which they invest. Many are former entrepreneurs who have sold their businesses to invest the profits in new firms without assuming day-to-day operational responsibility. For more information on the role of venture capital, see Gompers and Lerner (2001).

Establishing and developing a successful firm in a knowledge-intensive area requires not only a visionary entrepreneur with a business idea but also several other key actors with complementary skills (Henrekson and Johansson, 2009). These other actors include venture capitalists, industrialists, researchers/inventors, innovators, skilled workers, competent and demanding customers, and actors in the secondary market (institutional investors, buyout firms etc.). Entrepreneurial success also requires a high degree of cooperation among these actors, who are likely to have different primary interests and are aware that an investment in a new enterprise is likely to mean unusually high transaction costs and uncertainty. Thus, these various interests may prove difficult to harmonize. Generally speaking, it is quite a challenge to identify in advance the few companies that eventually generate most of the returns in the entrepreneurial sector. Three-fourths of such investments produce zero or even negative returns for their founders (Hall and Woodward, 2010).

The high-technology entrepreneurial sector in the United States – where the sector first emerged – has developed contracts, financial instruments, and formal and informal institutions intended to reduce principal-agent problems (Gompers and Lerner, 1999). In American VC-financed companies, owners' rights to company returns are increasingly separated from control rights (Kaplan and Strömberg, 2003). Both rights are contingent on firm performance. Reward systems, with their stock options and convertible shares, are designed so that owners and other key actors have less and less control if the firm does poorly but gradually increase their control – and receive extremely high returns – if the firm does well. In today's challenging economic environment, a few companies have found that options are an effective way to reward firm owners and employees with key competencies when companies are profitable. Similarly, options can knit the interests of these owners and employees even more closely together with those of other actors in the firm's support structure.

In high-tech sectors, the entrepreneur is almost always dependent on others for support. Cooperation among actors is necessary for innovation although there may be problems because roles are increasingly specialized. In a firm's startup stage, entrepreneurs identify potentially profitable opportunities. They are also the main actors in the early commercialization phase. Industrialists become involved in the industrialization phase at the same time that skilled employees become more important. Business angels and venture capitalists finance development in the early stages and also contribute key competencies, such as business networks, management expertise, and market knowledge. Financiers from the secondary market contribute support at later dates if or when ownership changes hands.

At a relatively early stage in their companies' life cycle, entrepreneurs frequently sell their innovations to larger companies. The innovations are then developed further and marketed by these large companies, which have the necessary resources and marketing capacity to produce and sell large volumes of the ensuing product. A large sales volume is often a prerequisite for a high rate of return, which typically results from economies of scale. This division of roles, which has been studied both empirically (e.g., Baumol, 2002) and theoretically (Norbäck and Persson, 2009), can be quite effective. Both the support structure theory and Norbäck and Persson's theory emphasize the need for an institutional framework that facilitates interaction among actors with complementary competencies and that does not influence value creation as firm ownership changes.

Companies generally depend on external sources to finance their growth. Thus, business angels and VC-financed companies have become increasingly important in the entrepreneurial sector. In addition to financial capital, these actors contribute their expertise and business contacts. According to Kaplan and Strömberg (2003), the role of the venture capitalist includes screening business ideas, providing advice, and drafting contracts, including contracts with external business partners, between founders, with key employees and with shareholders. Venture capitalists and business angels are frequently experienced entrepreneurs who are often integral to the early professionalization of young companies. In short, the VC sector ideally provides competent capital rather than merely passive capital.

In section 2, we discussed how models that include corporate governance effects lead to different conclusions, primarily regarding dividend taxes, than simpler models that ignore the need for and value of efficient corporate governance. The same conclusions apply to models that analyze the interaction of venture capitalists and entrepreneurs. The new view models, which assume that companies already exist, are not suited to analyzing entrepreneurship. Although startup companies generally do not pay dividends in their initial years, that fact does not imply that dividend taxes are irrelevant to them. Even in its earliest years, the existence of such a tax reduces a firm's value because it constrains the firm's ability to obtain external financing; financiers recognize that future dividend taxes will reduce their expected net-of-tax return.

Sinn's (1991a) important and early exception in the new view tradition, i.e., his startup firm model, excludes individual entrepreneurs and shows that dividend taxes have a distortionary effect on such firms. However, companies seek to minimize this effect by being undercapitalized in the startup phase and by financing growth with retained earnings. Dietz (2003) applies Sinn's theory in a general equilibrium model of monopolistic competition in

which new and old companies exist simultaneously. Dietz (2003) concludes that dividend taxes create distortions regarding the use of both internal and external capital. Dividend taxes and capital gains taxes – both of which result in lower capital accumulation – raise the threshold for the founding of new companies. Thus, owner-level taxation constrains small businesses by limiting their growth opportunities.

Keuschnigg and Nielsen (2004a) model a market in which entrepreneurs and venture capitalists cooperate to create value. In addition to financial capital, entrepreneurs benefit from venture capitalists' competence. Although there are significant potential benefits from cooperation in the VC sector, these authors also show that there are enormous difficulties emanating from contractual problems with VCs. Because earnings will be shared among the parties and because it is impossible to write contracts that cover all contingencies, a classic principal-agent problem arises in which the external financiers and the founder(s) risk suffering from the moral hazard encountered by the other party. Neither actor has sufficient incentive to invest resources in the firm. The costs for a certain input in terms of time, effort and financial resources are borne entirely by the contributor, whereas the returns are shared in some way among the parties involved.

