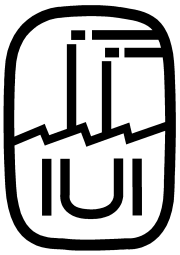

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Taxation of Entrepreneurs Relative to Well Diversified Investors -- A Swedish Perspective

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Abstract
Some high tax countries concerned about outward flight of capital have reacted by imposing so called dual income tax systems. The idea is to keep high taxes on labour while holding low tax rates on capital income received by individual investors and entrepreneurs, matching those on corporations. A popular method is to state by law that capital income exceeding a certain level of return should be taxed as labour income. In specifying this level, cost of capital calculations have been used to determine what it should be to avoid serious distortions. This paper claims that such cost of capital comparisons across closely held companies and entrepreneurial ventures on the one hand and widely held companies on the other could easily be misleading. Contrary to current practice they should not be based on equal level assumptions regarding the investors' required rates of return, net of taxes.

Theoretical considerations as well as empirical evidence show that the return requirements are much higher on investments by entrepreneurs in venture start-ups than on those by well diversified investors. Using earlier results based on the capital asset pricing model (CAPM), the paper shows that the difference can be as high as a factor three. Given this observation, the paper argues that by more or less neglecting it, dual income tax systems used in the Nordic countries are seriously discriminating against entrepreneurship and growth of small firms. The argument is supported by numerical illustrations for the case of Sweden. The conclusions send an important message to other countries in Europe and elsewhere considering the mitigation of effects of capital mobility by a dual income tax (i.e. by using standardized measures of the amount of capital income to be taxed at lower rates than labour).

Keywords: Tax neutrality; Entrepreneurship; Dual income taxation; Cost of capital,
JEL classification: G32; H25; H32

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1. Introduction

For efficiency reasons, neutrality is one of the key objectives of many tax reforms. In the context of capital income taxation, the idea is that the tax wedges should be uniform across uses of capital, sources of financing and forms of business organisation. Special tax provisions should only be allowed when there are strong indications of market failures or for redistributive considerations.

In considering the conditions for entrepreneurial efforts when starting up new ventures, important institutional constraints come to mind. It is clear that the financing conditions are different from those of established larger firms, since the access to international as well as national markets for equity capital is limited in the startup phase and for young firms. This means that risk capital must be provided in narrower circles, often by the use of the entrepreneur's own private wealth and financial support from relatives. As a result, the risk level tends to be high in such investments due to the limited possibilities for diversification.

It thus follows that the rate of return on investments required for entrepreneurs tends to be higher than for well diversified investors. If tax systems treat entrepreneurs and small firms in the same way as larger firms, the consequence is that the cost of capital, i.e. the required rate of return gross of all capital income taxes, will be much higher for small firms. This illustrates a competitive disadvantage for such businesses. In some countries, this has led governments to provide relief for entrepreneurs and venture efforts (Chen, Lee and Mintz, 2002). It is not clear, however, that this relief is sufficient to compensate for the differences in risk.

In analyses of the impact of tax systems on various kinds of firms, the risk aspect has often been treated in an oversimplified way. This is a particular problem when different organisational forms are compared. If the risk premium differs between quoted and unquoted small firms, it is important how the tax system deals with risk. Some economists have argued that taxation of risk does not add to the cost of capital (Gordon, 1985 and Bulow and Summers, 1984). Following Devereux (2003), this paper takes the view that taxes may have a symmetric effect on the cost of capital by pushing up the risk-free as well as the risk-compensating component of the required rate of return. Empirical support for this view is provided in Kerins, Smith and Smithl (2003), although in an indirect way.

Entrepreneurial talent is a scarce resource that can be seen as a separate factor of production that requires remuneration to enter the market. In analyses only distinguishing between two factors of production, labour and capital, the earnings of the latter can be seen as including rewards to entrepreneurship. This would be part of what is often referred to as economic rent in empirical research. Normal return to capital in entrepreneurial activities would therefore be markedly higher than the normal return to business activities in general. The size of this difference is an open question. However, its existence means that taxing economic rent in the usual way ,means creating disincentives to entrepreneurial efforts (Kirzner, 1986, 1997). In particular, this would be true if a progressive income tax schedule were applied (Gentry and Hubbard, 2001).

As capital is highly mobile across national borders, countries with high tax levels on individual incomes relative to the rest of the world face problems of capital flight. In some Nordic countries, a policy reaction has been to introduce so-called dual income tax systems with a lower rate on capital income than income from labour. This has created a suspicion among regulators that what is essentially labour income could be declared as capital income

by being channelled through a firm. To reduce such concerns for misuse, special provisions have been legislated. In designing these provisions, tax neutrality across different forms of businesses has been one of the objectives (Lindhe, Södersten och Öberg, 2004). However, only very limited attention has been given to differences in the required rates of return across different institutional forms for carrying out business. Such variation may occur due to the existence of non-diversifiable risk. One message that this paper wishes to convey is that building tax systems based on such negligence can be very serious for entrepreneurship and economic growth.

As indicated, the required rate of return of a start-up firm net of taxes can be seen as consisting of the risk free rate of interest, a component to compensate for risk and a return to production factor entrepreneurship. In addition, given a return requirement after tax on behalf of the owner or investor, taxes and regulations may further increase the cost of capital for the small firm. A review of the literature shows that the cost of equity capital for start-ups and early stage ventures can be much higher than for larger firms, up to four times that of widely held companies (WHCs).

The paper argues that these circumstances should be reflected in assessments of the impact of taxes on closely held companies (CHCs) as opposed to other companies[1]. To illustrate this, an assessment is made of calculations made in Sweden in the context of the so-called 3:12 Committee, which presented its report in 2002 (SOU 2002:52). There, comparisons of the impact of taxes on the cost of capital were based on the key assumption that the investors' required rates of return were the same in these two categories of firms. Given this assumption, taxes on closely held firms were compared with those on widely held companies under the norm that neutrality should be established. The design principle was then to set the tax parameters to such levels that there should be no discrimination between firms under different organisational settings. Calculations along these lines do, however, not reflect the fact that for entrepreneurs, there are special factors leading to higher required rates of return.

2. The basic issue

Assume a simple tax system where firms are taxed on their profit and the investor/owner is taxed on dividends or capital gains. An investor requires a rate of return of k percent after all taxes, to support an investment by the firm. If the tax rate on the firm is τ, the investment must earn $k/(1-\tau)$ after company tax. As there is also a tax on dividends (τ_{pi}), the investment must earn at least $k/(1-\tau)(1-\tau_{pi})$ to satisfy the investor. This requirement gross of taxes is the cost of capital for this investment.

Assume now two types of firms, one large with many owners and the other a newly started firm more or less completely owned by the entrepreneur herself. An investor in the large company may be somebody also investing in many other companies and who therefore has limited the risk of portfolio losses, if the new firm should fail in its investments. This investor might be satisfied to get, say, a 7 percent nominal return after all taxes[2]. With a company tax rate of 0.28 and a dividend tax rate of 30 percent (like in Sweden), the cost of capital would in this case be 14 percent. The entrepreneur, on the other hand, would probably require a higher rate of return. One of the reasons is that the risk in this case is much higher so that a higher

[1] According to Swedish tax law, CHCs are companies where more than 50 percent of the ownership is concentrated to less than five owners.

