

Estimating the Value of the Tax Incentive to Incorporate

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Introduction

Any Corporate Finance textbook will explain in an early chapter that there are two basic forms of organizing a business. Accordingly, an entrepreneur has the choice of operating on a personal or corporate basis. It will also be generally noted that a personal enterprise is usually cheaper to establish and run (i.e. entails lower transaction costs), and sometimes brings additional competitive advantages, such as less stringent disclosure requirements, whilst a corporate enterprise offers the benefits of permanency, easier transferability of ownership, and, most notably, limited liability.

Readers are then normally due to conclude that the personal form might possibly be acceptable for petty start-ups, whereas for any business of substance it would be dubious. Of course, this conclusion misses some vital points. Firstly, in many countries and industries, we encounter scores of successful and even prominent businesses which are in the long run managed on a personal or semi-personal basis (under various legislations, these may be called e.g. limited partnership, Kommanditgesellschaft, komanditní společnost). Furthermore, practitioners will attest that particularly in the segment of small and medium-sized companies (SMEs), the dilemma whether to incorporate or not is an essential and broadly spanning issue.

This paper strives to develop and apply a simple option-based model comparing the dynamics of earnings for the basic alternative forms of business organization. The parameters of the model include two distinct measures of business risk, income volatility and leverage, and the characteristics of the particular tax environment. The conclusions can either be used to assess the implications of different tax policies, or to obtain a better understanding of the impacts of different parameters on business organization choice.

In order to obtain and compare actual results, we have applied the model using Czech and Slovak data. In terms of organization, both environments offer nearly identical terms, based on formerly common legislation stemming from the early nineties. The personal enterprise alternative can effectively be realized through the form of “physical person“ (fyzická osoba – podnikatel in Czech), or as an “physical persons’ association“ (sdružení fyzických osob), or as a “public commercial company“ (veřejná obchodní společnost). Typical for the corporate enterprise option within the segment of SMEs would be a “limited liability company“ (společnost s ručením omezeným).

However, the terms of the Czech and Slovak Tax Codes do differ substantially. The Slovak Code is based on the flat-tax proposition, introduced by a former Government since 2004, whereas the Czech Code includes elements of progression for individual taxation, such as tiered rates and a minimum mandatory tax, also pursued by former Governments (ironically, in both countries recent General Elections have brought to power administrations, which strive to reverse these policies).

1. Problem Analysis

The fundamental characteristic of enterprise is that future incomes related to any irreversible investment decision are uncertain (investments may be assumed in capital goods as well as human capital, which makes any pertaining conclusions quite general). This uncertainty can be quantified historically or implicitly, in the terms of income volatility over a period of time.

In the real world, entrepreneurial income will be distributed between various categories of stakeholders, such as shareholders, debtholders, employees, and the state. This creates a rather complex set of value-redistribution relationships. Of these, at least since the seminal publications of Black and Scholes (1973) and Merton (1973), the shareholder-debtholder put option, representing the value of limited liability, has received the most attention, due to ample availability of empirical evidence on developed capital markets.

It is reasonable to assume that the vast majority of past investments are irreversible (in other words, they can be considered to be sunk costs), meeting the terms stipulated and exhaustively reviewed by Dixit and Pindyck (1994). The tax obligation can thus be described as a real option, issued by the tax-payer and held by the state. It should be pointed out that this approach does not in any way discredit the principles of modern Public Finance theory, as put forth by e.g. Tresch (2002), it simply uses value-based analysis in a stochastically dynamic environment.

The construction can be utilized to pursue miscellaneous lines of applied research. An option-based model has been proposed for fiscal-budgeting purposes by Draaisma and Gordon (1996). Various micro- and macroeconomical aspects of proportional corporate taxation have been analyzed, among others, by Hassett and Metcalf (1999), MacKie-Mason (1990), Panteghini (2001), Sureth (2002), Niemann (2004). Implications of progressive taxation on the optimal investment threshold have been modelled by Koskela and Alvarez (2004). Vlachý (2007) demonstrates, comparing Czech and Slovak schedules up to 2006, that progressive taxation of personal income may result in a substantial penalty incurred by risky

(ie. entrepreneurial) income, with less risky (e.g. occupational) income taken as a benchmark.

