Risk Substance of Newly Established Businesses

Gabriela Chmelíková [1] | *Mendel University in Brno, Czech Republic*
Kristina Somerlíková [2] | *Mendel University in Brno, Czech Republic*

Abstract

This paper investigates the risk substance of newly established business in the Czech Republic. As traditional methods for risk measurement in this case come across the lack of reliable data from capital markets, lack of any financial history for start-up companies and low level of diversification of investors, we draw on the theory of business risk and empirically investigate the role that risk fundamentals may play in the overall riskiness of start-up firms in the Czech Republic. Our findings confirm that the return fluctuations of start-up companies are statistically significantly associated with the operating and financial leverage.[3]

Keywords	JEL code
Risk measurement, start-up business, degree of operating leverage, degree of financial leverage	*M21, G12*

INTRODUCTION

The capital markets are an important source of data for a number of techniques used to quantify risk. The efficiency of the capital market is then the same for the quality of the information contained in data coming from the capital markets and therefore can restrict the range of techniques that can be used to quantify the discount rates. Capital market efficiency at all levels has become a subject for a number of empirical studies, e.g. Cross (1973), French (1980), Gibbons and Hess (1981), Bonin and Moses (1974), Abeyratana et al. (1996) and Al-Deehani (2003). Their conclusions can be summarised as follows: developed markets tend towards a weak form of market efficiency, while developing markets can be seen as mostly inefficient at all levels. Methods for quantifying risk based purely on technical analysis can therefore only be used in economic systems which have the efficient price mechanisms of capital markets in its weak form. Companies operating in other than developed conditions must therefore rely on data from the developed economies when assessing risk or on other quantification techniques.

The capital markets in the Czech Republic are usually rated as developing capital markets, c.f. FTSE (2017), Hull and McGroarty (2014). This is largely because of their short history compared to that of the capital markets of traditional market economies. This is also true in the scope of transactions done

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[1] Department of Regional and Business Economics, Faculty of Regional Development and International Studies, Mendel University in Brno, Czech Republic. Corresponding author: e-mail: gabriela.chmelikova@mendelu.cz, phone: (+420)731624694.
[2] Department of Applied Statistics, Faculty of Regional Development and International Studies, Mendel University in Brno, Czech Republic.
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with capital resources, since the share of capital acquired through trading in capital markets (with regards other long-term sources of financing) is smaller in comparison with Anglo-Saxon capital markets. This largely restricts the options of existing approaches in a big way.

The nature of newly established businesses lets imply two important aspects when evaluating suitable risk measurement techniques. The first specific feature of a start-up company is the lack of history. This aspect does not allow for the use of usual methods based on a regression analysis of data on the company`s performance and performance of the market over time. This is a principle which is specific to the CAPM (Capital Asset Pricing Model), but also to its mutation on an accounts basis. This restriction means that alternative approaches should be used by looking for analogical companies or by identifying risk factors using multiple regression.

Another important restriction is the character of companies' capital resources. Analyses of capital structure of start-up companies in the Czech Republic (see Chmelíková and Somerlíková, 2014) have shown that the most prevalent source of financing is of an internal character. The term internal is used to refer to financial resources which the entrepreneur, his family members or employees invested or lent in the company. According to Damodarana (2009), we can assume about the stakeholders that their investment into the start-up company is their only or at least their dominant personal investment. This investor is likely to invest a considerable portion of his property in the company and it is unlikely that this share is part of a well-diversified portfolio. Therefore, we can see a low diversification of these investors` personal capital and the impossibility of using traditional methods based primarily on systematic risk evaluation.

The below mentioned facts resulting from the character of the emerging capital markets as well as the character of start-up companies restrict the use of methods for quantifying risk:
  – Lack of reliable data from capital markets,
  – Lack of any financial history for start-up companies,
  – Low level of diversification of investors.

The above-mentioned limits represent a serious restriction on using common methods for setting discount rates for start-up companies in the transitive economies and can be an important barrier to their development. New born businesses are said to provide the thrust for economic growth, which is actually supported by the statistics for national economies (Horell and Litan, 2010). Fast-growing economies usually have a higher number of start-up companies than stagnating ones. Knowing the correct discount rate will encourage the owners to establish new businesses and thereby significantly increase the economic growth. The aim of this paper is therefore to identify the substance of riskiness of newly established firms operating in the conditions of developing capital markets, which could help in designing a suitable technique for the discount rate estimation.