[2] To facilitate comparisons, the levels of assumptions as well as the symbols used are those of Södersten (2002) and Lindhe, Södersten and Öberg (2003, 2004).

return is necessary to compensate. Assume now the return requirement net of taxes in this case to be 15 percent and therefore, the cost of capital 30 percent. Clearly, to be realised, the latter investment must then generate a higher return than that in the larger company. Given this, it should be much easier to find profitable investments in the large firm and therefore, this firm will grow relative to the small one. If this institutional arrangement were typical in an economy, as is actually the case in Sweden, it is clear that the entrepreneurial sector would be in a disadvantaged position.

Empirical observations of cost of capital have been derived in the international financial literature for different kinds of firms and types of owners. If the tax system had the above structure, i.e. if it were simple and linear with regard to increases in k, it would be straightforward to translate an observed measure of the cost of capital to an ex ante return requirement on behalf of the investor/owner. The role of the tax system for investment incentives could therefore be estimated.

In reality, however, the modes for taxing income from investments are complex. A number of rules make the tax base deviate strongly from that of an ideal income tax on corporations, for example, depreciation for tax purposes deviates from true economic depreciation. More important in the current context is that tax rules differ across widely held companies and various kinds of closely held firms, partly due to different relations between managers and owners. To a minor extent, the differences also reflect an acceptance by legislators of variations in risk.

As a result, the factor by which an increase in k increases the cost of equity capital for the firm is dependent on many factors. In addition, tax systems are in general not linear with respect to differences in return requirements, which makes it a nontrivial issue to derive investors' return requirements net of tax from empirical estimates of cost of capital. Given a tax model and results from international research using the capital asset pricing model (CAPM), some rough indications of the order of magnitude can, however, be made of the difference in return requirement, net of tax for the two types of investors. This information can then be used to compare estimates of the cost of capital in Sweden for different types of firms.

3. Reasons for differences in required rates of return

Anecdotal evidence, for example from interviews with entrepreneurs, suggests that there are several reasons why the required rate of return on investments in small and young firms is higher than in large companies. Among those are human capital risks, like when the entrepreneur or another key person in the company is absent due to disease.

Another type of risk might be called subsistence risks, including the fact that the social security system in Sweden provides lower compensation rates for entrepreneurs and also that the rules for debt relief are not applicable. To this category, one might add the fact that a condition to get debt financing for a small company is that the entrepreneur uses her private wealth, e.g. her house as collateral. A bankruptcy might therefore have disastrous consequences for the private economy and the family. The fact that, before really getting started with the firm, the entrepreneur has often worked hard without pay to transform the invention into a commercial product and prepare a business plan is also of importance in this context.

Combined, these factors, which are common to most entrepreneurs, add a small business component to the required rate of return after all taxes. An individual would be likely to demand a higher return when her capital is invested in her own firm than when investing in stocks of quoted companies.

An additional important factor stressed in the corporate finance literature is that investing a large part of an entrepreneur's wealth in her own start-up firm means that possibilities of diversification in portfolio management are foregone. This increases the risk of the portfolio which, in turn, leads to demand for a higher return.

A third factor is that the entrepreneur effectively demands (earns) a return to entrepreneurship, a factor of production in addition to labour and capital. This is a reward for looking for new, formerly unknown, products or innovative ways of producing existing products and transforming these ideas into commercial activities. Since this exploration requires investments in physical and financial capital, it is usually lumped into the production factor capital. To understand the conditions for entrepreneurship and venture efforts it is, however, a component which deserves to be treated separately and which requires compensation above the cost of capital as usually measured (Kirzner, op.cit, Henrekson and Sanandaji, 2004). Entrepreneurship is a valuable resource in scarce supply which requires a return to enter the market. Since it can be brought to alternative uses, it has a shadow price. To the extent that its price elasticity is high, taxing it at high rates would create negative supply effects (Gentry and Hubbard, op cit).

These three factors may be referred to as investor related reasons for the higher required rate of return on start-up firms and other small firms. In the literature, arguments for higher required returns on small firms than larger firms have also been based on factors related to the nature and activities of firms. Here, those costs are referred to as costs of information and transactions as well as agency costs. To the extent that they are recognised by investors, they will be likely to have an impact on the required rates of return.

4. Size effects of the rate of return

Several studies have empirically shown the rate of return on equity capital to be higher for small firms than large firms. Different approaches have been taken. In a 2004 paper, Andersson, Ericson and Fall use a firm data set to calculate the cost of capital for small manufacturing corporations that are closely versus widely held. They find that the CHCs have much higher capital costs than the WHCs. This approach tends to underestimate the return requirement on behalf of the entrepreneur, since different types of investors are involved in a CHC, including investors with well-diversified portfolios. This tends to shield the situation for the driving force and key resource in the venture. The authors seem aware of this, since they tentatively argue that the difference in ex ante return requirements could be even higher for investors in the two types of firms than what their results indicate.

Other authors use the capital asset pricing model, CAPM, to derive the cost of capital. This method addresses the investor's decision problem in a more direct way. The model says that in well functioning capital markets, the expected risk premium on each investment is proportional to its systematic risk, as measured by the beta parameter.

If CAPM is a valid model and the markets can be assumed to be efficient, there should be no difference between the risk-adjusted returns for different classes of companies. The model can be formulated as

$$\bar{p}_j = i + \beta_j (\bar{r} - i) \qquad (1)$$

where
i is the risk-free interest rate,
$\bar{r}$ is the expected return on a market portfolio and
$\bar{p}_j$ =E ($\tilde{p}_j$) is the expected return on stock j.
(Throughout a tilde indicates a stochastic variable while a bar indicates an expected value).
Equation 1 can easily be rearranged as

$$(\bar{p}_j - i)/\beta_j = \bar{r} - i, \qquad (2)$$

which says that there should be no systematic differences in risk adjusted returns across projects or firms.