The dividend tax exacerbates this inherent problem by reducing the returns on the efforts of entrepreneurs and venture capitalists. Keuschnigg and Nielsen (2004a, p. 3) note as follows: "Our results thus show that a dividend tax, in reducing mature firm value, will impair incentives for entrepreneurial effort and VC advice in startups and cause a welfare loss."

Because Keuschnigg and Nielsen's (2004a) model includes entrepreneurs and other actors whose efforts influence the firm, the neutrality result no longer holds. They assume – more realistically – that the amount of time and effort that entrepreneurs and venture capitalists invest in companies influences the likelihood of success. This assumption changes the conclusions regarding tax policy: Dividend taxes have a distortionary effect.

Keuschnigg and Nielsen (2004b) note the same negative effect for capital gains taxes that they found for dividend taxes. Although income from capital gains taxation is a relatively minor source of finance for the government, these taxes specifically target the owners of innovative and rapidly growing companies. In recent decades, total realized capital gains have amounted to roughly only about three percent of GDP in countries such as the United States and Sweden. Moreover, many investors are exempt from capital gains taxes, such as foreign holding companies, family foundations, and pension funds.

Kanniainen and Panteghini (2013) analyze the new view and its tax neutrality conclusion in their study of taxation's effect on entrepreneurial firms. The models in the new view were developed to study marginal investments in existing firms. However, the most important decision for a potential entrepreneur is the founding decision, i.e., whether to leave a salaried job and start a new firm. This fundamental occupational choice decision, as well as the opportunity cost of leaving a conventional salaried career position, is ignored in models in the tradition of the new view. The opportunity cost for entrepreneurs is defined as the income lost from leaving their salaried positions, calculated with reference to their income at some future point when they again become employees. When this aspect of entrepreneurship is incorporated into economic decision models, the new view's conclusion that dividend taxes have no effect on firm investments becomes invalid. While dividend taxes are neutral with respect to the marginal investment decision in mature companies (where the funds needed for investments are available in the form of internally generated profits), the decision regarding whether to become and remain a firm owner is distorted.

5.4 Entrepreneurship as a factor of production

In most countries, the design of the tax system is motivated by a theory of taxation in which only two factors of production/sources of income are assumed: capital and labor. However, it may be more reasonable to consider entrepreneurship as a separate factor of production with unique features that make distinct contributions to value added. It is easy to forget that the intellectual basis of the notion that income must be either derived from capital or from labor is a highly simplified model of reality. Because the model only includes capital and labor, total income must necessarily be split between those two factors. The more sophisticated the economy, the more this conceptual simplification departs from reality.

Marxist theory, for example, assumes that the return on capital created by labor is a form of labor income. Conversely, according to neoclassical economic theory, capital consists of assets that its owner chooses not to consume in the current period; instead, it is used as an input for future production. Whether the capital assets were created by labor is irrelevant; future returns are regarded as compensation for postponing consumption and for risk-taking. In the Marxist model, which recognizes only one factor of production, all returns are attributable to labor. According to that model, returns that flow from factors of production other than labor are illegitimate. The neoclassical model, however, which considers capital as well as labor as factors of production, can identify the component of factor income that is attributable to capital. A model with more factors of production in addition to labor and

capital can identify even greater complexity in factor returns by attributing part of the value added to factors other than labor and capital.

In the early stages of their companies, entrepreneurs combine their own labor with previously invested financial capital to create additional capital. Such capital may be technological, intellectual, or organizational. Such entrepreneurial venturing may result in a successful firm with an economic value that is many times larger than the financial resources invested. Skype and Facebook are recent examples of this phenomenon.

When examining entrepreneurship, it is impossible to distinguish the return on labor from the return on capital because the value created is aggregated as a result of the inseparable combination of entrepreneurial talent, work effort, human capital and financial capital.

One way to determine which portion of the return is attributable to labor and which to capital is to determine what the return would have been had the entrepreneur not worked in the firm. It also might be asked how large would the return have been had there been no existing capital in the firm from earlier years. However, the answers to these questions do not necessarily result in consistent answers regarding the returns to entrepreneurship. The answer to the first question may well be almost zero, e.g., if the value of the firm is highly dependent on the individual entrepreneur's vision and efforts, which means that all or almost all the returns come from labor. As far as the second question, the answer may also be almost zero, e.g., if previously created organizational capital is necessary to generate revenue, which would imply that all or almost all the returns come from capital investments.

The theoretical distinction between capital and labor is simply not well suited for the analysis of entrepreneurship (Pelikan, 1993). When there is an important factor that interacts positively with other factors, it becomes misleading to ask only the first question, for which the answer is that almost all returns are attributable to labor. An entrepreneurial firm in which the founder does not reinvest a considerable portion of the firm’s returns is unlikely to grow. Clearly, the firm could not be sold without the founder’s efforts and willingness, year after year, to postpone consumption and to resist reducing personal risk by diversifying investments.

Another way to conceptualize this question is to ask what would have been the outcome if Bill Gates and Ingvar Kamprad had not created companies, and had instead – as employees – invested the same amount in other companies on the stock market that they invested in Microsoft and IKEA, respectively. The value of their entrepreneurial activity is thus the

difference in the hypothetical wealth from the stock market investments and the wealth they actually created by founding and developing their own companies. Entrepreneurship is the combination of a business idea, human capital, effort, and re-invested capital during the many years required for a firm to grow and is thus part of an inseparable bundle of inputs supplied by specific individuals. It is difficult to divide and tax the return on this bundle of inputs in a way that clearly separates what should be attributable to capital and labor, respectively – as yet, no one has succeeded.