This paper is organized as follows: After the introduction, in the following section we develop our hypothesis, describe the data including the descriptive statistics and present the empirical study. We conclude with a discussion on main results.

1 BUSINESS RISK

1.1 Hypothesis, data, methods

Business risk is a function of uncertainty connected with the future earnings from doing business (Galasyuk and Galasyuk, 2007). The rate of required return of used capital should then match the fluctuation of earnings on the investment. Traditionally, these earnings are measured via the invested capital profitability indicator, whose future volatility is, according to Brayman (2012), a risk indicator of the intended investment. However, using this for risk quantification conflicts with the character of this variable's calculation. To identify future earnings volatility requires a knowledge of how these future profits develop, which requires admitting a certain degree of inaccuracy set by the forecast of these qualities. The validity of the result of estimating the fluctuation in return based on future earnings analysis

is naturally deformed by the inaccuracy of estimating these future earnings. This estimation is based on a high-quality sales forecast, which requires not only an analysis and forecast of the company's market, but also an analysis of the inner potential and rival strength of the company itself. Quantifying these categories allows for a certain amount of subjectivity to solve the problem, however, which limits the exactness of the sales forecast and the subsequent estimation of future return and its fluctuation.

Nevertheless, when it comes to applying this procedure to the quality of risk quantification techniques assessment, this deficiency is suppressed. A common way of measuring the fluctuation of a random variable is dispersion, from which a standard deviation is derived. The random variable is represented here by the expected earnings from investment into own capital. We suggest to measure returns on equity using the indicator *Free Cash Flow to Equity (FCFE)* as the most appropriate profitability indicator (Kislingerová, 2010). A question to what degree is this criterion an objective scale arises here. The answer may be found in comparing the fluctuation figures for this profitability measure with the mortality rate of new companies. The survival time of newly established companies is linked to the risk of a given investment in the new company. One may assume that the lower the percentage of surviving companies in a number of newly-established firms after a specific amount of time has elapsed since their establishment, the higher the risk of the given industry. The survival percentage on a number of newly-established firms determines the probability of decline for companies in individual industries. Therefore, it is a suitable scale for checking that the right accounting productivity fluctuation criterion for risk measurement has been selected.

To verify this conjecture, the following hypothesis may be formulated:

H_1: *Probability of decline across individual economic sectors is related to the average fluctuation of the rate of return on equity for companies in these sectors.*

For the purposes of testing and eventually supporting the presented hypothesis, its zero alternative is formulated as follows:

H_0: *Probability of decline across individual economic sectors is unrelated to the average fluctuation of the rate of return on equity for companies in these sectors.*

The probability of decline for individual industries can be identified thanks to the Eurostat database "Business Demography Project" (European Comission – Eurostat, 2014). Since this database publishes the figures for company lifespan until 2007 and the electronic financial statements of Czech companies that made them public are accessible only after 2004 inclusive, only the figures of both variables in 2005, 2006 and 2007 may be used for mutual comparison. This reduction of the time period does not, however, lower the quality of the studied sample, since it captures the phase of a company's lifespan that is the subject of this study (initial, start-up phase).

The analysis of firm specific variables is based on the data published by Bisnode in the corporate database Albertina – Gold Edition (Bisnode Czech Republic, 2012). There were 6 581companies established in 2004 in the Czech Republic that also published their financial statements. In 2004, almost 90 000 economic subjects were established in the Czech Republic. Therefore, the sample of 6 581 presents only a small part of them. A significant reduction in the sample of companies available for testing fluctuation in the profitability also shown by the fact that only 3 507 of them reached their third year. Nevertheless, the size of this sample is sufficient for testing the stated hypothesis. Given the fact that survival is monitored as an average for individual sections according to NACE classification, it is also necessary to express accounting return fluctuation in average values for the given sections of economic activity. As has already been stated, the degree of fluctuation in return of individual companies is characterised by the standard deviation, whose absolute level is influenced by not only the dispersion of the observed quality, but also by the level of the mean value of a given random variable. Because of the mutual comparability of the observed companies and the ability to characterise the average fluctuation of a whole industry, for every company the standard deviation has been relativized by conversion to a coefficient of variation in accordance with the following equation:

Coefficient of variation of FCFE for firm i:

$$Coefficient\ of\ variation\ of\ FCFE_i = \frac{\sigma_i}{\mu_i}\ , \tag{1}$$

where σ_i stands for standard deviation of financial return of a firm i in the 4 – years time after inception and μ_i represents mean of this variable for the firm i.