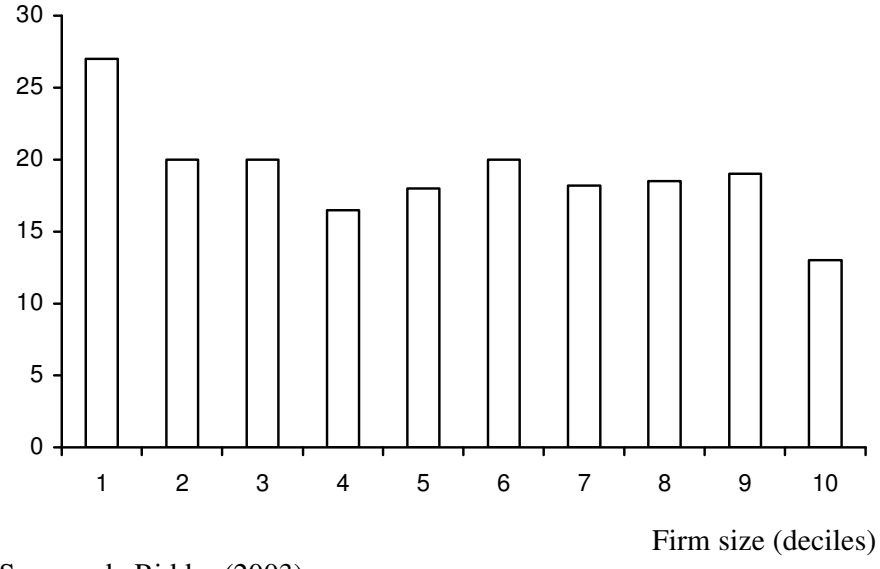
For the United States, Day, Stoll and Whaley (1985) noted empirically that there are actually such differences between classes of companies. They also made an effort to find an extension to CAPM, such that the size effect disappeared. The ex post version of CAPM can be written as

$$p_j - i = \gamma_0 + \gamma_1 \beta_j + \gamma_2 s_j + \varepsilon_j, \qquad (3)$$

where p_j is the annual realized return on stock j, s_j the market value of common stock and ε_j a random disturbance term. If expectations are, on average, realized, the values of γ_0 and γ_1 should be zero and $p_j - i$ respectively, and γ_2 be equal to zero. In estimating this equation, the size effect was established since γ_2 was, on average, found to be negative.

Using Swedish data for the period 1964 – 1988, Vinell and de Ridder (1990) confirm this pattern for the risk-adjusted rate of return for Sweden. (Figure 1, updated to 1988 in de Ridder, 2003).

Figure 1. Risk adjusted rate of return by firm size. Sweden 1964 – 1988.
Rate of return, percent



Source: de Ridder (2003)

The results in this study on Swedish data reflect the rates of return for a multitude of different types of investors, with different required rates of return. To really understand the incentive structure for entrepreneurs, the key actors for starting up new ventures, a more disaggregated picture is needed. I will return to this while referring to results produced in Kerins et al (op.cit)..

5. Required rates of return derived from the level of the entrepreneur

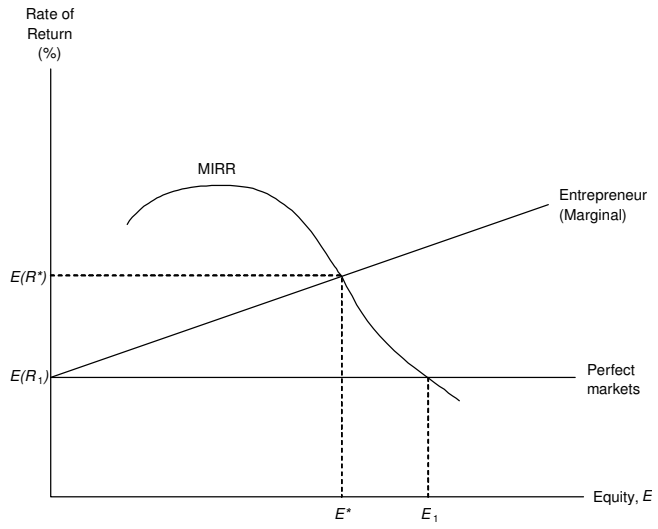
It is interesting to note in the Vinell and de Ridder study that the rate of return on equity is the highest for the smallest category of firms. This may reflect the fact that newly started or very young firms face particular factors tending to increase the required rate of return. An entrepreneur in the process of exploiting an innovation often has very limited access to the market for equity capital. Therefore, it is necessary to make use of the own resources or those of relatives and friends to start the venture. In addition, some borrowing from a bank might be necessary.

When an entrepreneur invests a large share of her wealth in her project, she will face a higher risk than if alternatively, she chooses to invest in the capital market, since she must give up, or at least reduce, the possibility of diversifying over classes of assets. Therefore, the risk increases and she must demand a higher level of return on her venture to offset the risk.

Day et al (op cit) offer an illuminating graphical presentation of this argument. In their analysis, the required rate of return of equity capital for an entrepreneur is built on two components. One part is the return that outside investors would require in the absence of influences from issues of asymmetric information, agency costs and transaction costs or – which amounts to the same – the return that the investor would require if her portfolio were fully diversified. This opportunity cost would thus correspond to the return on a market portfolio. The other part would be a premium for the loss of diversification that results from increased variance in the entrepreneur's portfolio, her attitude to risk and the share of her overall private wealth invested in the venture. To these two components it would be appropriate to add a third, namely the return to entrepreneurship per se as a factor of production (Kirzner, 1986, 1997).

The situation can be illustrated as in Figure 2 below.

Figure 2. Demand for Equity and Entrepreneurial Supply of Equity

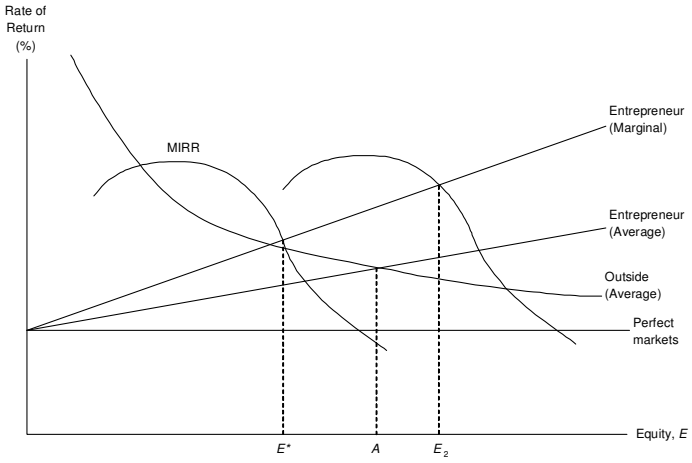


Source : Day, Stoll and Whaley (1985)

The MIRR curve represents the marginal internal rate of return for an entrepreneur in the process of starting a venture. After a certain level, she finds that putting more equity into the venture will reduce the rate of return, which corresponds to a traditional investment demand curve. The upward sloping line Entrepreneur (Marginal) is her marginal cost in the venture, which is the result of the three components mentioned above. In terms of the figure, this means that the entrepreneur will invest E* of equity in the venture. The figure also illustrates that on perfect markets without agency cost or costs of information and transactions, the amount of equity in the project would have been E_1.

The financing situation changes as the firm grows. In Figure 3, the venture is initially in equilibrium, as before, with an equity of E* provided by the entrepreneur and close allies. Her average cost, lower than the marginal, for equity capital of this size is depicted by the curve Entrepreneur (Average). The curve Outside (Average) represents the costs if the entrepreneur were able to find external financing for her venture. The cost for this would consist of the return to a market portfolio and a set of costs that can, to a large extent, be seen as fixed, namely agency costs, information costs and transactions costs. The Outside costs will therefore fall with the growing size of the venture.

