Branch Standards as the Possible Way of Optimizing of Capital Structure of the Concrete Firm[*]

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This article is about the problem of optimizing of the capital structure of the concrete firm and about the possibility to use the passive way of optimizing of this capital structure on the basis of the so-called Branch standards. Branch standards are defined as some average indebtedness that the firms are trying to follow. There are a lot of theories available, but the final process of optimizing of the capital structure of the concrete firm is very complicated and it is necessary to cope with a lot of application problems. Besides Traditional theory, none of the further theories offer some concrete recommended optimal indebtedness. For that reason, the possibility to optimize the capital structure based on the passive way is represented besides other things by the so-called Branch standards. The aim of this article is to judge if it is possible to identify this average indebtedness in different branches and in different countries. The hypothesis was stated that it is possible only in selected branches in selected countries. The research is realized in the six selected branches: Railroads, Beverages, Steel, Paper Production, Tobacco, and Electrical Equipment in the Czech Republic and in USA. Data for the years 2008-2016 were obtained from the system Albertina Data at the University of Economics in Prague and from the web pages of Prof. Aswath Damodaran in USA. There were identified so-called Branch standards in the Czech Republic for the branches Railroads 45%, Beverages 50%, Tobacco 50%, and Electrical Equipment 40%. There are also identified so-called Branch standards in USA for the branches Railroads 40% and Paper Production 40%-50%. For the branch Paper Production in the Czech Republic and for the branch Beverages in USA were identified ranges of 40%-45% and 40%-50% respectively. The so-called Branch standards were not stated for the branch Steel in both countries and for the branches Tobacco and Electrical Equipment in USA. The values were verified by the data for the year 2016 and the so-called Branch standards were confirmed excluding the branch Steel in both countries and the branches Tobacco and Electrical Equipment in the US.

Keywords: capital structure, optimizing, branch standards, analysis

Introduction

Optimizing of the capital structure of the concrete firm is one of the very important parts of the long-term financial management. This process can positively and negatively influence the basic financial goal which is represented by the maximizing of the market value of the firm. But the process of optimizing is very complicated. Debt in the capital structure represents the positive effect of the interest tax shield, but if there is a

lot of debt, the financial distress threatens. For that reason, optimizing of the capital structure of the concrete firm is very difficult both in theory and in practice. There are a lot of theories available, but every theory has its application problem. The firm can choose the active and passive way of optimizing. The active way is represented mainly by the Traditional theory and the passive way of optimizing by Pecking Order theory or by the so-called Branch standards. Branch standards are defined as the average indebtedness in some concrete branches which firms are trying to follow. Because the active way of optimizing is represented by the calculation of the weighted average cost of capital which is a very complicated thing mainly in case of the different levels of the indebtedness, the passive way could be suitable for the firm. But can the firm do optimizing of the capital structure according to the Branch standards? Is it possible in real economy to identify the average indebtedness or not? The answer to this question is not easy and for that reason the aim of this article is to judge if it is possible to identify this average indebtedness in different branches and in different countries.

Theory and Hypotheses

There are a few theories about the optimizing of the capital structure of the firm. The most important is the Traditional theory that is based on the average cost of capital. The average cost of capital is represented by the arithmetical average of the individual cost of capital of the different types of the firm's capital. This theory states that the optimal capital structure is represented by the minimum average cost of capital. It is possible to fall in this point with the maximizing of the market value of the firm in case of the stabilized expected incomes (Valach, 2011). The next theory which is called Compromising theory is relatively very close to the Traditional theory because it works with the influence of the interest tax shield and the cost of financial districts which both cause the U shape of the curve of the weighted average cost of capital, because firstly the weighted average cost of capital is decreasing and then it is increasing. First in fact prevails the positive influence of the interest tax shield and then the negative influence of the cost of the financial distress. The optimum arrives if the present value of the tax interest shield exceeds maximum the present value of the cost of financial distress.

The next theory is represented by two propositions of Modigliani and Miller (MM) (1958). The first states that the market value of the firm is independent on the capital structure and only the structure of the firm's assets is important. According to this approach, the process of the optimizing of the capital structure is not important. MM supposed tax-free environment and perfect capital markets. Then MM admitted the existence of taxes and they recommended to the firm the maximum of debt if the firm is expecting to have profit and can use the tax interest shield. But MM do not consider the existence of the cost of financial distress.

Brealey and Myers represented the next theory that is called the theory about four dimensions of the capital structure and took into consideration the following four dimensions: taxes, risk, asset type, and financial slack (Brealey, Myers, & Allen, 2014). It is recommended to accept more debt in case the firm is expecting profit and a relatively lesser risk of business and there is a prevalence of tangible assets.