The extent to which a company is financed by equity versus debt depends on, among other things, its size and age. Startups are more constrained by transaction costs associated with external financing because prospective financiers are unable to evaluate them as accurately as they are able to evaluate large and mature companies (Blanchflower and Oswald, 1998). Therefore, a potential entrepreneur must bear many of these costs, particularly in a company's early years. The taxation of private wealth accumulation thus affects startups more and creates a disadvantage for entrepreneurial firms. Gentry and Hubbard (2000) show that the personal wealth of entrepreneurs in the United States is quite different from that of other households. Although entrepreneurs have a high savings rate, their investments are far less diversified than the average investment portfolio. In many cases, the entrepreneur's savings and investment choices are so closely linked that they cannot be meaningfully analyzed separately.

Glaeser (2013) argues that entrepreneurship is a unique form of human capital with its own supply curve. The stock of entrepreneurial human capital is created by investments, which, like other investments, it is sensitive to economic factors. Certain geographic areas that have built up a larger stock of entrepreneurial human capital than other areas are more innovative, as a result. Another argument for treating entrepreneurship as a separate factor of production (e.g., Baumol, 2010) is that it is empirically clear that entrepreneurs behave differently than wage earners. Taxation, for example, has been found to influence entrepreneurs' behavior more than that of wage earners (e.g., Bastani and Selin, 2014; Chetty et al., 2011; Kleven and Schultz, 2011; Saez, 2010). Entrepreneurs typically cannot decouple their savings from investments, their capital from their own labor, or their labor and capital from their business ideas. Furthermore, there is no external market in which incumbent companies can buy entrepreneurs' ideas to develop them internally as new business activities.

In taxation theory, the absence of external markets and the inability to dissociate capital from labor are particularly problematic issues. Without an external market and market prices, it is impossible to calculate the value of the entrepreneur's effort and ideas. In other words,

although owner-level taxes may be neutral with respect to the capital in a firm, they need not be neutral with respect to the allocation and utilization of entrepreneurial talent in the economy. By reducing the return on entrepreneurial innovation in the formal sector, the talent will be diverted away from that entrepreneurial activity in which the expected social rate of return is the greatest.

These conceptual issues are of practical policy importance. The dual income tax – also known as the Nordic system of dual taxation – taxes capital and labor income separately, and capital income is typically taxed at a lower rate. This system was introduced in Sweden, Norway and Finland as part of comprehensive tax reforms in the early 1990s. Whereas most business owners in the United States are taxed according to the individual income tax schedule, the Nordic system contains a sharp division between capital and labor income. Cnossen (2000) argues that the Nordic dual income tax system ought to be adopted by the European Union as a whole, thereby permitting lower taxes on capital income, which is more tax elastic than labor income. However, this principle becomes less clear-cut when the self-employed are considered. Owners of closely held firms face special tax rules that assign part of their income to capital income (taxed at a lower, flat rate) and the rest to labor income taxed at a higher, progressive rate (Agell et al., 1998; Sørensen, 1994). Thus, the state must determine what part of the profit is the return to labor or capital, which has led to major problems in practice (Alstadsæter et al., 2014). The problem of addressing self-employed business owners is sometimes referred to as "the Achilles Heel of the [Nordic] dual income tax" system (Alstadsæter, 2007).

If entrepreneurship is regarded as a separate factor of production, it is no longer obvious that entrepreneurial returns should be taxed either as labor or as capital income. There might thus be good reason to design a third pillar in the tax system for entrepreneurship, perhaps with tax rates somewhere between the ordinary tax rate for wage income and the preferential tax rates in most countries for capital gains and dividends. It could even be argued that entrepreneurship should be taxed at a lower rate than passive ownership, if one accepts the idea that entrepreneurship gives rise to innovation spillovers. The major problem with having three tax pillars is the difficulty of distinguishing entrepreneurial income from wage income if lower taxes create incentives to report labor income as entrepreneurial income.

Comparisons generally show that taxes influence owner-managers more than wage earners (i.e., the tax elasticity is greater), possibly because the former have more control over their total work hours and have greater opportunities to avoid or evade taxation. Bastani and Selin (2014) examined tax sensitivity in Sweden by studying behavior at sharp kink points in the

income tax schedule and found that owner-managers are more tax-sensitive than wage earners.

Harju and Kosonen (2013) study two tax reforms in Finland that applied only to small, unincorporated firms. They conducted a natural experiment that allow them to use incorporated firms as a control group and find that lower taxation led to some increase in sales for the former group. The estimated elasticity was 0.15. The elasticity of taxable income – which was considerably higher at 0.35 – showed that these firms were relatively tax-sensitive. The researchers also separate the behavioral influence into a real economic effect and a tax avoidance effect. Although both effects matter from a fiscal perspective, the real economic effect is more important from an efficiency perspective. They conclude that about a third of the effect was real and two-thirds was attributable to less tax avoidance, including lower depreciation, fewer deductions, and fewer company-paid benefits for the owners.

Tax-sensitivity is relevant even when it is caused by greater scope for tax avoidance rather than by real behavioral adjustments. The real effects of taxation are obviously more important for society and should be given greater weight. However, higher responsiveness resulting from tax avoidance should also be considered in optimal taxation design (Chetty, 2009). The reason is straightforward: the state loses revenue when taxes are too high on activities with greater propensity to evade taxes.