The present paper undertakes to assess the simultaneous impacts of leverage (generally both financial and operating), due to limited liability, as well as the tax shield, on the corporate level, combined with the progressive nature of taxation on the personal level.

2. Model Development

We contend that there are two basic way in which an individual can technically gain access to entrepreneurial incomes. He can run a business as an individual, where the enterprise incomes are earned (and taxed) directly. Alternatively, he can invest through owning a stake in a company.

In both cases we assume that the sole form of taxation is an Income Tax due annually, which can be levied both at the corporate and individual level (it is to be stressed that neither social security taxes nor mandatory health policy levies are part of the model). For convenience only, representation will be made as if no other individuals participated in the enterprise (the problem would become rather more complex, however, if the partnership/shareholding stakes were to differ in terms of seniority). We focus primarily on the typical SME situation where the management – shareholding positions tend not to be separated. The agency problem issue can thus conveniently be passed over.

The value of the business, which is the essential criterion for entrepreneurial decisions, including the legal form, is a function of expected business income, which is subject to a business risk expressed by income volatility. The business income may then flow directly to the entrepreneur's account, where it is distributed between his personal income and the income due to the state. It can also accrue on the account of a firm, which proceeds to pay its fixed obligations, such as debt interest and repayments, lease and tennancy instalments, salaries, depreciations and amortizations (these normally tend to be tax-deductible, the present model assumes that this would always be the case). The balance then belongs partly to the state, partly to the investor, who may, under circumstances, be further obliged to declare the dividends.

There is an implicit assumption that any free cash flows would be immediately distributed in the form of dividends. Whilst it may be unrealistic, as pointed out by Lintner (1956) and subsequent literature, we argue that there is only a slight impact on the overall conclusions, provided there is a relatively low time value of money and a constraint on outright hoarding, perhaps stimulated by the existence of a tax shelter. Essentially, these terms would be met by the model being used in a low-inflation environment and the investors refraining from keeping available funds,

unnecessary for investment, in the company. It should be further noted that reinvested retained earnings would still be taken into account through the parameter X , which does include operating leverage.

Three dynamic parameters are included in the model:

- Current business income (R)
- Expected annual income growth (r)
- Income volatility (σ)

Structurally, the model differs for the corporate and individual enterprise alternatives. The corporate model includes:

- Fixed annual expense commitment (X)
- Corporate income tax rate (τ_C)

Note that a relative parameter λ (which we shall proceed to designate “Leverage“, as it combines a cash-flow based view of both financial and operating leverage) is implied as $\lambda = X/R$.

The personal model, on the other hand, features (where applicable):

- Marginal personal income tax rates (τ_i ; $i=\{1; \dots n\}$)
- Individual rate ceilings (B_i ; $i=\{1; \dots n-1\}$)
- Tax-exempt earnings allowance (B_0)
- Tax credit (C)
- Rate of withholding tax rate on dividends (τ_D)
- Minimum mandatory tax (T_{\min})

Each situation then translates into a more or less complex option combination, describing the income-dependent pay-offs by the end of the year of assessment. For the valuation of the respective options, we have used the closed-form solution derived by Merton (1973) which has been shown by Rubinstein (1976) to hold for non-traded values (i.e. real options), on the assumption that they follow a log-normal distribution.

3. Model Application and Results

We have applied the model under the current (2007) terms of the Czech and Slovak Tax Codes, as described in Table 1 (the model is a simplification and does not include miscellaneous deductible items, exemptions etc. which abound mainly within the Czech legislation).

The Slovak tax is essentially flat, at a single 19% rate, avoiding double-taxation of corporate earnings. Individuals may file tax-exempt earnings of up to a fixed amount.

In the Czech Republic, there is a rate of 24% on corporate profits, plus a withholding tax on dividends, which effectively results in a rate on distributed income (assuming a dividend ratio $D=1$) of 35.4%. As concerns personal incomes, there are four gradually ascending tax brackets ranging from 12% to 32%. There is no tax-exemption, but payers may claim a tax credit. There is also a minimum mandatory tax obligation for the vast majority of non-wage earners, which features automatic annual indexation, in contrast to the other parameters.

In both cases, we have used the latest published wage-growth index as a proxy for r . This provides for the inclusion of the bracket-creep effect into the models.