The average of coefficients of variation for individual sections, according to NACE classification, was discovered from data on the accounting return for companies established in 2004 that made their financial statements of 2005, 2006 and 2007 public. In contrast to Chmelíková (2014), the weighted average of coefficients of variation for individual sections was used. The weights for particular companies were calculated according to the following formula:

$$w_i = \frac{Total\ Assets_i}{Total\ Assets\ in\ the\ sector}\ , \tag{2}$$

where *Total Assets$_i$* stands for total assets of firm i in the year of inception and *Total Assets in the sector* represents the sum of *Total assets* of all firms in the respective NACE sector.

The weighted average values of variation coefficients calculated this way are shown in Table 1.

Table 1 Financial fluctuation in return for newly-established companies in the Czech Republic and the probability of decline for new companies.

NACE code	Description	Probability of business´s death within 3 years	Number of business´s births in 2004	Number of newly born in 2004 survived the first 3 years of life	Weighted average coefficient of variation of FCFE
1	Crop and animal production, hunting and related service activities	N/A	76	35	0.257
2	Forestry and logging	N/A	27	13	0.458
3	Fishing and aquaculture	N/A	N/A	N/A	N/A
5	Mining of coal and lignite	33%	4	1	0.357
6	Extraction of crude petroleum and natural gas	50%	1	1	0.502
7	Mining of metal ores	52%	N/A	N/A	N/A
8	Other mining and quarrying	N/A	6	4	0.415
9	Mining support service activities	N/A	4	2	0.123
10	Manufacture of food products	43%	44	21	0.435

(continuation)

NACE code	Description	Probability of business's death within 3 years	Number of business's births in 2004	Number of newly born in 2004 survived the first 3 years of life	Weighted average coefficient of variation of FCFE
11	Manufacture of beverages	41%	14	6	0.339
12	Manufacture of tobacco products	40%	N/A	N/A	N/A
13	Manufacture of textiles	54%	20	11	0.537
14	Manufacture of wearing apparel	37%	20	10	0.299
15	Manufacture of leather and related products	N/A	5	4	0.218
16	Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	38%	75	39	0.319
17	Manufacture of paper and paper products	37%	1	1	0.236
18	Printing and reproduction of recorded media	N/A	39	17	0.421
19	Manufacture of coke and refined petroleum products	0%	N/A	N/A	N/A
20	Manufacture of chemicals and chemical products	27%	14	7	0.216
21	Manufacture of basic pharmaceutical products and pharmaceutical preparations	N/A	1	0	N/A
22	Manufacture of rubber and plastic products	42%	47	31	0.540
23	Manufacture of other non-metallic mineral products	46%	34	20	0.487
24	Manufacture of basic metals	40%	8	8	0.346
25	Manufacture of fabricated metal products, except machinery and equipment	30%	196	107	0.200
26	Manufacture of computer, electronic and optical products	29%	33	20	0.193
27	Manufacture of electrical equipment	N/A	58	30	0.212
28	Manufacture of machinery and equipment n.e.c.	N/A	74	46	0.328

(continuation)

NACE code	Description	Probability of business´s death within 3 years	Number of business´s births in 2004	Number of newly born in 2004 survived the first 3 years of life	Weighted average coefficient of variation of FCFE
29	Manufacture of motor vehicles, trailers and semi-trailers	45%	14	9	0.455
30	Manufacture of other transport equipment	N/A	6	2	0.362
31	Manufacture of furniture	N/A	18	14	0.421
32	Other manufacturing	45%	31	16	0.403
33	Repair and installation of machinery and equipment	x	14	11	0.246
35	Electricity, gas, steam and air conditioning supply	17%	14	10	0,18
36	Water collection, treatment and supply	N/A	4	1	0.201
37	Sewerage	N/A	4	2	0.453
38	Waste collection, treatment and disposal activities; materials recovery	N/A	31	14	0.247
39	Remediation activities and other waste management services	41%	3	1	0.311
41	Construction of buildings	45%	242	119	0.356
42	Civil engineering	N/A	18	12	0.178
43	Specialised construction activities	N/A	271	140	0.147
45	Wholesale and retail trade and repair of motor vehicles and motorcycles	33%	143	98	0.214
46	Wholesale trade, except of motor vehicles and motorcycles	31%	1033	561	0.201
47	Retail trade, except of motor vehicles and motorcycles	48%	580	299	0.423
49	Land transport and transport via pipelines	35%	170	91	0.252
50	Water transport	33%	1	1	0.245