Research shows that both taxable income and labor supply is more tax sensitive for entrepreneurs than for wage earners, which supports our argument that entrepreneurship should be treated as a separate factor of production rather than as a type of labor. The fact that the self-employed are more tax responsive does not ipso facto prove that self-employment is a distinct factor of production. It is possible that ability to evade taxes drives this result, though it should be noted that also the real responsiveness of the self-employed (excluding reporting) appears to be higher than salaries workers. Another possibility is that more tax-responsive or for that matter more income responsive individuals select into business activity.

Regardless of whether entrepreneurship can be viewed as a distinct factor of production or not, business owners appear to be more tax-responsive. The theory of optimal taxation implies that entrepreneurs should be taxed at a lower rate than employees because taxes on entrepreneurs erode the tax base more than taxes on employees, which is likely one of the

main reasons why capital gains and dividends are typically taxed at a lower rate than wage income.

6. Taxation of stock options and innovative entrepreneurship

A new firm based on a unique idea is typically started by one or several founders who are carriers/owners of the innovation and the concomitant tacit knowledge necessary to launch the firm.

Figure 1 outlines the central phases in the evolution of an entrepreneurial firm in the common case when the founder-entrepreneur has insufficient funds to finance the development of the firm on his own before it can be sold to outside parties.

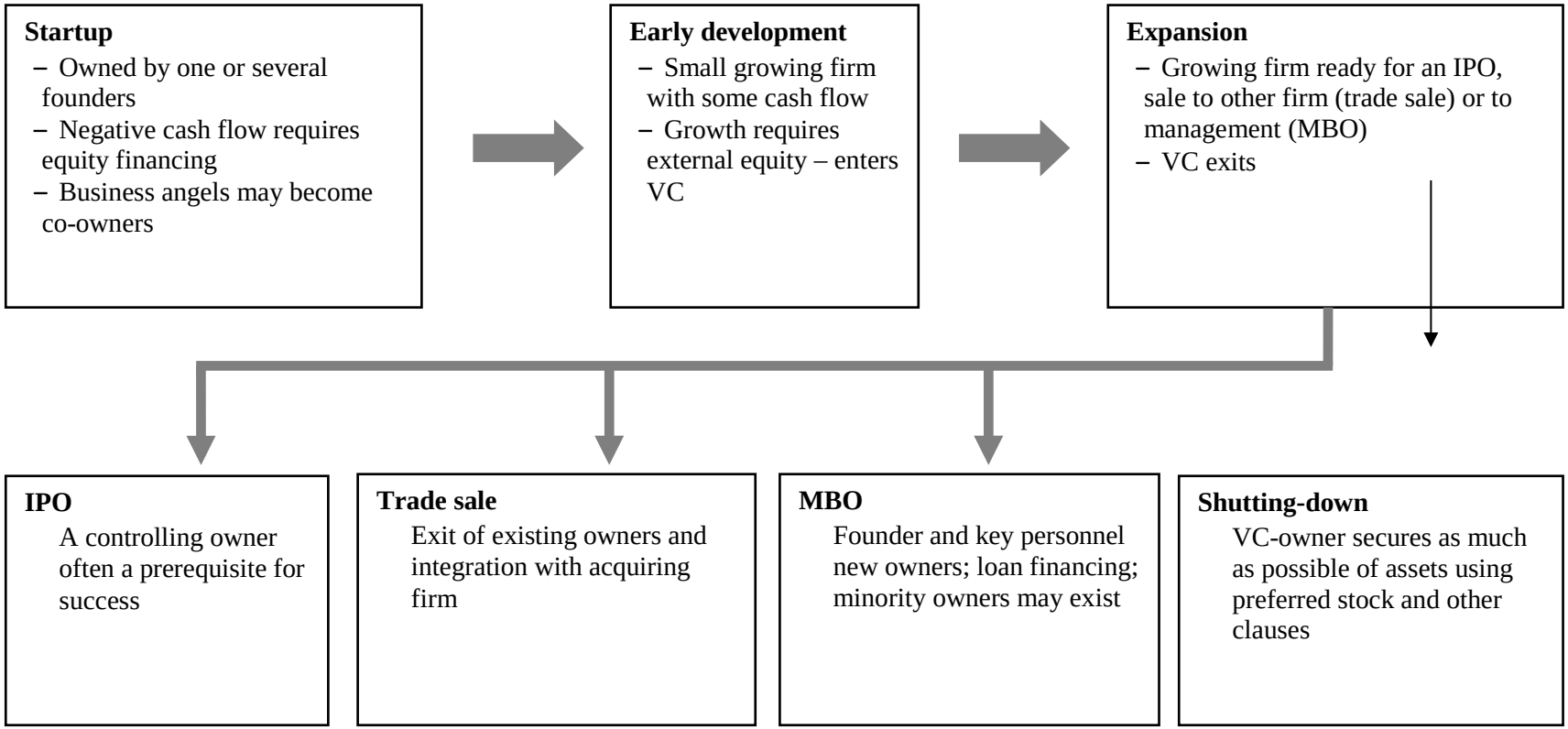
If the firm is in the high-tech sector or if it is based on a truly novel idea, the risk associated with engaging in a new venture is extremely high; three out of four American entrepreneurs receiving VC funding ultimately result in a zero rate of return (Hall and Woodward 2010). Even when the firm is eventually a success, it typically takes a long time before the finished product is introduced to the market and longer still before cash flow becomes positive. In each phase, a typical set of problems must be managed (Gompers and Lerner 2001).

A production factor that is used in a certain highly specialized activity is relation specific, i.e., it can rarely be reallocated to another activity without incurring substantial costs (Caballero 2007). Thus, the value of such a production factor is contingent on its continued use precisely in its specialized activity – in which it has developed and honed its unique competencies.

