http://dx.doi.org/10.18778/1429-3730.48.01

Dr Monika Burżacka*

BUILDING AN OPTIMAL CAPITAL STRUCTURE OF START-UPS

BUDOWANIE OPTYMALNEJ STRUKTURY KAPITAŁU W FIRMACH TYPU START-UP

Streszczenie

Skuteczne zarządzanie finansami i optymalna struktura kapitału są ważne dla firm – pozwalają bowiem uzyskiwać lepsze wyniki operacyjne. Celem artykułu jest zbadanie najważniejszych czynników warunkujących wybór struktury kapitałowej firmy. Błędna decyzja o doborze struktury kapitału może prowadzić do finansowej utraty równowagi, a w konsekwencji nawet do bankructwa. Istnieje wiele teorii wskazujących na metody budowy optymalnych struktur kapitałowych, które mogą jednak okazać się niewystarczające. Nie są dostępne badania jednoznacznie wskazujące kanon uwarunkowań determinujących wybór konkretnego rozwiązania w zakresie struktury finansowej firm, zwłaszcza tych określanych mianem firm start-upowych (startowych). Wynika to bezpośrednio z ich specyfiki i często z konieczności stosowania niestandardowych i niekonwencjonalnych metod zarządzania. Niemniej jednak, jak wskazują Abdulsaleh i Worthington, menedżerowie często decydują się na zastosowanie struktury kapitałowej już sprawdzonej przez innych uczestników danego rynku.

Słowa kluczowe: struktura kapitałowa, specyfika aktywów, zdolność informacyjna, finansowanie start-upów, teoria hierarchii źródeł finansowania

Klasyfikacja JEL: G32, O31

* Politechnika Warszawska, Kolegium Nauk Ekonomicznych i Społecznych Filia w Płocku, monika.burzacka@pw.edu.pl

Introduction

It's common known that effective creating of proper financial capital structure is crucial for a company to obtain better operational performance. Missed decision in that area may lead to financial distress and, as the experience shows, finally to bankruptcy. In start-up companies the situation cannot be different. There is only one significant thing: the theories delivered by many famous authors like for instance: Modigliani and Miller[1], Kraus and Litzenberger[2] or the others, may occur not good enough, because of specifics of that group of companies. For example, Reiss[3] describes start-ups as new operators excisting in extreme uncertainty, where they can be never sure whether the resulting product or service will meet their expectations of the market. They are organizations of dissipative structures, always in a state of imbalance, acting in chaotic and unpredictable environment where the the most import ant rule is the change.

There is no significant studies about the financial structure of startup firms. As this group of companies play a significant role in job creation and development of economies, the problem of finding optimal capital structure became a very important or even crucial issue.

Determinants of optimal capital structure

An optimal capital structure leads the firm to achieve a better performance, ensures the sustainability in its operation and its viability.

One of them is profitability. According to the pecking order theory, in the presence of asymmetric information, a firm will prefer internal finance, but would issue debt if internal finance was exhausted. The last alternative would be issue new equity. The pecking order theory assumes that there is no target capital structure. The firms choose capitals according to the following preference order: internal finance, debt, equity.

Next determinant in choosing the source of financing is the growth. The capacity to finance the increasing demand depends on internal finance, also the requirement of finance tends to increase. If a firm entirely relies on internal fund, then the growth may be restricted.

[1] F. Modigliani, M.H. Miller, *Corporate income taxes and the cost of capital: a correction*, "The American Economic Review" 1963, No. 53(3), pp. 433–443.

[2] A. Kraus, R. Litzenberger, *A State-Preference Model of Optimal Financial Leverage*, "Journal of Finance" 1993, vol. 28, No. 4, pp. 911–922.

[3] E. Reiss, *The Lean Startup, Crown Business*, 2011, https://www.amazon.com/Lean-Startup-Entrepreneurs-Continuous-Innovation/dp/0307887898 [accessed: 20.10.2017].

Modigliani and Miller[4], creators of Capital Structure Irrelevance Theory proved that companies should aim towards entire debt financing due to tax deductions associated with interest payments on debt. They explained an operational definition of the cost of capital, according to that group of companies should condition financing decisions to tax savings associated with interest payments on debt. This effect encourages the use of debt by firms. The theory was confirmed by MacKie-Mason in 1990 who studied the tax impact on the choice between debt and equity[5]. The conclusion was clear: the average tax rate should affect financing decision. In 1963, Modigliani and Miller introduced the concept of the interest tax shield (technique of maximizing the value of a company), that after wide criticism was enriched with bankruptcy costs and transaction costs, as a substitution theory[6].