Figure 3. Choice between Entrepreneurial Financing and Outside Financing



Source: Day, Stoll and Whaley (1985), expanded by the author

When the required equity capital is E*, the average cost for external financing is higher than the corresponding cost for "internal" financing. With a growing venture, the MIRR is shifting to the right in Figure 3. When these shifts have reached a point where, as shown at E_2, the intersection between MIRR and the marginal cost line of the entrepreneur implies a need for equity capital exceeding A, the entrepreneur will allow the venture to be completely financed by external equity funds, which means that she will sell the firm. This is due to the fact that external financing will, on average, be cheaper than what the entrepreneur can provide. (An additional condition is that the benefit from entrepreneurial control is outweighted.)

An implication of this analysis is that small firms tend to be financed by the entrepreneur and close allies to a large extent, since external financing is connected with large fixed costs. Another implication is that small firms, ceteris paribus, tend to have higher debt ratios than larger firms, because internal equity financing gives rise to high costs due to loss of diversification possibilities. A third consequence of the analysis would be that debt by small firms consists of bank loans, because such debt tends to minimize agency and information costs.

In summary, the arguments so far show that there are a number of reasons proposed in the literature why the rate of return requirements for an entrepreneur and other investors in small firms are higher than for large companies. Transaction costs, administrative burdens, the degree of investment diversification all tend to have this effect, as will the fact that the scarce production factor entrepreneurship must be rewarded. Unless compensated for by lower taxes, this will be reflected in higher costs of capital for small firms.

6. Influences on return requirements at the firm level

The technique used by Day et al (op cit) in extending the CAPM was to add theoretically plausible variables to equation 3, one at a time, to find out if there was one that eliminated the

size effect. They tried dividend yield, earnings yield, leverage and transaction costs. Only the last variable, as represented by the price per share, did the trick. In an earlier paper, Stoll and Whaley had noted that generally, the price of stocks in small firms is relatively low and the percentage spread between bid and ask prices is an inverse function of price. Since high spread means relatively high costs of commission and trade, they argued that size could be seen as a proxy for transaction costs.

The authors concluded from this analysis that the existence of transaction costs related to the floating of shares of successful small companies – i.e. companies that were actually quoted – could contribute to explaining the size effect. In the study, economic variables such as degree of leverage and earnings yield did have significant positive effects on return, but did not reduce the size effect. Dividend yield, on the other hand, did not have a significant effect on returns. No clear results were derived regarding the effects of taxes on leverage and dividends.

Other transaction costs also weigh relatively more heavily on small firms than on larger companies. Nooteboom (1993) gives an account of such costs associated with effects of scale, scope, experience and learning. Such effects appear in stages of contact, contract and control. An additional category of transaction costs is related to red tape and compliance burdens, which also, according to many studies, are particularly harmful for small companies (OECD, 2001).

The existence of transaction costs is a well-known problem for entrepreneurs and other investors in start-ups and SMEs, and it is therefore reasonable to believe that they would be reflected in higher required rates of return before tax for small firms than larger firms.

The financial literature argues that diversification at the firm level should not be a management goal, since this is done in a much cheaper and more flexible way by the investors themselves. Yet, the variability of profits is usually higher in small firms than in larger companies, which may be due to the fact that larger companies tend to be organised in a set of divisions. This automatically generates a certain degree of diversification. Provided that earnings across divisions are not perfectly correlated, this means that large businesses are exposed to lower financial risks than small firms, which are more concentrated in their activities. Once more, this may lead investors to demand a higher return on investments in small firms.

7. Ex ante requirements – entrepreneurs versus well diversified investors

Financial economists have made efforts to measure differences in the required rates of return between well diversified investors and entrepreneurs who invest much of their human and financial capital in venture efforts. One branch of this literature has estimated hurdle rates for risk adverse entrepreneurs. The results indicate that the required rates are much higher for venture investments than for well-diversified portfolios (see e.g. Heaton and Lucas, 2004).

In their paper from 2003, Kerins et al propose a different approach which aims at estimating the opportunity cost of capital for a limited investor in a venture project and for the entrepreneur, i.e. the general (main, principal) investor. This opportunity cost is taken as a measure of the required rate of return at the firm level, including the effects of all relevant taxes.

The method is an exercise in using the CAPM and a distinction is made between the entrepreneur and the limited investor who is seen as well diversified with a beta-risk at the level of other well diversified investors. The opportunity cost is estimated using the certainty-equivalent version of the CAPM. For simplicity of presentation, assume that the return of a venture is p and the market return r. As usual, beta can be written as

$$\beta = \rho(\tilde{p},\tilde{r})\,\sigma(\tilde{p})/\sigma(\tilde{r}) = \mathrm{cov}(\tilde{p},\tilde{r})/\sigma^2(\tilde{r}) \qquad (4)$$

where $\mathrm{cov}(\tilde{p},\tilde{r}) = \rho(\tilde{p},\tilde{r})\sigma(\tilde{p})/\sigma(\tilde{r})$. $\rho(\tilde{p},\tilde{r})$ is the coefficient of correlation between the stochastic variables $\tilde{p}$ and $\tilde{r}$. The opportunity cost of capital (i.e. the required rate of return) to a limited investor is then given by:

$$\bar{p} = i + \beta(\bar{r} - i) = i + [\rho(\tilde{p},\tilde{r})\sigma(\tilde{p})/\sigma(\tilde{r})](\bar{r} - i)\,. \qquad (5)$$

This is an equilibrium relation where opportunity cost and standard deviation of returns are simultaneously determined. The certainty-equivalent of CAPM can be written as

$$PV_v = \{C_v - [\rho(\tilde{p},\tilde{r})\sigma_c(\tilde{p})/\sigma(\tilde{r})](\bar{r} - i)\}/(1 + \bar{r})\ , \qquad (6)$$

where PV_v is the present value of venture v and C_v is the expected harvest cash flow from investing in the venture.

This uses the standard deviation of cash flows, $\sigma_c(\tilde{p})$ at harvest time, instead of equilibrium standard deviations of holding period returns, $\sigma(\tilde{p})$. The former is estimated from a model of ventures by Kerins et al, an estimate of $\rho(\tilde{p},\tilde{r})$ is derived from data on comparable firms and thus, PV_v can be calculated. The investor's opportunity cost of capital is then given from

$$R_v = C_v / PV_v - 1\,. \qquad (7)$$

In the case of the entrepreneur, the method is to consider somebody who will invest a larger or smaller part of her wealth in a venture with a certain total risk. The total risk can be calculated from cash flows and includes idiosyncratic (unsystematic) risk as well as market (systematic) risk. The latter risk is measured by the beta values. The entrepreneur's opportunity cost of capital is calculated as the return of a diversified portfolio that holds the same total risk. This is taken as the entrepreneur's minimum required rate of return.

Kerins et al find that the opportunity cost of capital for the entrepreneur is up to four times higher than for the well-diversified, limited investor. The size of the difference depends on the degree to which the entrepreneur commits her human and financial resources to the venture. If she commits 35 percent of her resources, the additional risk premium compared to the well diversified investor is 29 percentage points, while with a 15 percent commitment, the additional risk premium is 14 percentage points as an average over the sectors covered. With a 100 percent commitment, which is seen as impossible in practice due to constraints e.g. in pension savings, the opportunity cost of capital for the entrepreneur would have exceeded that of the well diversified investor with as much as 40 percentage points. The different levels of commitment obviously correspond to different values of β.