The high degree of uncertainty and asset specificity means that it is virtually impossible to formulate explicit contracts that provide all the parties with the right incentives to build relation-specific assets. It becomes particularly important to protect against opportunistic behavior by other parties, e.g., the risk that the founder and/or other key personnel will be outmaneuvered by external investors and forced to leave the firm prematurely.

High transaction costs and non-calculable risks often necessitate equity financing. Further, few founders have the financial means to finance the venture until the point at which cash flow turns positive or the degree of uncertainty has fallen sufficiently to make the firm creditworthy.

Figure 1 Central Phases in the Evolution of an Entrepreneurial Firm.



Source: Henrekson and Sanandaji (2014b).

Stock options can be used to encourage and reward individuals who supply key competencies to a firm; ideally, stock options provide incentives that closely mimic direct ownership. The efficiency of stock options greatly depends on the tax code. If gains on stock options are taxed as wage income, some of the incentive effect is lost – particularly if the gains are subject to (uncapped) social security contributions and if the marginal tax rate on wage income is high.

The situation changes dramatically if an employee with stock options can defer the tax liability until the shares are actually sold. The effectiveness is further reinforced if the employee suffers no tax consequences upon granting or exercise of the option and if the employee is taxed at a low capital gains rate when the acquired stock is sold (Gilson and Schizer 2003).

The tax systems of many countries evolved before the development of complicated ownership structures involving private equity financing (i.e., VC and buyout firms). Private equity (PE) ownership involves layers of ownership, including private ownership stakes by founders and key personnel, an ownership share for the PE firm, an ownership stake by PE partners (often indirect), an investor stake in the PE fund, and final beneficiaries of institutions investing in PE funds. Sophisticated mechanisms were initially needed to provide high-powered incentives for many actors in addition to the final equity holders. In fact, the modern VC industry in the United States could not have evolved if the tax system had not been changed in key respects. Sharp reductions in the capital gains tax and stock option legislation in 1981 allowed tax liabilities to be deferred to the point at which stocks were sold rather than when the options were exercised. In addition, new legislation in 1979 allowed pension funds to invest in high-risk securities that were issued by small or new companies and VC funds (Misher, 1984; Fenn et al., 1995).

In practice, of course, the contribution to value creation by financial capital provided by outside investors cannot be separated from the entrepreneurial insight, knowledge and effort supplied by the founder(s) and key employees. Instead, they constitute an inseparable *bundle* of inputs that are all necessary to create value. Neither the entrepreneurial insight and effort, nor crucial human capital/management skills residing in a unique individual can be hired in the regular labor market at a market wage. Moreover, should the concerted effort of this inseparable bundle of inputs result in the emergence of a successful firm, it would be instantly capitalized as a sharp increase in the market value of the firm. Hence, it is logical to lay down contractual terms that aim to reflect the fact that all providers of inputs to the

inseparable bundle are guaranteed *ex ante* a share of the capital value that may be created by building the firm.

To test empirically whether taxation of stock options influences innovative entrepreneurship, one must compare the tax rates on employee stock options across countries. However, the statutory tax rate rarely reflects the true rate, which depends on a myriad of complex rules. Moreover, there is no single tax rate, and the effective tax rate depends on the type of firm. To be able to reliably compare countries, we constructed a representative firm and commissioned the accounting firm of PricewaterhouseCoopers (PwC) to calculate the tax rate for employee options for a sample of countries. PwC in part specializes on tax issues and relied on their tax experts active in each country to estimate the options tax rate for the year 2012. Income taxes, capital gains taxes and payroll taxes were included when applicable.

The tax calculation is based on the following scenario. The representative firm is started by a founder with little initial need for capital. After one year of growth, the firm requires more capital to grow, which the owner lacks. A VC firms buys the entire firm (their purchasing price is irrelevant), simultaneously giving the owner the option to buy back 25 percent of the firm after seven years.[7] The options are priced at the nominal stock value of the firm that applies at year one, which is negligible. After three years, a CEO is hired and is given the option to purchase ten percent of the firm. At this point, the firm is valued at 5 million dollars. After eight years, the firm is sold for 20 million dollars in a trade sale. Immediately before the sale, the stock options are exercised and the founder and CEO come to possess 35 percent or seven million dollars' worth of stock, which they sell to the purchasing firm.

Table 2 reports the tax rates that were calculated by PwC's tax experts. The tax rate is reported as a share of total cost, which means that the incidence of payroll taxes is assumed to fall on the recipient of the option. The tax rate on the options ranges from 72.2 percent in Italy to 15 percent in the United States and Hong Kong.

[7] The assumption that the venture capitalist buys the entire firm is somewhat unrealistic. We impose this assumption to simplify our case. An equivalent case could be constructed in which the venture capitalist buys a fraction of the equity and the firm has greater market value (in all years).