(continuation)

NACE code	Description	Probability of business´s death within 3 years	Number of business´s births in 2004	Number of newly born in 2004 survived the first 3 years of life	Weighted average coefficient of variation of FCFE
51	Air transport	N/A	1	1	0.207
52	Warehousing and support activities for transportation	45%	52	34	0.442
53	Postal and courier activities	44%	2	1	0.343
55	Accommodation	40%	59	37	0.272
56	Food and beverage service activities	48%	200	98	0.421
58	Publishing activities	N/A	51	26	0.252
59	Motion picture, video and television programme production, sound recording and music publishing activities	N/A	N/A	6	0.154
60	Programming and broadcasting activities	N/A	N/A	N/A	N/A
61	Telecommunications	38%	16	9	0.333
62	Computer programming, consultancy and related activities	40%	100	47	0.373
63	Information service activities	37%	24	12	0.233
64	Financial service activities, except insurance and pension funding	51%	24	8	0.526
65	Insurance, reinsurance and pension funding, except compulsory social security	N/A	N/A	N/A	N/A
66	Activities auxiliary to financial services and insurance activities	58%	14	5	0.443
68	Real estate activities	47%	1546	630	0.411
69	Legal and accounting activities	54%	134	75	0.427
70	Activities of head offices; management consultancy activities	N/A	180	132	0.254
71	Architectural and engineering activities; technical testing and analysis	N/A	156	122	0.014

(continuation)

NACE code	Description	Probability of business´s death within 3 years	Number of business´s births in 2004	Number of newly born in 2004 survived the first 3 years of life	Weighted average coefficient of variation of FCFE
72	Scientific research and development	44%	10	4	0.476
73	Advertising and market research	48%	129	74	0.422
74	Other professional, scientific and technical activities	N/A	167	112	0.274
75	Veterinary activities	N/A	5	3	0.254
77	Rental and leasing activities	N/A	38	26	0.453
78	Employment activities	48%	24	15	0.290
79	Travel agency, tour operator and other reservation service and related activities	N/A	34	27	0.187
80	Security and investigation activities	33%	24	17	0,19
81	Services to buildings and landscape activities	N/A	17	10	0.254
82	Office administrative, office support and other business support activities	N/A	27	10	0.132
84	Public administration and defence; compulsory social security	40%	N/A	N/A	N/A
85	Education	N/A	71	32	0.189
86	Human health activities	45%	46	27	N/A
87	Residential care activities	23%	N/A	N/A	N/A
88	Social work activities without accommodation	N/A	1	N/A	N/A
90	Creative, arts and entertainment activities	N/A	7	5	0.125
91	Libraries, archives, museums and other cultural activities	N/A	N/A	N/A	N/A
92	Gambling and betting activities	N/A	15	10	0.098

(continuation)

NACE code	Description	Probability of business´s death within 3 years	Number of business´s births in 2004	Number of newly born in 2004 survived the first 3 years of life	Weighted average coefficient of variation of FCFE
93	Sports activities and amusement and recreation activities	N/A	64	35	0.161
94	Activities of membership organisations	35%	9	N/A	N/A
95	Repair of computers and personal and household goods	39%	16	11	0.302
96	Other personal service activities	43%	20	11	0.404
97	Activities of households as employers of domestic personnel	N/A	N/A	N/A	N/A
98	Undifferentiated goods- and services-producing activities of private households for own use	N/A	N/A	N/A	N/A
99	Activities of extraterritorial organisations and bodies	N/A	N/A	N/A	N/A
	Total		**6681**	**3507**	

Note: N/A – not available data.
Source: Own calculation based on data from Eurostat (Business Demography Project) and Albertina

1.2 Results

The method of regression analysis was used to analyse the relationship between financial fluctuation in return-on-investment and the probability of decline. Individual sets of data were first subjected to normality verification by the Kolmogorov-Smirnov test as well as on the basis of a normal probability plot, and then came a regression analysis of the following two variables:

– weighted average coefficient of variation of *FCFE* companies established in 2004 as independent variable and
– dependant variable probabilities of decline within 3 years.