The final theory is called Pecking Order theory which is not in the reality theory, but the results of the practical researches of firm's behaviour. It was found out that more than 70% of firms mainly in USA prefer internal financial sources, then debt, and finally external equity, mainly stocks (Valach, 2011). According to this theory, the final debt share is not actively identified, but it is the result of the process of financing. If for example there are enough internal financial sources, the indebtedness is zero. If for example the firm needs capital 10M USD and only 7M USD of internal financial sources are available, then it is necessary to obtain 3M USD of debt and the final indebtedness is 30%. For that reason, this process is called the passive way of optimizing.

Besides the different theories, the so-called Branch standards and the determinants of the capital structure play an important role. The most important determinants are, for example, according to Křivská (2009), profitability and stability of the firm, structure of assets of the firm, financial slack, the amount of investment, the firm's size, legislation, the amount of investment, and the branch of business. The last determinant would play a very important role.

The usage of the different theories will very strongly depend on the ability to cope with the application problems which arise in case of their application. It is necessary to identify the cost of equity and the cost of debt for the different levels of indebtedness. And that is a very complicated process. The cost of equity and debt will grow, but the problem is how much moderately and how much strongly. This application problem very strongly limits the usage of this in other respects very good theory.

Compromising theory is limited by the problem of the identification of the cost of financial distress. Levy and Sarnat (1999) offered the solution of this problem and they recommended measuring the cost of financial distress as the fictional insurance against the bankruptcy. But the problem is how to identify these insurance payments.

Brealey and Myers theory about four dimensions of capital structure recommends some procedures for optimizing, but it is not possible to identify according to this theory some concrete recommended value of indebtedness. MM propositions I and II are overcome.

Besides theoretical solutions, there are also some results of practical researches in the Czech Republic. Horová and Hrdý (2007) or Hrdý et al. (2008) presented that 55.6% firms pursue the active optimizing of their capital structure considering mainly the cost of capital. Only 20% of the enterprises pay attention to the long-term optimizing of the capital structure, where these firms are trying to minimize the debt and maximize internal financial sources which represent Pecking Order theory. More than 20% of firms do not take into consideration the process of the optimizing of the capital structure (Horová & Hrdý, 2007). Relatively interesting are some researches that analyse the influence of the concrete industry branch (Hrdý, 2016; 2017). Talberg, Winge, Frydenberg, and Westgaard (2008) demonstrated significant difference in the capital structure depending on the industry. According to their study, debt ratio reports a negative relation to profitability, growth, and age, in contrast to asset structure and company size with a positive relation. Ghost and Cai (2011) examined whether enterprises converge their capital structure toward their industry mean. The empirical result found out that optimal capital structure is not a single point rather a range of values from zero to the industry and typical U.S. enterprises will only adjust to the optimal capital structure when the enterprises' debt level is out of this range. An extensive questionnaire for central and European countries was contented in the study of Hernádi and Ormos (2012), who found that CFOs present rather strong Pecking Order behaviour, with a limited role for target leverage. However, according to the results, trade-off theory and Pecking Order theory are not mutually exclusive. Ultimately, there is a set of studies which devoted its attention to capital structures among Asian industrial enterprises: Iranian (Abzari, Fathi, & Torosian, 2012), Indonesian (Hardiyanto, Achsani, & Sembel, 2014), or Pakistan (Afza & Hussain, 2011), not bring such similar results. Present research in this field for Czech enterprises is not performed systematically, but it focuses only on particular aspects (Růčková & Heryán, 2013; Hrdý & Marek, 2012).

The theoretical and practical knowledge shows that the process of optimizing of the capital structure of the concrete firm is very complicated and that it is not easy to identify some optimal indebtedness. For that reason, the importance of the alternative steps is increasing. Optimizing of the capital structure, according to the so-called Branch standards, can be one possibility how to cope with this very complicated situation. But there is the key question if it is possible to identify the average indebtedness and the so-called Branch standards for different sectors in different countries.

It is possible to identify the basic hypothesis H0 that "It is possible to identify the average indebtedness and the so-called Branch standards, but only in selected branches in selected countries". Besides this, the basic hypothesis can be identified the alternative hypothesis H1 that "It is not possible to identify the average indebtedness and the so-called Branch standards in practically none branch in selected countries".