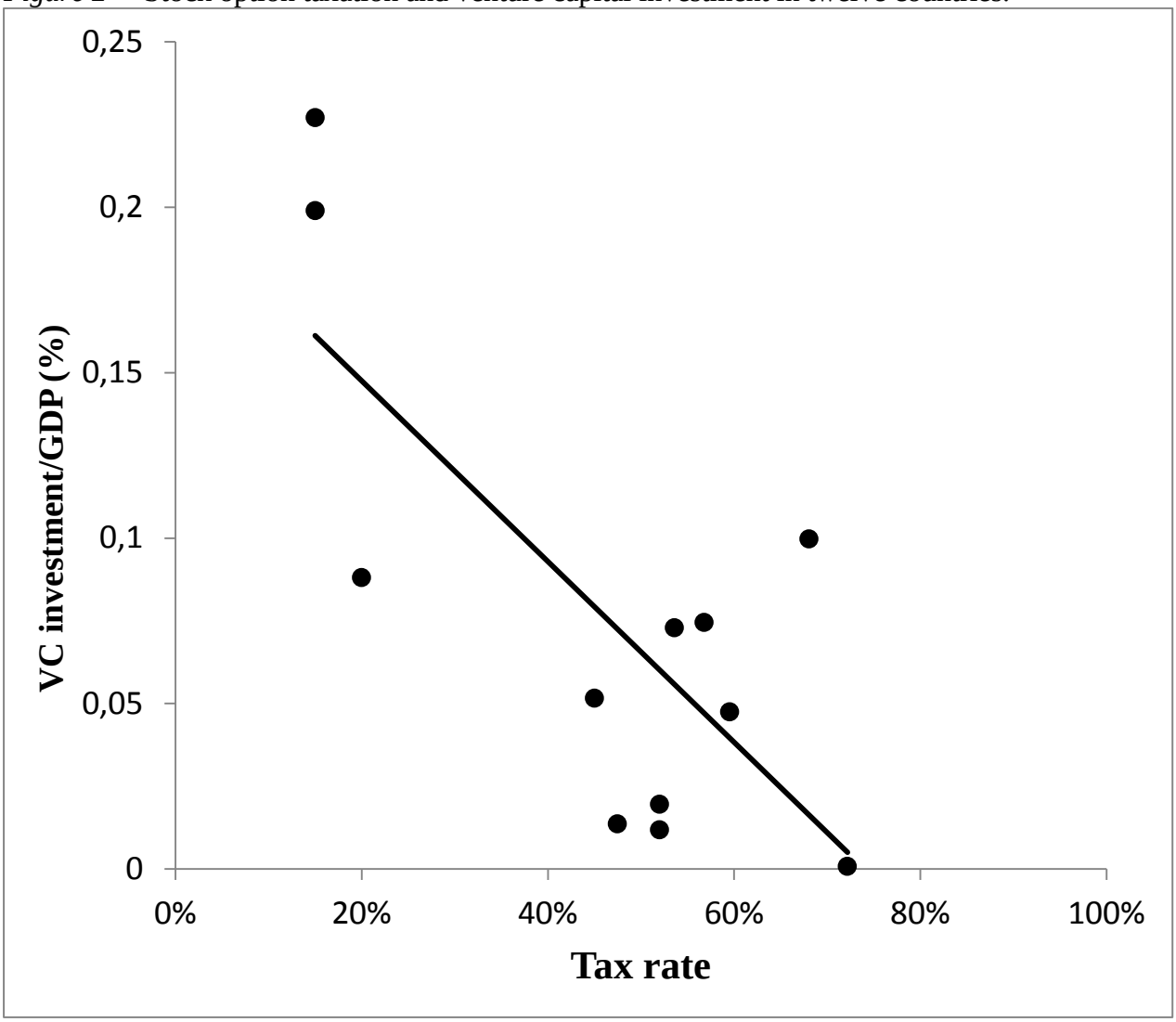
Table 2 Tax rate on Stock Options in Twelve Countries (percent).

Country	%	Country	%
Italy	72.2	Netherlands	52.0
Sweden	68.0	Germany	47.5
France	59.5	China	45.0
United Kingdom	56.8	Singapore	20.0
Denmark	53.6	United States	15.0
Spain	52.0	Hong Kong	15.0

Source: PricewaterhouseCoopers (PwC); see main text.

Figure 2 provides a scatterplot of the options tax rate and VC investments as a share of GDP. The bivariate relationship between the two variables is negative and significant. Needless to say, the small sample size of countries and lack of exogenous source of variation of tax rates does not allow for any causal inference. However, the strong negative correlation between tax rates and VC activity is suggestive and is consistent with the view that high option tax rates reduce VC-backed entrepreneurship.

Figure 2 Stock option taxation and venture capital investment in twelve countries.



Note: VC investment as a share of GDP are from Lerner and Tåg (2013).

These suggestive results for twelve countries are consistent with the results reported in other recent studies. Da Rin et al. (2006) study VC activity in 14 European countries between 1988 and 2001 and find that countries with lower capital gains tax rates have more high-tech startup activity and more PE investment in early phases. Cumming (2005a) studies a panel of entrepreneurial firms in Canada and finds that the use of stock options increased significantly following a reduction in the capital gains tax rate. Thus, Cumming (2005b) shows that American venture capitalists use stock options less frequently when financing Canadian firms, which (according to Cumming) reflects the fact that gains on stock options are more heavily taxed in Canada than in the United States.

7. The effects of different taxes on debt and owners' equity

Most countries levy taxes at a lower rate on returns from lending than on returns from equity. Generally, this difference arises because the return on borrowed capital (interest) is a tax-deductible business expense, whereas the return on equity (dividends) is not deductible and paid from previously taxed firm profits. This issue is only covered briefly because the effect of taxes on capital structure is fairly straightforward.

In line with Modigliani and Miller (1958), the basic new view model presupposes that the composition of firms' balance sheets is determined solely by the incentives provided by the tax system. Numerous studies indicate that higher corporate taxes lead to more highly leveraged companies (e.g., De Mooij, 2011; Desai et al., 2004; Egger et al., 2010; Gordon and Lee, 2001; Huizinga et al., 2008).