All variables, including a description of the measures used and their descriptive statistics, are summarized in Table 2.

Table 2 Variable description and summary statistics						
Variable	Abbreviation	Mean	SD	Min	Max	N
Dependent Variable						
Probability of Decline	*PoD*	40.9024	8.1511	17.0000	58.0000	41
Independent Variable						
Weighted average variation Coefficient of Free Cash Flow to Equity	*VCoFCEF*	0.3501	0.1063	0.1770	0.5400	41

Source: Eurostat (Business Demography Project) and Albertina

The resultant regression line is $y´ = 18.95 + 62.71 * x$, the coefficient of correlation reaches the value $r = 0.67$ and points to a significant dependence of decline on the weighted average of *FCFE* coefficient of variation. The resultant value of the coefficient of correlation is lower in comparison to the version with simple average of FCFE coefficient of variation (see Chmelíková, 2014), however, still points to a significant relationship between the observed variables and so disproves the hypothesis H_0. So, this conclusion supports the hypothesis H_1, and thus also the assumption about the suitability of choosing accounting fluctuation in *FCFE* an objective scale for the determining the risk substance.

The hypothesis about the relationship between the observed variables was statistically tested on the significance level α = 0.001. The summary results of statistical analysis are presented in Table 3.

Table 3 Statistical hypothesis H_0 test on the significance level $α = 0.001$

Independent Variable *VCoFCEF*	Dependent Variable (Coefficients)
Intercept	**18.9471 *** **
	(0.0000)
VCoFCEF	**62.7078*** **
	(0.0000)
R^2	0.6682
F-test	78.5540
p-value	0.0000
	< 0.001

Note: Standard errors in parentheses ***p<0.001.
Source: Own calculations (processed in software Unistat)

The null hypothesis of the independence assumption is rejected on the basis of statistical significance (p-value is less than the given significance level α = 0.001). We can hence support the base hypothesis: Probability of decline across individual economic sectors is related to the average fluctuation of the rate of return on equity for companies in these sectors, which explain 83% of the decline probability. This finding is in accordance with the theoretical prediction that future volatility of profitability indicator indicates the total riskiness of intended investment (Brayman, 2012). This result supports the idea that fluctuation in return to equity to owners is convenient predictor of future financial distress and hence can serve an objective tool for risk substance identification.

2 RISK SUBSTANCE

2.1 Hypothesis, data, methods

Business risk is partly independent of the pressures of the cost structure with its fixed elements. If the share of fixed costs is high, even a small fall in demand can lead to a large fall in profitability (cf. Toms and Nguyen, 2005). Therefore, it can be said that a higher share of fixed costs leads to a higher business risk. A higher share of fixed costs is usually typical for companies with highly-automated processes, for firms with highly-qualified staff (who need to be paid even in a recession) and for companies who have invested into research and development in the past and whose fixed costs therefore include the depreciation of the R&D.

If the share of fixed costs of the overall costs is high, the company is seen as having high operating leverage. As in physics and finance, leverage means bigger impact using less energy. Here, the high level of leverage means that a relatively small change in the turnover of the company produces a relatively large change in the profitability of all the capital invested and vice-versa.

From the point of view of the owners the operating risk is not the only risk connected with their investment. An extra risk on their investment comes from using debt and with fixed payments to creditors connected to this. The owners facing a certain level of operating risk are exposed to a greater risk on their investment by being involved in the debt. If the firm is exclusively financed from own sources, the risk run by the owners is the portion of the operating risk for the whole company. However, they are properly rewarded for meeting certain conditions for this high risk in the form of higher return on their investment. This effect is known in the jargon of company finance as financial leverage. Financial leverage only has a positive effect on the profitability of own capital in conditions where the return on total assets exceeds interest rates paid for using debt.

According to Toms (2012) the fluctuation of future revenue is closely linked to the level of fixed payments in the company's cash flow. The higher the level of fixed liabilities (whether in the form of past investment, contracts with suppliers or creditors), the lower the ability of the company to react both to changes in demand (real and nominal) and also to changes in the level of business costs (again real and nominal). The research question of this paper was therefore formulated as to what extend the volatility of returns of start-up companies is caused by the risk fundamentals – operating and financial leverages.