These results are derived by applying CAPM to data for newly public firms in eight high-tech industries in the United States between 1995 and late 2000. The evidence indicates that the total risk is, on average, 5 times higher than the market risk, the correlation with the market is 0.2 and equity betas are comparable with the overall market. The data also show that as the maturity early stage firms grows, the total risk declines while the market risk increases as a larger share of the entrepreneur's wealth is allocated to the venture.

It could correctly be objected that since such estimates (and also those by Vinell and de Ridder) include effects of the tax system, they cannot be used to properly measure the required rates of return net of taxes for the investors. However if, as a first approximation, tax systems are assumed to be reasonably homogenous in their treatment of different organisational forms, the observed gaps can be interpreted as a result of differences in basic return requirements of investors. Already from the simple example given in section 2, it follows that an increased return requirement after tax (α) gives rise to a proportional rise in the cost of capital:

$$\overline{p} = (\overline{k} + \alpha)/(1-\tau)(1-\tau_{pi}), \qquad (8)$$

and $$dp/d\alpha = 1/(1-\tau)(1-\tau_{pi}). \qquad (9)$$

Given τ equal 0.4 and τ_{pi} equal 0.3, the derivative would equal 2.38. The value in the current Swedish system will be derived later in the paper. The higher the tax rates, the higher is the derivative .

The high value of the derivative may raise a theoretical question regarding the way the interaction works between taxes and risk. It has not been unusual to hear economists argue that taxation of corporate income is neutral with respect to risk, the reason being that the state is seen as sharing the risk with the investor up to the level of the tax rate (Gordon, 1985 and Bulow and Summers, 1984). The condition would be arrangements for full loss offset. In experts' work for the Swedish 3:12 Committee a model along these lines was used (Södersten, 2002). The underlying idea is that the distribution of the possible outcomes is reduced by the tax – potential gains are reduced by the tax as are also potential losses. The tax is thus seen as having a dampening effect on risk, thereby counteracting the additional tax that should result from an additional, expected return generated by a more risky asset. This, the so-called sleeping partner argument, would call for a zero value of the derivative with regard to the risk premium.

Devereux (op cit) has challenged this view. He argues that this is only true if it is assumed that the same investment project would be marginal in cases with and without tax. This is typically not the case. In addition to a full formal derivation of his argument, Devereux uses the following simple illustrating example:

"Suppose an investment consists of purchasing an asset for $100. After one period, the asset can be sold for a certain $100. In addition income is generated: $10 in the bad state and $30 in the good state, hence – with good and bad states having an equal chance of occurring – with an expected value of $20. A tax is levied at 50% of the stochastic income generated. That is, the tax payment is $5 in the bad state and $15 in the good state. The expected value of the tax liability is $10. The investor faces a post-tax of either $5 or $15, also with an expected value of $10. It is true that, relative to the initial investment, the range of possible outcomes is lower after tax than before tax; in some sense risk has been reduced. But it is inconceivable that the investor would regard the position after tax as being remotely as favourable as the position before tax. Indeed, to be equivalent to the position without tax, the pre-tax income generated would need to be $20 in the bad state and $60 in the good state. This is precisely the same as grossing up all returns – and the current market value of those returns – by 1-τ." (τ is the tax rate).

In Södersten's model, taxing the risk premium would have no effect on the required rate of return because of the assumption that the state would share in the risk-taking (provided full loss offset). In Devereux's view, a tax will reduce the potential cash flows from the asset, but also the expected value of the asset by the same proportion. Therefore, it is misleading to argue that the tax reduces the risk of the investment. It is true that the range of possible returns is affected; but relative to the reduced value of the asset, the distribution of possible rates of return is unchanged.

It is likely however that the investor would adjust her portfolio as a consequence of the tax. By taking on more risk it could be possible to restore the level of expected return before tax. The tax may therefore increase the cost of capital by its effect on the risk premium in the same way as it is grossing up the risk-free interest, i.e. by $1/(1-\tau)$.[3] If so, clearly the number of profitable investment projects would fall more than if the traditional view was valid. The alternative view implies that entrepreneurial activity would be considerably held back in the economy as a result of the tax. Questions of tax and risk are further developed in annex 1.

8. Estimates of the ex ante return requirement

Kerins et al estimate the opportunity cost of capital for a limited investor in a venture project to be 16.7 per cent. This level is taken to be the same as for a well diversified investor on the stock market. As mentioned above, the opportunity cost of capital for the entrepreneur depends on the degree of total wealth that is committed to the venture. A 35 percent commitment implies a return requirement gross of taxes of 45.6 percent. With a 25 percent commitment, the cost of capital falls to 40 percent.

Taking all aspects of business investment taxation into consideration, we know that the derivative $dp/d\alpha$ is not higher in the US tax system than in Sweden (Chen et al , op cit). In fact, the levels are fairly similar, which allows us to use information from the USA without risking an overestimation of the required rates of return net of tax in Sweden.

From earlier work by the present author, the derivative in the Swedish system for capital income taxation can be estimated to 1.9 for equity capital (Normann and Fall, 1999). This is derived from a model providing a detailed description of the tax base. Using this – and assuming the tax system in the US to be linear with respect to differences in the required rates of return – the ex ante return (net of tax) can be estimated to 8.8 percent (16.7/1.9) for a well

[3] In Devereux (op cit), cases with different relative risk of the marginal stochastic distributions in the presence and absence of tax are analysed, as measured by a parameter b. A value of b equal $1/(1-\tau)$ corresponds to the case where, as in the box above, the distribution of the returns in the presence of tax is more risky, i.e.has a higher β, than the marginal investment in the absence of tax. This higher risk implies a higher cost of capital.

diversified investor and to 21.2 (40/1.9) percent for an entrepreneur who commits 25 of her wealth to the venture. Given globalised capital markets, it is likely that similar levels could be relevant also for Sweden. These results regarding ex ante return requirements will therefore be used to give an indication of the cost of capital (including grossing up effects of taxation) under the current Swedish tax system for different kinds of investors. If instead the entrepreneur committed 35 percent of her wealth to the venture, the required rate of return ex ante would be 24 percent.

In many of the calculations carried out for the Swedish 3:12 Committee, mentioned in the introduction, all investors' return requirements were set to 7 percent in nominal terms as a starting point, an assumed market rate of return after all taxes. Although somewhat lower than the level derived from US data, it will here be used in illustrative calculations to provide comparability with calculations for the committee. Given the assumption of a linear tax system, the corresponding return requirement for the entrepreneur would be 19.3 percent $\Delta p = (dp/d\alpha)\Delta k$ i.e. $40 - 16{,}7 = 1{,}9\ (k - 7)$ in the case of a 25 percent commitment.

On this basis, it will be assumed that the required rate of return net of all taxes on investment income is in the range of 19-21 percent for an entrepreneur in contrast to 7-9 percent for a general investor. In the following sections these results will be used for simulations within the context of the current Swedish taxes on CHCs, sole proprietors and trading companies.