The Modigliani-Miller theorem is based on extremely strong assumptions, such as perfect markets and zero transaction costs. However, there are incentive problems in every situation in which there is imperfect information and when it is impossible to design contracts that cover all contingencies. The choice of financing structure (the debt-equity ratio) is one important mechanism used to mitigate these incentive problems.

In their analysis of this issue, the International Monetary Fund (De Mooij, 2011) concludes that the various distortions that advantage debt relative to equity financing – the debt bias – is a serious concern. De Mooij writes:

> One cannot compellingly argue for giving tax preferences to debt based on legal, administrative, or economic considerations. The evidence shows, rather, that debt bias creates significant inequities, complexities, and economic distortions. For instance, it has led to inefficiently high debt-to-equity ratios in corporations. It discriminates against innovative growth firms, impeding stronger economic growth.

Rajan and Zingales (1995) show that leverage is higher in large firms, in firms with a higher proportion of tangible assets, and in firms with lower growth potential. Entrepreneurial industries and firms that find it harder to borrow and that are therefore forced to be less leveraged, are systematically disadvantaged by a tax system that treats debt financing more favorably than equity financing. In practice, this treatment means that the tax system benefits industries that are amenable to large, capital-intensive firms and that have a weak need for entrepreneurial entry (Davis and Henrekson, 1997).

For commercial reasons, some sectors have a higher degree of leverage than others, which is true for industries in which real estate and other assets that can be readily used as collateral

are major items on the balance sheets of firms. Simply put, real-estate companies have easier access to loans than IT firms or research-based biotech firms. Therefore, different industries are leveraged differently, even in a neutral tax system. A tax system that favors debt financing means that highly leveraged industries and firms receive *de facto* tax subsidies compared with industries and firms with low debt levels. Although high-tech companies are more innovative than real-estate companies, they are disadvantaged by the tax system because they are less leveraged. A tax system that redistributes resources from industries and companies with low leverage to industries and companies with high leverage is distortive and likely to be socially harmful.

Small and medium-sized firms are constrained in their ability to borrow in international markets. The same is true for companies and industries whose assets are not tax-advantaged tangible assets (e.g., land, structures, and capital equipment) but tax-disadvantaged intangible assets (e.g., knowledge, trademarks, patents, structural capital, and entrepreneurial talent) (Nooteboom, 1993).

8. Conclusions

Recent studies have furthered our understanding of the effects of owner-level taxation on business activity by incorporating greater theoretical and empirical complexity. Previous (and simpler) models have often concluded that owner-level taxes were neutral with respect to business activity. There is now more robust evidence on how owner-level taxes affect entrepreneurship as well as large, mature firms. Rather than being neutral, owner-level taxes can impede high-growth firms and reduce owners' incentives to assume an active role in firm governance. The new research on the effects of owner-level taxation is both useful for policy and interesting methodologically.

One important lesson is that the conclusions of theoretical models of capital taxation are highly sensitive to the assumptions made in the models. The schools of thought regarding dividend taxation rely on relatively simple models in which the inner workings of the firm are treated as a black box, i.e., excluded from the analysis. A taxation model that ignores a certain aspect of economic reality will generally miss the potentially distortive effect of taxes on the activity in question. It is thus not surprising that, more complex models of firm activity have recently produced different results than previous models.

According to the traditional – or "old" – view, owner-level taxation of firm owners reduces incentives to save and invest. Although the "new" view concurs with regard to the capital gains tax, it concludes differently when it comes to dividend taxation. According to the new view dividend taxation on owners of mature firms does not affect the company's marginal cost of capital and investment behavior. The reason is that firms are assumed to finance marginal investments by means of retained earnings instead of issuing new equity.

International capital is far from perfectly mobile across borders, which means that it may be problematic to assume that foreign capital can or will fully substitute for domestic capital. However, the causes of home bias are not fully understood. One explanation may be that local information costs and network effects give domestic business owners an advantage when investing in their home market compared with investing abroad. Another problem with taxing domestic investors and relying on foreign capital to finance investments is that it can shift ownership and investment income abroad.

A new school of thought, sometimes referred to as the agency view, has been developed concerning dividend taxes and incorporates principal-agent problems between owners and management regarding dividends. The agency view claims that when ownership and

management are separated, a conflict of interest emerges regarding the use of firm cash flow. Management often has incentives to pay very low or no dividends to shareholders and instead overinvest in existing businesses, which benefits management privately. Dividend taxation exacerbates this inherent principal-agent problem. Taxes thus create a “wedge” between capital in mature firms with fewer investment opportunities and newer firms with less capital but better growth prospects. This misallocation of capital lowers economic efficiency, as the optimal outcome would be for the old firms to pay out excess capital as dividends to their owners, who in turn might reallocate these funds to firms offering better investment opportunities and greater growth potential.

Entrepreneurs supply an inseparable bundle of effort, human capital, and financial capital. As the company grows, additional capital is created by using existing capital and the entrepreneur’s own vision and effort. Because these factors are largely inseparable, the return on entrepreneurship is extraordinarily difficult to neatly parse between capital and labor income. Employer behavior is generally more tax elastic than employee income due to tax compliance and planning, in part, but this elasticity may also reflect a higher real elasticity that heretofore has remained more or less invisible. In the classical framework of optimal taxation, higher tax responsiveness can be viewed as an argument in favor of taxing business activity at a lower rate than income from employment.