Table 1

Structural parameters of the models

Parameter	Czech Republic	Slovakia
t	1	1
r	6.4%	8.0%
τ_C	24%	19%
n	4	1
B_0	-	SKK 95 616
B_1	CZK 121 200	-
B_2	CZK 218 400	-
B_3	CZK 331 200	-
τ_1	12%	19%
τ_2	19%	-
τ_3	25%	-
τ_4	32%	-
C	CZK 7 200	-
T_{\min}	CZK 120 800	-
τ_D	15%	-

Sources: Czech Republic Act No. 586/1992 Coll.; Slovak Act No. 595/2003 Coll. (both as of 2007); Czech Statistical Office; Slovak Statistical Office (both 2006, end-of-year data)

Running a simulation of the model, we derive the comparative statics of income under various income, volatility and leverage assumptions. An illustrative summary of selected results is shown in Tables 2 and 3.

Note that we are showing several representative income categories, characterized by selected values of R , with benchmark volatilities set at $\sigma=20\%$ and $\sigma=50\%$, respectively. As indicated earlier, a particular income relates to a single investor's or partner's share (provided they do not differ in terms of seniority), not necessarily to that of the enterprise as a whole.

The exhibits show the respective effective annual tax rates for individual entrepreneurs τ_p , the effective annual tax rates for investors in a company τ_λ (whose leverage $\lambda=X/R$), arbitrarily using $\lambda=50\%$, and the break-even leverage λ^* , at which the respective effective rates would match, as well as the actual fixed expenses X^* , corresponding to $\lambda^*(50\%)$.

Table 2

Income and volatility dependencies – Czech Republic

R [CZK]	200 000	300 000	400 000	500 000	1 000 000	2 000 000
$\tau_p^*(\sigma=20\%)$	11.85%	16.31%	19.76%	22.16%	27.08%	29.54%
$\tau_p^*(\sigma=50\%)$	13.44%	17.50%	20.39%	22.44%	27.09%	29.54%
$\tau_{50\%}^*(\sigma=20\%)$	18.80%	18.80%	18.80%	18.80%	18.80%	18.80%
$\tau_{50\%}^*(\sigma=50\%)$	19.13%	19.13%	19.13%	19.13%	19.13%	19.13%
$\lambda^*(\sigma=20\%)$	71.1%	57.5%	47.1%	39.9%	25.0%	17.5%
$\lambda^*(\sigma=50\%)$	71.2%	55.7%	45.9%	39.3%	25.0%	17.5%
X^* [CZK]	142 400	167 100	183 600	196 500	250 000	350 000

Source: Author

Table 3

Income and volatility dependencies – Slovakia

R [SKK]	200 000	300 000	400 000	500 000	1 000 000	2 000 000
$\tau_p^*(\sigma=20\%)$	10.61%	13.41%	14.81%	15.65%	17.32%	18.16%
$\tau_p^*(\sigma=50\%)$	10.75%	13.42%	14.81%	15.65%	17.32%	18.16%
$\tau_{50\%}^*(\sigma=20\%)$	10.23%	10.23%	10.23%	10.23%	10.23%	10.23%
$\tau_{50\%}^*(\sigma=50\%)$	10.40%	10.40%	10.40%	10.40%	10.40%	10.40%
$\lambda^*(\sigma=20\%)$	48.0%	31.9%	23.9%	19.1%	9.6%	4.8%
$\lambda^*(\sigma=50\%)$	47.8%	31.9%	23.9%	19.1%	9.6%	4.8%
X^* [SKK]	95 650	95 650	95 650	95 650	95 650	95 650

Source: Author

The results as shown suggest several interesting insights. Firstly, the effective tax rates for different volatilities, tend to differ in the Czech personal tax model, with $\tau_p^*(50\%) > \tau_p^*(20\%)$. Vlachý (2007) argues in more detail that this penalty on volatile earnings (most pronounced on median and below-median incomes) is due to the progressive characteristics of the tax, comprising tiered rates and the minimum mandatory tax liability (a similar effect does appear in the Slovak model as well, but is very slight and affects very low incomes only, due to progression incurred solely through the tax-exempt allowance).

On the other hand, the effective corporate tax rates remain unchanged across all possible income levels, the tax being purely proportional. However, at a given leverage, they will always be higher for higher volatilities, i.e. $\tau_c^*(50\%) > \tau_c^*(20\%)$. This is due to the tax-shield not protecting the value of the put option held by the shareholder. While the particular figures in Tables 2 and 3 presume a leverage of $\lambda=50\%$, the essence of this inequality will hold for any $\lambda > 0\%$, with the effect increasing at higher levels of leverage. Of course, considering the tax asymmetry, a higher λ principally lowers the effective tax rate, as postulated by Miller and Modigliani (1963).