9. Taxation of different organisational forms in Sweden

In Sweden, as in the other Nordic countries except Denmark, income from labour is taxed at a higher rate than income from capital. This is the essence of so-called dual income tax systems. A complex set of rules have been set up to prevent people from transforming what is essentially labour income into capital income. These rules have been seriously criticised by the business community for having harmful economic consequences and for their lack of transparency. The 3:12 Committee was set up to analyse the rules and propose reforms if called for. The committee asked distinguished Swedish economists to provide calculations of the differential effects of the tax rules for various organisational forms in the business sector with the aim of assessing the degree of tax neutrality – or rather tax homogeneity – across businesses. The purpose of this section is to give a brief account of how this was done. In the following section, it will be shown how sensitive these calculations are to assumptions regarding the required rates of return after tax.

The method chosen by the economists was a developed form of the well-known King-Fullerton technique. Given that individual investors require a certain rate of return net of personal income tax, the minimum return of an investment at the company level necessary to satisfy this requirement is calculated with due regard to the relevant tax parameters. This minimum return before tax is referred to as the cost of capital in the following.

Even though the calculations did abstract from rules of depreciation, inventory evaluation and other details of base determination, the formulas for the cost of capital became quite complicated in reflecting the complex tax rules. This is illustrated in Annex Table 1, which replicates the expressions as presented in Lindhe et al (2004). Some expansions – also derived by these authors – have been integrated to cover certain relief rules. The table covers widely held companies that are quoted (WHC), closely held companies (CHC) and finally trading companies (partnerships) and sole proprietorships (SP). A distinction is made between financing through retained earnings (RE) and new issues (NI). To achieve a degree of

homogeneity in the taxation of companies and sole proprietorship, there is a ruling of "expansion funds" for the latter which corresponds to the case of retained earnings. Another peculiarity with the SPs is a ruling regarding "distribution of the interest" introduced to create a degree of non-discrimination with new issue financing in the case of companies.

The tax parameters in 2003 can be seen in Annex Table 2. Parameter ρ which represents an imputed rate of capital income is of special importance in the current context since it determines the maximum rate of return to capital that is allowed to be taxed as income from capital in the case of CHCs and SPs. Any return above this level is taxed as labour income.

Using this approach, the cost of capital under the assumption of a 7 percent required rate of return after all taxes (k) for the individual investor is as in Table 1 (column 1). These results can be found in Lindhe et al (2004) and also in a special section in a report from the National Institute of Economic Research in the autumn of 2003 using the same technique. A return of 7 percent corresponds to 10 percent before a 30 percent personal income tax. ρ is set to 10 percent in the first column, whereas in the second column it is 12 percent to reflect an increase for CHCs on January 1, 2004. As can be seen, the only effect of this increase is to reduce the cost of capital for new issue financing for CHCs. Södersten (op cit) provides some sensitivity analysis varying the required rates of return and ρ, but within a narrow range.

Table 1. Cost of capital for types of firms

Imputed positive rate of return 10% (column A, 2003) and 12 % (column B, 2004)

	A	B
Widely held company, quoted		
Retained earnings	11.4	11.4
New issues	13.9	13.9
Closely held company		
Retained earnings	12.4	12.4
New issues	10.8	9.3
Sole proprietorship/trading company		
Retained earnings	9.7	9.7
New issues	9.9	9.9

Note:
The required rate of return after taxes is 7 percent in all cases
The imputed rate of return was not increased for sole proprietors/trading companies.

Three main observations can be made from the results in column A. First, a substantial tax wedge – i.e. a wide gap between the cost of capital and the net return to the investor/owner – is implied for all combinations in the column. The average size of the wedge is 4.1 percentage units. If this is divided by the after tax return, we obtain a measure of the marginal effective tax rate (in grossing up terms as seen from the investor's point of view) at the level of 59 percent. This is a substantial impact of the tax system. Considering different types of firms,

the marginal effective tax rate is (on average) 55 percent on closely held firms, 40 percent on sole proprietorships and 81 percent on quoted, widely held firms. The picture given by these (misleading) calculations is thus that CHCs and SPs are favoured as compared to WHCs.

Second, it will be shown in the next section that the table gives a serious underestimation of tax wedges and marginal rates for CHCs and SPs, although these are high.

Third, and this was the aspect given prime attention by the parliamentary committee dealing with the issue, the degree of non-homogeneity in the cost of capital across forms of business organisation and financing options might not be seen as too alarming. Given this picture, the majority in the committee felt that only marginal adjustments were called for by way of reform. Based on these results, longstanding requests from the business community were therefore resisted. It does not seem clear, however, that homogeneity is more important than the absolute tax level when it comes to an evaluation of the business climate. As a result of discussions in the committee, the imputed rate of capital income was finally slightly increased to 12 percent (column B in Table 1) for CHCs, but not for SPs and trading companies.

10. Perspectives on the results

Given the arguments earlier in this paper, an important assumption underlying the calculations as replicated above seems unwarranted, namely that the required rate of return net of taxes is at the same level in the case of CHCs and SPs, respectively, on the one hand and WHCs on the other. In particular, it would be highly misleading in the case of an entrepreneur. However, using this assumption and with ambitions to achieve formal neutrality as referred to above, the imputed rate of capital income is set to a specific level by Södersten and his co-writers. This level is based on a risk-free interest rate, plus what the authors see as a risk premium for entrepreneurs, the size of which is calibrated to give "neutrality" in the cost of capital to that of widely held companies. More precisely, ρ is set to equal the official government borrowing rate of interest (around 5 percent in 2004) plus 5 per cent in 2003, changed to plus 7 per cent in 2004[4]. This measure of the return requirement does not correspond to conditions in the real world.

With the strong indications that the required rate of return is much higher for small and newly established companies, the economic effect would, in practice, be very different from what is implied by these background calculations. This is illustrated in Table 2 where ρ is set to 12 percent and therefore, the entries in the first column are identical to those in the second column of Table 1. Already when the return requirement is set to 10 percent after all taxes for CHCs and SPs as compared to 7 per cent for WHCs, the difference in cost of capital turns out to be substantial. The difference is larger, namely on average 4.5 percentage units, than the three percentage point increase in the return requirement. The limited part of the current tax system under analysis here is thus such that it is increasing the cost of capital by a factor of 1.5 per unit increase in the return requirement at this range of change.

As mentioned above, the commission's work led to a modest increase in ρ on January 1, 2004. This can be seen as a partial recognition of the fact that the return requirements had been underestimated for small firms. It would, however, be necessary to set ρ much higher to establish neutrality between small and large firms. This is shown next.

[4] It follows that the risk premium at 5 (or 7) percent is seen as somewhat higher for an entrepreneur than the 2 percentage points for a general investor (required return at 7 minus risk-free rate at 5).

From the considerations earlier in this paper, it seems likely that the required rates of return set by entrepreneurs are closer to the level of 20 percent net of tax. In this case, the cost of capital for an investment in a closely held company would be 48 percent when financed by new issue capital and 36 percent when financed by retained earnings (Table 2). The corresponding numbers for the sole proprietor would be 49 and 28 percent for financing by new issues and retained earnings, respectively. This is considerably higher than the cost of capital for widely held companies, with well diversified investors where it would be on a level of 11 to 14 percent, given a required rate of return of 7 percent after income tax.