Methods and Results

This part describes the data sources, the methods used, and the results of the research. Data for this research were used from the two key sources. The first source is represented by data obtained from the database Albertina in the University of Economics in Prague for the period of 2008-2016. In this database, the information about firms in different branches in the Czech Republic including accounting data is available. The data were adjusted by elimination of the indebtedness over 100% and of the negative indebtedness. The only problem of the sources of information is the reality that not all the firms fulfil their obligation to publish the financial statement. Ii is supposed that data are relatively very credible with its information value. All data from the concrete branch are covered including the changes about the constitution or winding up of different firms. The number of firms is changing, but in the last three or two years, this number is relatively stabilized and for that reason this research is relatively credible. The objects of the research were the branches of Railroads, Beverages, Steel, Paper Production, Tobacco, and Electrical Equipment. The indebtedness in the Czech Republic was identified from accounting data because the market values were not available. For that reason, data from USA were also identified from accounting data whereas the market data were also available. The database of the web page of Professor Aswath Damodaran (2018) was used. On this web page, a lot of information not only about the American firms is available including the indebtedness from accounting and market data in different branches. Because of the possibility of the comparison, the same branches were chosen.

The methods used for the realization of this aim of the research are the analysis, the comparison, and the final synthesis of the analyzed information. Because the series of data are not so long, some more sophisticated statistical methods are not necessary and the simple observation and analysis is sufficient. The key matter for the final finding would be the statement if the indebtedness in the last few years is relatively stabilized and if it would be possible to identify some average indebtedness and the so-called Branch standards.

The following results were identified in different branches in the Czech Republic and in USA and they are stated in the following six tables with some concise comments.

Table 1

The Average Indebtedness (AI): Branch Railroads

Year	Czech Republic (%)	USA (%)
2008	48	38
2009	46	40
2010	45	44
2011	45	41
2012	47	41
2013	49	41
2014	48	40
2015	46	40

Note. Source: Albertina Data, University of Economics in Prague, 2018 and Damodaran (2018) adjusted by the author from the accounting data, retrieved from http://pages.stern.nyu.edu/~adamodar.

Table 1 shows a relatively stabilized position in the Czech Republic as well as in USA. So the situation is relatively easy and without problem it is possible to identify the average indebtedness. Because of the future expected volatility, it would be relatively suitable to identify this average indebtedness rounded off. For that reason, the average indebtedness would be for the Czech Republic not 46% or 47%, but 45%, and for USA 40%. This average indebtedness can be for both countries identified as the so-called branch standards.

Table 2

The Average Indebtedness (AI): Branch Beverages

Year	Czech Republic (%)	USA (%)
2008	52	39
2009	51	49
2010	48	49
2011	48	40
2012	48	49
2013	50	50
2014	49	51
2015	49	40

Note. Source: Albertina Data, University of Economics in Prague, 2018 and Damodaran (2018) adjusted by the author from the accounting data, retrieved from http://pages.stern.nyu.edu/~adamodar.

Table 2 shows again a relatively stabilized position in the Czech Republic and it is possible to identify the average indebtedness and the so-called branch standard at the level of 50%. The volatility in USA is between 39% and 51%, so it is not possible to identify the average indebtedness and the so-called branch standard. Only it is possible to state the interval 40% and 50%.

Table 3

The Average Indebtedness (AI): Branch Steel

Year	Czech Republic (%)	USA (%)
2008	54	33
2009	43	36
2010	48	36
2011	49	34
2012	51	30
2013	48	33
2014	46	42
2015	47	49

Note. Source: Albertina Data, University of Economics in Prague, 2018 and Damodaran (2018) adjusted by the author from the accounting data, retrieved from http://pages.stern.nyu.edu/~adamodar.

Table 3 shows relatively very similar values in the last two years in the Czech Republic and in USA. But the development of these values is somewhat different. The values in the Czech Republic are decreasing while the values in USA are increasing from 2008 to 2015. Because of these tendencies, it is not possible to identify some average indebtedness and the so-called branch standards. Maybe the result of the next year 2016 can decide if these trends are ongoing or if there is some termination of these trends.

Table 4

The Average Indebtedness (AI): Branch Paper Production

Year	Czech Republic (%)	USA (%)
2008	53	44
2009	50	61
2010	46	46
2011	46	41
2012	45	41
2013	47	41
2014	48	40
2015	47	40

Note. Source: Albertina Data, University of Economics in Prague, 2018 and Damodaran (2018) adjusted by the author from the accounting data, retrieved from http://pages.stern.nyu.edu/~adamodar.

Table 4 shows after the initial decrease a relatively stabilized position in the Czech Republic and it is possible to identify the average indebtedness and the so-called branch standards, but only in the range of 45% and 50%. The development in USA, on the other hand, is after the initial volatility relatively stabilized and it is possible to identify the average indebtedness and the so-called branch standard at the level of 40%.

Table 5

The Average Indebtedness (AI): Branch Tobacco

Year	Czech Republic (%)	USA (%)
2008	63	42
2009	57	49
2010	51	62
2011	50	65
2012	50	62
2013	50	68
2014	51	95
2015	51	99

Note. Source: Albertina Data, University of Economics in Prague, 2018 and Damodaran (2018) adjusted by the author from the accounting data, retrieved from http://pages.stern.nyu.edu/~adamodar.