Observing the levels of corporate leverage λ^* , at which the effective rates for the corporate form of organization match those of the individual enterprise, one easily notices that these tend to diminish at higher incomes. Particularly under the the Czech tax code, it is clearly prohibitive to incorporate at low expected incomes, not even taking various other aspects, such as transaction costs, into account. Interestingly, the break-even leverage for the Slovak model (in contrast to the Czech one) comes up to fixed annual expenses of $X^* = \text{SKK } 95\,650$ (which can be easily figured as $X^* = \lambda^* \times R$), irrespective of total business income and its volatility, which is due to the neutrality of the flat tax.

We may point out another particular context to this result. Provided, for the sake of argument, that a company in Slovakia used all of its equity solely for the financing of fixed assets, carrying, on the average, a 20% rate of amortization. Its fixed, tax-deductible expenses would then amount to the break-even SKK 95 650 subject to a capital floor of SKK 478 000. That is well above the statutory minimum for a limited liability company, but below that of a joint-stock company (Table 4). Accordingly, there is an incentive to set up a limited liability company solely from the tax point of view, provided the entrepreneur intends to incur investments of over SKK 0.5 million.

Within the Czech framework, the commensurate break-even would be considerably higher, as well as income-dependent, implying e.g. investments of CZK 0.85 mil. for annual incomes of CZK 300 000, and CZK 1.75 mil. for incomes of CZK 2 mil. To outline the functional trend, we may further note that for $R = \text{CZK } 20 \text{ mil.}$, the fixed expenses required to break even would amount to $X^* = \text{CZK } 2.2 \text{ mil.}$, corresponding to investments of CZK 11 million.

This may conceivably be one of the reasons why limited liability companies (s.r.o.) are relatively more frequent in Slovakia, when compared either to the numbers of individual entrepreneurs, of joint-stock companies (a.s.), or to the sum of all these business forms taken together (Table 4). Note that the capital prerequisites for the setting up of limited liability companies are identical in both

countries, with those for the joint-stock companies being more stringent in the Czech Republic.

Table 4

Organizational statistics in the Czech Republic and Slovakia

	individual	a.s.	s.r.o.
Registered units (CZ)	1 796 336	18 093	244 417
% of total	87.25%	.88%	11.87%
Registered units (SK)	388 246	4 786	80 638
% of total	81.97%	1.01%	17.02%
Statutory capital (CZ)	-	2 000 000	200 000
Statutory capital (SK)	-	1 000 000	200 000

Sources: Czech Statistical Office; Slovak Statistical Office (both 2006 end-of-year data); Czech Republic Act No. 513/1991 Coll.; Slovak Act No. 513/1991 Coll. (both as of 2007)

Summary and Conclusions

The model demonstrates several asymmetries of existing tax legislations. These are much more pronounced under progressive taxation of personal income and a generally higher tax quota (Czech Republic), but are not completely absent under a flat-tax schedule (Slovakia) either, mainly due to the availability of tax shields. Some of these asymmetries may serve to explain or bring about practical business decisions, some may, under circumstances, distort the economic environment or even create perverse incentives, noting e.g. the considerable penalty on risky incomes in the Czech environment.

Considering the primary stated purpose of this paper, we conclude that the incentive to incorporate is more clearly vested in the Slovak framework, while high corporate rates and a progressive personal schedule, combined with a withholding tax on dividends, make it more advantageous to run small businesses on a personal basis in the Czech Republic, unless they are particularly capital-intensive and/or risky.

Keywords

Income Tax, Option Model, Incorporation, Corporate Leverage, Limited Liability, Progressive Taxation, SMEs

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Abstract

This paper uses a comprehensive option-based model to analyze the comparative statics of income under uncertainty, observing differences in individual and corporate forms of business organization. Structural parameters include the income tax structure and corporate leverage. Results are illustrated on applications in the Czech Republic and Slovakia. Various asymmetries are identified and discussed, with a focus on the incentive to incorporate, less pronounced under the Czech tax framework, which tends to favour the personal form for a range of businesses.

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