Table 2. Cost of capital for types of firms

	Investor's required rate of return, per cent			
	7	10	15	20
Widely held company, quoted				
Retained earnings	**11.4**	16.3	24.5	32.7
New issues	**13.9**	19.8	30.0	40.0
Closely held company				
Retained earnings	12.4	17.7	**26.6**	**35.5**
New issues	9.3	19.8	**33.3**	**48.2**
Sole proprietorship/trading company				
Retained earnings	9.7	13.9	**20.8**	**27.8**
New issues	9.9	19.2	**33.8**	**48.8**

Note: The required rate of return after taxes is 7 percent in all cases
Imputed rate of positive return = 12 percent, 10 percent for sole proprietorship/trading companies
Source: Own calculations

It follows that to keep neutrality between widely held companies and those that are closely held, the imputed rate of capital income (i.e. ρ) would have to be set at much higher levels than those seen in practice. A level of 60 percent, rather than 10 or 12, would be called for if discrimination against entrepreneurship should be avoided with regard to new issue financing.[5]

Three reflections could then be made. First, if homogeneity were achieved by this change, it is obvious that protection against the suspected misuse of the system by individuals using the business form to take out what is essentially wage income as capital income would be lost. An

[5] In the case of retained earnings for entrepreneurial firms, a method to reduce discrimination, called the BEK-model, was invented within the 3:12 Committee. The idea was that when the entrepreneur reduced her wage withdrawal from the firm, this would be allowed to increase the base for the lower tax rate. The Committee discussed a level of 45 percent of (company taxed) wage to be used for this purpose (parameter γ). Simulations in the context of the present paper suggest that using this method, the cost of capital in the case of retained earnings would be reduced to the neighbourhood of that of a WHC, provided that γ were set to 55 percent but given that the imputed rate of capital income (ρ) was also set to 60 percent. A rationale for a solution like the BEK-model is that, in practice, an entrepreneur must often use her private property (e.g. her home) as collateral for debt in the company. This means that in real life, equity capital actually ploughed into the firm very often exceeds what is reported in the books.

imputed rate of capital income at the level of 60 percent means very low protection in this sense. A different method could be to allow CHCs and other small businesses improved methods for consolidation. Immediate deduction of investment expenses could be a measure in that direction. Moves towards a proportional income tax could also be a possible approach. By ultimately equalizing the tax rates on wage and capital income, respectively, the need for the 3:12 rules would be eliminated.

A second reflection is that tax wedges are considerably higher for CHCs and SPs than for WHCs. For CHCs, they are 22 percentage points for the two sources of equity capital on average and for SPs 18 percentage points, in both cases given a return requirement of 20 percent net of taxes. On the other hand, the average for WHCs is 5.2 percentage points. Clearly, the picture given in Table 2, where the wedges were 3.9 and 2.8, respectively, for CHCs and SPs, is strongly misleading.

A third, more technical observation is that the effective marginal tax rate on an investment in a CHC would, on average, be 109 percent to be compared to 81 percent for a widely held company, a difference that may not seem too dramatic. As a theoretical point, this illustrates a limit to the concept of the marginal effective tax rate when comparing cases with different required rates of return. To give a fairer comparison, the wedges should rather be presented as multiples of the risk-free rate of return (5 percent). In this case, the comparison in terms of averages for the sources of equity financing would turn out as follows; the multiple would be 4.36 for CHCs, 3.66 for SPs and 1.14 for WHCs. So there is indeed a substantial discrimination of investments by smaller firms in Sweden.

11. Concluding remarks

With regard to fostering economic growth, a special focus by many economists has been on the start-ups of knowledge-based firms. Entrepreneurship then comes to the forefront. This paper has analysed how the Swedish tax system affects investment incentives in small entrepreneurial firms, as compared to investments in large, widely held companies. Comparisons have been made with calculations produced for a parliamentary committee that delivered a report on this issue in 2002, the so-called 3:12 Committee. The paper has argued that, contrary to claims by this committee, the current rules in the dual income tax system seriously discriminate against closely held companies, sole proprietorship and trading companies.

My “best” estimates of the situation build on results in section 8. There, the required rate of return net of tax was estimated to 8.8 percent for the diversified investor and 21.2 percent for the entrepreneur. Using these figures, the cost of capital can be calculated to 16 and 43 percent on average for the two sources of equity financing, respectively. The cost is thus almost three times higher for the entrepreneur.

The historical experiences in practice with parameters that, like the imputed rate of positive income, are set at standardised levels in a political process, are not good. When such parameters are confronted with parameters set by the market, the economic consequences can be very negative. In the case of Sweden, the result to be expected is that the expansion of the small business sector would be harmed, as would also the start up of new firms with a potential for growth.

12. Post scriptum

Since the first version of this paper, a new tax commission appointed by the Swedish government has again looked into the rules for taxation of entrepreneurs and small enterprises under the dual income tax (Edin, Hansson, Lodin, 2005). It did however not reconsider the theoretical view that guided the earlier commission regarding the treatment of the capital base of the tax rules. As a consequence only very minor changes were made in this respect. The situation for early stage ventures with few employees would therefore only marginally be improved if the commission's proposals were enacted.

Annex 1: Tax and risk

If a tax on investments had no effect on the risk premium, i.e. if it was neutral with respect to risk, the entrepreneur would not be discriminated by the tax system compared with a diversified investor. Indeed, the cost of capital would increase by increasing risk but the tax would be neutral by leaving the risk premium unchanged. This is how the usual argument goes (see e.g. Södersten, 2002 and Birch Sørensen, 2003). The purpose of this appendix is to show that this is true only under special conditions.

In terms of the traditional "Capital Asset Pricing Model" (CAPM) a situation without a tax on investments can be written as

(A1) $\bar{p} = i + \beta \bar{r}_m = i + \delta$

where $\bar{p}$ is the expected return on the investment, i is the risk-free interest, $\bar{r}_m$ is the expected excess return on the market portfolio (i.e. $\bar{r} - i$) and β indicates how the risk of the specific project covaries with the risk of a market investment. β is equal to $\text{cov}(\tilde{p}, \tilde{r}_m) / \text{var}(\tilde{r}_m)$. δ is short for the expected risk premium. In a small open economy $\bar{r}_m$ can be taken as given from the outside world.

Under a regime with full loss offset on stochastic returns, the investment's expected return after tax can be written

(A2) $\bar{p}^e = i + [\text{cov}(\tilde{p}, \tilde{r}_m)(1-\tau)^2 / \text{var}(\tilde{r}_m)(1-\tau)^2]\, \bar{r}_m (1-\tau) = i + \delta(1-\tau)$.

Next, according to the reasoning by Södersten and Birch Sørensen

(A3) $(1-\tau)\, \bar{p} = \bar{p}^e$.