In fact, these connections have become the subject of a number of research papers into the relationship to total risk measures, however, the research of the influence of the two basic components on shareholder risk measured for markets has been limited. Nevertheless, it has shown that the influence is roughly balanced (Mandelker and Rhee, 1984; Li and Henderson, 1991; Toms and Nguyen, 2005).

To research these conjectures, we develop the following null hypotheses (and their alternatives):

– H_{02}: *The return fluctuations of start-up companies are not associated with the operating and financial leverage,*
– H_2: *The return fluctuations of start-up companies are associated with the operating and financial leverage.*

The hypothesis is formulated in line with expectations stemming from the conclusions of Toms and Nguyen (2005), who provide clear evidence that basic risk fundamentals are connected to the increased fluctuations of returns.

The method of multiple regression analysis and statistical hypotheses testing is used to analyse the relationship between return fluctuations of start-up companies and risk fundamentals – financial and operating leverage. Individual sets of data are first subjected to normality verification by the Kolmogorov-Smirnov test as well as on the basis of a normal probability plot. Then comes a multiple regression analysis of the following variables:

– Degree of Operating *(DOL)* and Financial Leverage *(DFL)* by a start-up firm as independent variables (which enables to monitor the intensity of basic risk fundamentals in the newly established companies in the Czech Republic),
– Free Cash Flow to Equity *(FCFE)* variation coefficient[4] by a start-up firm as dependent variable (which enables to describe the level of riskiness in the companies after their inception). We use *FCFE* indicator, as it is the most convenient measure of financial return for the owners, that is long-term sustainable (Brealey et al., 2012).

The degree of operating leverage and the degree of financial leverage are calculated according to following formulas:

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[4] The degree of fluctuation in return of individual companies is characterised by the standard deviation, whose absolute level is influenced by not only the dispersion of the observed variable, but also by the level of the mean value of a given random variable. Because of the mutual comparability of the observed companies the standard deviation has been relativized by conversion to a coefficient of variation.

$$DOL = \frac{Earnings\ before\ interest_{(t+1)}\ /\ Earnings\ before\ interest_{(t)}}{Sales_{(t+1)}\ /\ Sales_{(t)}}, \tag{3}$$

$$DFL = \frac{Net\ profit_{(t+1)}\ /\ Net\ profit_{(t)}}{Earnings\ before\ interest_{(t+1)}\ /\ Earnings\ before\ interest_{(t)}}, \tag{4}$$

where *(t)* is a year of inception of a firm and *(t+1)* is one year after inception of a firm.

Coefficient of variation of free cash-flow to equity is calculated according to following formula:

$$Variation\ Coefficient_{FCFE_{(t)}\ to\ FCFE_{(t+5)}} = \frac{\sigma_{FCFE_{(t)}\ to\ FCFE_{(t+5)}}}{\mu_{FCFE_{(t)}\ to\ FCFE_{(t+5)}}}, \tag{5}$$

where $\sigma_{FCFE_{(t)}\ to\ FCFE_{(t+5)}}$ stands for standard deviation of financial return of a start-up firm for 5 year period after inception and $\mu_{FCFE_{(t)}\ to\ FCFE_{(t+5)}}$ represents mean of this variable.

On the basis of data from Czech start-up companies the assumption about positive relationship between the operating and financial leverage is verified with the use of statistical hypothesis testing. The software Unistat is used for calculations. The null hypothesis is rejected or accepted on the basis of statistical significance (the significance level $\alpha = 0.05$).

The analysis is based on the data published by Amadeus – the trans-European database compiled by Bureau van Dijk Electronic Publishing. The dataset covers the period from 2008 to 2015 and consists of start-up firms in the Czech Republic. In the research sample we deployed those firms that were born in the period from 2008 to 2011 and survived and published their financial statements for five years after inception.[5] The total number of firms in the sample is 11 371. All variables, including a description of the measures used and their descriptive statistics, are summarized in Table 4.