Table 5 shows after the initial decrease a relatively stabilized position in the Czech Republic and for that reason it is possible to identify the average indebtedness and the so-called branch standard at the level of 50%. The situation in USA is more complicated and after the initial relatively slow increase, there is a relatively strong growth of the indebtedness in the years 2014 and 2015. It is not possible to identify the average indebtedness and the so-called branch standard.

Table 6 shows a relatively stabilized position of the indebtedness after a small decrease in the first five years in the Czech Republic. It is again possible to identify the average indebtedness and the so-called branch standard at the level of 40%. The situation in USA is relatively volatile. There was a strong decrease of the indebtedness between years 2008 and 2009 and then a small decrease in the years 2011, 2012, and 2013. The final position is again at the higher level of about 35%. And it is not possible to identify the average indebtedness and the branch standard.

Table 6

The Average Indebtedness (AI): Branch Electrical Equipment

Year	Czech Republic (%)	USA (%)
2008	45	75
2009	44	32
2010	43	32
2011	42	24
2012	41	23
2013	39	22
2014	41	33
2015	40	35

Note. Source: Albertina Data, University of Economics in Prague, 2018 and Damodaran (2018) adjusted by the author from the accounting data, retrieved from http://pages.stern.nyu.edu/~adamodar.

The branch standards were identified for the branch Railroads in the Czech Republic and in USA, for the branch Beverages in the Czech Republic and in USA, for the branch Paper Production in the Czech Republic and in USA, for the branch Tobacco in the Czech Republic, and for the branch Electrical Equipment in the Czech Republic. Now it is necessary to verify these proposed values by their confrontation with data in the year 2016. The situation is described in Table 7.

Table 7

Verification of Branch Standards

Branch	Branch standard Czech Republic (%)	The indebtedness 2016 Czech Republic (%)	Branch standard USA (%)	The indebtedness 2016 USA (%)
Railroads	45	46	40	40
Beverages	50	52	40-50	60
Steel	-----	48	------	53
Paper Production	45-50	48	40	43
Tobacco	50	51	------	85
Electrical Equipment	40	39	------	41

Note. Source: Albertina Data, University of Economics in Prague, 2018 and Damodaran (2018) adjusted by the author from the accounting data, retrieved from http://pages.stern.nyu.edu/~adamodar.

The result of Table 7 can be explained as follows. All so-called branch standards were confirmed including the range for the branch Paper Production in the Czech Republic and for the branches Railroads and Paper Production in USA. The range for Beverages in USA was confirmed to be 40%-50%.

It is also interesting to analyze the development in the branches where the so-called branch standards were not identified. The branch Paper Production shows the relatively stabilized position in the Czech Republic and it can be considered the so-called branch standard at the range of 45%-50%. The increasing tendency is confirmed in USA for the branch Steel and for that reason it is not possible to identify the average indebtedness and the so-called branch standard. The branch Tobacco shows in USA the decrease of the indebtedness after a relatively great increase in the last two years and for that reason, it is not possible to identify the average indebtedness and the so-called branch standard. The same situation is in the branch Electrical Equipment where the increase continues.

Discussions and Conclusion

This paper examines if it is possible to identify the average indebtedness and the so-called branch standards. The hypothesis H0 was confirmed and the hypothesis H1 was rejected. The key conclusion of this research consists in the fact that it is possible to identify the average indebtedness and the so-called branch standards, but only in the selected branches where the tendency of the average indebtedness is relatively stabilized and where there is a minimum volatility in the last few years. There are relatively great differences among different branches and among countries. The stability in the Czech Republic is in more branches than it is in USA. It is very complicated to identify the reasons for this behavior because it depends on the different factors. The most important factors can be, for example, the situation on the capital markets, the changes in the economy, the position and the development of the most important and strongest firms in the concrete branch, and the economic cycle in the selected branches. The discussion can also develop the fact if the average indebtedness in some concrete branches is the optimum the theory is looking into. The answer to this question is not easy. But the average indebtedness would reflect the real risk in some concrete branches and some other conditions and for that reason, the average indebtedness can be the result of the balance with the specifics of this concrete branch. For that reason, the so-called branch standards have their relatively strong position in the theory and practice of the process of optimizing of the capital structure of the concrete firm.

There is a relatively great opportunity for the next research. Primarily, it is necessary to develop this research when the next data in the following years would be available. Then, it would be possible to confirm the tendency for the stabilized position in the selected branches or vice versa identify the new wave of some volatility. Of course, this research has its limitations that are caused by the fact that not all firms have actual information in databases.

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