Innovation and firm growth generally requires the sustained collaboration of a number of distinct agents and competencies, including founders, financiers, and key employees. Complex contracts are designed to facilitate cooperation and reduce conflicts of interest. In countries with low or moderate tax rates, a wide spectrum of option contracts is frequently used in agreements between founders, financiers, and key employees of startups. Options are used to remunerate founders and key employees when the company performs well, which is particularly valuable for startups at the beginning of their life cycle when they tend to have weak cash flow but high growth potential.

The so-called Nordic system of small business taxation is based on the premise that income comprises either capital gains or derives from work. In this framework the returns on, for example, employee or founder stock options are considered labor income. Entrepreneurship is assumed to be largely a type of labor. However, we argue that this conceptual division between capital and labor is economically inoperable when discussing owner-managed firms. Economic models that consist of only two factors of production – capital and labor – are not sufficiently complex to account for the returns on entrepreneurship.

Another line of research has tried to incorporate complexity relating to entrepreneurship into capital taxation. Innovative startups are increasingly dependent on venture capitalists that provide both external financing and complementary skills. Entrepreneurship is a demanding activity characterized by relation-specific assets, conflicts of interest, low liquidity, weak cash flow in early stages, and high uncertainty, which makes it particularly difficult to write contracts to cover even some of the likely contingencies. In this framework, dividend taxes cause a distortion by reducing the return on effort toward mutual goals by both entrepreneurs and venture capitalists. As in the agency view, dividend taxes amplify pre-existing distortion related to transaction costs.

An interesting angle on entrepreneurship that has been incorporated into models of ownership taxation is the occupational choice margin. When analyzing capital taxes in large mature firms with dispersed ownership, the cost of capital is the most studied dimension. By contrast, when analyzing entrepreneurial startups, the central choice variable is occupational choice rather than the cost of capital. Startups do not typically pay dividends and are unaffected by the dividend tax directly. However, taxes on future dividends are incorporated into the value of the firm. Therefore, both dividend and capital gains taxes make it less lucrative to attempt to create a company rather than remaining employed.

Stock options can be used to encourage and reward individuals who supply key competencies to a firm. In ideal circumstances, stock options can provide incentives that closely mimic direct ownership and can thereby alleviate potentially grave agency problems. However, the efficiency of stock options depends substantially on the tax code. If gains on stock options are taxed as earned income when they are tied to employment in the firm, some of the incentive effect is lost, which is particularly strong if the marginal income tax rate is high.

The situation is different if an employee who accepts stock options can defer the tax liability to the time when the options or the stocks received are eventually sold. The effectiveness is further reinforced if there are no tax consequences for the employer upon the granting or exercise of the option, and if the employee is taxed at a low capital gains rate when the stock acquired through the exercise of the option is sold. The tax risk of the options is then borne by the government, which increases the potential profit from the stock options and allows budget-constrained individuals to sell stocks whenever they choose.

Empirically, more recent studies have increasingly tried to incorporate firm heterogeneity in the sense that different classes of firms react differently to taxes. It is believed that taxes affect mature and cash-constrained firms in different or even opposite ways. Lower taxes on

dividends result in lower investments by mature firms with strong cash flows, which instead increase dividend payouts, which in turn enable credit-constrained firms to increase their investments as it becomes easier for those firms to raise funds. Consequently, the effect of the tax cut on investments is not uniform. Mature firms are likely to react differently to taxes than entrepreneurial startups that rely on external capital.

Similarly, small “mom-and-pop” businesses may differ significantly from high-tech startups in their behavioral response to taxes. Generally, high levels of taxation may in fact promote small business activity and non-entrepreneurial self-employment due to the increased opportunities to evade taxes for this type of firm. High tax rates may also reduce the ability of new innovative startups to attract capital and entrepreneurial talent from competing sectors.

A key lesson to take home from this essay is that the models used in economics are necessarily simplified. It is important that researchers and political decision makers are conscious of these simplifications when the conclusions derived from economic models motivate or are used to justify tax policy decisions. Conclusions from overly simplified models – such as the model that concludes that dividend taxes do not influence firm behavior – may change when additional factors are considered. Moreover, an economic model cannot detect the possible distortionary effects of taxes on a particular factor (e.g., the quality of corporate governance), if the factor in question has been abstracted from. In other words, that it is not part of the analytical model. This could cause models to produce misleading results if the dimension that is excluded from the analytical model is of real importance.

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In 2011–2014, he was a commissioned expert on the Swedish Government Committee on Business Taxation, and in 2015, he became a commissioned expert on the Government Committee on Entrepreneurship. He has also written a number of books, studies, and articles within the framework of Swedish policy discussions. He has experience in international banking, and has served as an advisor in both the public and private sectors. He has been a board member of two public companies.

Tino Sanandaji is an economics major from the Stockholm of Economics. He earned his doctorate in public policy at the University of Chicago in 2011. He was a researcher at IFN between 2007 and 2014 and is currently a research fellow at the Center for Policy Studies in London and an affiliated researcher at the Institute for Economic and Business History Research at the Stockholm School of Economics. His research interests are concentrated mainly in the areas of entrepreneurship and taxation. He has studied the differences between entrepreneurs and small firm owners, with attention to the effect of taxation and regulations. He is also an active participant in debates on economic issues, both in Sweden and in the United States, and a columnist for *The American* and *The National Review*.

Magnus Henrekson and Tino Sanandaji are the joint authors of two books in Swedish on the effects of taxation on entrepreneurship and business activity. They jointly authored two expert reports for the Swedish Government Committee on Business Taxation, which were published as part of its final report in the summer of 2014.