Table 4 Variable description and summary statistics

Variable	Abbreviation	Mean	SD	Min	Max	N
Dependent Variable						
Free Cash Flow to Equity	*FCEF*	0.2472	0.0560	0.0270	0.5962	11 371
Independent Variable						
Degree of Operating Leverage	*DOL*	2.3066	1.5312	0.0000	10.6051	11 371
Degree of Financial Leverage	*DFL*	2.0739	1.4167	0.0000	9.7860	11 371

Note: Standard errors in parentheses ***$p<0.001$.
Source: Own calculations (processed in software Unistat)

2.2 Results

The hypothesis H_{02} has been tested in order to determine the relationship between the degree of financial and operating leverages and fluctuations in the returns. The equation $y´ = 0.2022 + 0.0068\ x_1 + 0.0141\ x_2$ was calculated to determine the influence of the two variables *DOL* (x_1) and *DFL* (x_2) on the *FCFE* variation

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[5] Firms are obliged to publish their financial statements when they reach given limits on assets, turnover or number of employees. The exact rules are given by Law n. 563/1991 Sb. § 20. The sample doesn´t include only those firms that did not meet their legal duties of publishing their financials.

coefficient variable as a percentage. The rising nature of function shows that fluctuation in the earnings is positively dependent on the extent of fixed costs in the operating and financial cost structure. This is in line with expectations stemming from the empirical evidence and theoretical principles of corporate finance (Brealey et al., 2012). The correlation coefficient $r = 0.5111$ shows a relatively high connection. The results of multiple regression analysis have shown a significant close relationship between financial leverage and a less-distinctive risk connection with operating leverage. The combination of both the risk fundamentals analysed therefore explains the fluctuation in free cash flow for owners of more than 26%.

The hypothesis about the relationship between the observed variables was statistically tested on the significance level $α = 0.001$. The summary results of statistical analysis are presented in Table 5.

Table 5 Statistical hypothesis H_{02} test on the significance level $α = 0.001$

Independent Variable	Dependent Variable (Coefficients)
Intercept	**0.2022***
	(0.0000)
DOL	**0.0068***
	(0.0000)
DFL	**0.0141***
	(0.0000)
R^2	0.2613
F-test	2009.9104
p-value	0.0000
	< 0.001

Note: Standard errors in parentheses ***p<0.001.
Source: Own calculations (processed in software Unistat)

The null hypothesis of the independence assumption is rejected on the basis of statistical significance (p-value is less than the given significance level $α = 0.001$). We can hence support the base hypothesis: The return fluctuations of start-up companies are associated with the operating and financial leverage, which explain 26% of the movements. This finding is in accordance with the majority of findings from empirical studies devoting to influence of risk fundamentals to the total riskiness (e.g. Mandelker and Rhee, 1984; Li and Henderson, 1991; Toms and Nguyen, 2005). This finding is very useful when looking for appropriate risk indicator for start-up companies as it may help to overcome the limits set by lack of reliable data from capital markets, lack of any financial history for start-up companies and low level of diversification of investors.

CONCLUSIONS

The main challenge for researchers and policy makers with regard to small enterprises is to support institutional frameworks that enable to unlock the potential of start-up companies in the economy. The academics may help to overcome the barriers in the decision making process of potential investors by exploring the techniques for riskiness evaluation.

In our study we therefore investigate the relationship between risk fundamentals and total riskiness of newly born firms in the Czech Republic. For description of the overall riskiness of Czech start-ups we use variation coefficient of return to owners, which occurred to be statistically positively associated with probability of decline and hence a good measure of riskiness. Generally, our empirical results support our hypothesis that the riskiness is strongly determined by the burdening by fixed costs.

What is very important and will allow a new approach to quantifying risk is identification of the dependence of the fluctuation of free cash flow on the combined level of risk – operating and financial leverage. This could have been expected intuitively since both forms of leverage are among the primary determinants of company risk. The factors for the fluctuation in future earnings can actually be divided into two groups. On the one hand, there are factors which affect the level of future profits, such as the level of demand and the development of input prices. On the other hand, there is the company`s ability to adapt to these changes. The ability of the company to adapt to exogenous changes is then determined by the amount it is burdened by fixed payments (operating and also financial from the owners` point of view). The business risk is therefore partly dependent on the burden of the cost structure with its fixed elements. If there is a high level of fixed costs, even a small fall in demand can cause of large drop in the return-on-investment.

By verifying the dependence of risk on the burdening of the cost structure with fixed elements, it is possible to suggest that a model should be constructed to quantify the discount rate for start-up companies in the conditions of an economy with emerging capital markets. Since new companies play an important role in the national economy, this makes it a useful tool enriching the theory which can be used in practice in real-life decision-making.

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