This means that the required rate of return before tax but with respect to tax can be written

(A4) $\bar{p} = i/(1-\tau) + \beta\, \bar{r}_m = i/(1-\tau) + \delta$

By this argument an investment tax drives up the risk-free component but leaves the risk premium unchanged. This is also the basic view underlying the construction in practice of the rules for taxation of entrepreneurs in the dual income taxes in Finland, Norway and Sweden.

If (A4) is true then the return after tax has fallen to (c.f. A2)

(A5) $\bar{p}^e = i + \delta(1-\tau)$.

But this conclusion builds on the assumption that the underlying distribution of cash flows is unchanged by the introduction of the tax (or an increase of an existing tax), implying that β is unchanged. This is a special case where the tax reduces the spread of outcomes to such an extent that the fall in the expected return is fully counteracted. The same risky investment is marginal with and without tax.

This however completely disregards reactions from the supply side. Facing this new situation the entrepreneur may change her financial investments (Devereux, 2003). This would give an outcome different from the traditional view. She may increase her own commitment in the venture by investing a larger part of her personal wealth in it. By doing so she can keep the expected return at the original pre-tax level although at the expense of increased risk, meaning a higher value of β.

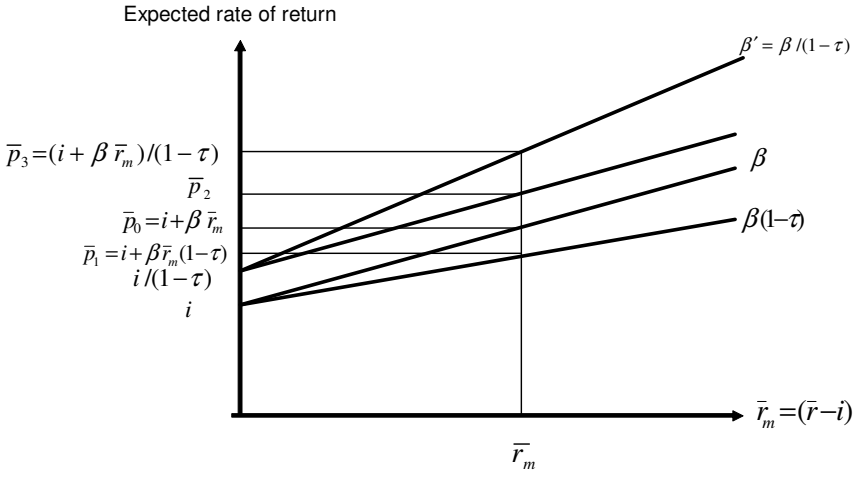
If this is done so as to compensate fully for the tax she will end up with a distribution giving $\beta' = \beta/(1-\tau)$. Therefore

(A6) $\bar{p} = i/(1-\tau) + \beta\ \bar{r}_m/(1-\tau) = (i+\delta)/(1-\tau).$

and the tax drives up the risk-free return as well as the risk premium. This means that by reallocating her financial resources the entrepreneur is able to keep her expected return after tax although at a higher risk. Her cost of capital has also increased and therefore the number of number of projects generating sufficient return has diminished. As a consequence the tax leads to a fall in real investments and a weaker entrepreneurial sector in the economy as a whole.

The relation between the two cases is shown in figure 4.

Figure 4. Expected rates of return before and after tax



Before tax the entrepreneur has an expected return on his project equal to $\overline{p}_0$ with a systematic risk of β. Under the traditional assumption a tax on the stochastic part of the investment will reduce the return after tax to $\overline{p}_1$. The cost of capital would then increase to $\overline{p}_2$ $[= i/(1-\tau)+\delta]$. However by reallocating her portfolio she can keep her expected return after tax equal to the situation before tax i.e. $\overline{p}_0$. This is done by finding a different distribution of cash flows with a higher β, *e.g.* $\beta' = \beta/(1-\tau)$. As a consequence the cost of capital is increased to $\overline{p}_3$ $[= (i+\delta)/(1-\tau)]$.

The two outcomes in the figure are extreme cases, the one probably as likely as the other. The actual outcome may lie somewhere in-between depending on circumstances. It is however misleading to build tax law on an extreme assumption of the impact incidence of a tax on entrepreneurs. One thing is sure - to the extent that actual tax law does not provide full loss offset it pushes outcomes in the direction of a cost of capital at $\overline{p}_3$.

Annex 2: Formulas for calculating costs of capital

Table 1. Summary of tax parameters in Sweden 2003
Percent

Item	**Parameters/ Definitions**	**WHC/ CHC**	**SP/ Partnership**
Statutory rate of corporation tax	τ	28	-
Personal tax on capital income (dividend, interest)	τ_{pi}	30	30
Personal tax on *realized* capital gain[1]	τ_{pc} or τ_{pc}^{w}	30 or 43.5	-
Tax rate on expansion fund	τ	-	28
Labor income tax[2]	τ_{pw}	57	57
General payroll tax	p	32.82	32.82
Imputed rate of positive capital income[3]	ρ	10.06	10.06
Total tax on income from corporate capital	$\tau + (1- \tau)\, \tau_{pi}$	*49.6*	-
Total tax on labor income	$(p+ \tau_{pw}) / (1+ p)$	*67.6*	*67.6*

Notes

WHC is a widely held corporation, CHC a closely held corporation, SP a sole proprietorship.

[1] In the model, the parameters τ_{pc} and τ_{pc}^{w} $(=0.5\tau_{pw} + 0.5\tau_{pc})$ represent the effective tax rates on *accrued* capital gains in WHC and CHC.

[2] The labor income tax consists of a national tax rate (set to 25 percent for income exceeding 374 000 SEK) and a local tax rate on labor income (set to 32 percent on average).

[3] Equal to the interest rate on ten-year government bonds plus a premium of five percentage points.

Source: Lindhe, Södersten and Öberg (2003).

Table 2. Summary of results
κ is the required rate of return after personal income tax.

	Debt	**Equity**
WHC	*i*	RE $\frac{k}{(1-\tau)(1-\tau_{pc})}$ NI $\frac{k}{(1-\tau)(1-\tau_{pi})}$
CHC	*i*	RE $\frac{k}{(1-\tau)(1-\tau_{pc}^{w})}$ NI $\frac{k}{(1-\tau)(1-\tau_{pi})}+\left\{\frac{k}{1-\tau_{pi}}-\rho\right\}\left\{\frac{(1-\tau)(1-\tau_{pi})-\frac{1-\tau_{pw}}{1+p}}{\frac{(l-\tau)(1-\tau_{pw})}{1+p}}-\right\}$
SP	*i*	EXP $\frac{k}{1-\tau}$ INT $\frac{k}{1-\tau_{pi}}+\left\{\frac{k}{1-\tau_{pi}}-\rho\right\}\left\{\frac{(1-\tau_{pi})-\frac{1-\tau_{pw}}{1+p}}{\frac{1-\tau_{pw}}{1+p}}\right\}$
Notes WHC is a widely held corporation, CHC a closely held corporation and SP a sole proprietorship. RE is retained earnings, NI is new equity issue, EXP is expansion fund, INT is interest distribution.		

Source: Lindhe, Södersten and Öberg (2003).

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