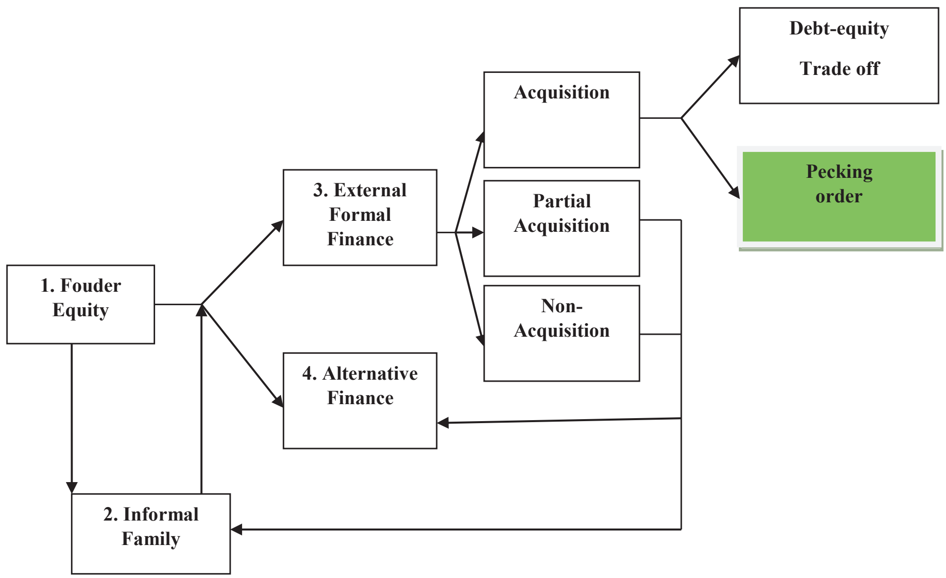

Figure 1. Postulated financing sequences for business start-ups

Source: A. Atherton, *Extending pecking Order considerations of New venture Financing to incorporate Founder experience, knowledge and networks*, "International Small Business Journal" 2012, p. 474.

[4] F. Modigliani, M.H. Miller, *The cost of capital, corporation finance and the theory of investment*, "The American Economic Review" 1958, No. 43(3), pp. 261–291.

[5] J.K. MacKie-Mason, *Do taxes affect corporate financing decisions?*, "The Journal of Finance" 1990, vol. 45, pp. 1471–1493.

[6] F. Modigliani, M.H. Miller, *Corporate income taxes and the cost of capital: a correction*, *op. cit.*,

Similarly, Kraus and Litzenberger creators of Trade-off Theory (1973), claimed that a company chooses the optimal capital structure by balancing the costs of financial distress and the tax saving benefits of debt.[7]

Another theory which is commonly used for explaining the capital structure of firms is the pecking order theory[8] indicating that assets structure is also an important determinant of the capital decision. The theory states that the hierarchy is structured this way because of the transaction costs involved in each form of financing, especially those associated with the problem of asymmetric information. In this hierarchy, first and the most preferred kind of financing is internal financing where managers don't need to share information to outsiders. When it's unavailable or is insufficient, firms decide to use external like debt. Equity takes further positions, mainly because owners of debt ask less information than equity holders do.

The firm's assets are tangible and have a greater liquidation value.[9] According to mentioned the pecking order theory, firms holding more tangible assets will be less prone to asymmetric information problems and reduce the agency cost. Some studies reveal that the capital structure is positively correlated with the firm's assets structure consisting with pecking order theory.[10]

According to this, Myers[11] claim that an optimal debt to equity ratio is absent, instead the driver for the use of debt is the need for external funding. Therefore firms are not striving for a targeted leverage ratio.

L. Chen, C. Jung, S. Chen[12] notice, size of firms definitely describes the path between tax rate and capital structure. The tax rate affects positively leverage. Large firms appear to take advantage of the tax deductibility of debt. Additionally, they face a relative advantage to raise finance from formal institutions because they have lower information asymmetry, more diversified and lower risk.

The issue of finance has been viewed as the immediate reason why most start-ups fail to start or to grow. To underpin this statement, Levy[13] found that there

[7] A. Kraus, R. Litzenberger, *op. cit.,*

[8] S.C. Myers, N.S. Majluf, *Corporate Financing and Investment Decisions When Firms Have Information Investors Do Not Have*, "Journal of Financial Economics" 1984, vol. 13, pp. 187–222, http://dx.doi.org/10.1016/0304–405X(84)90023–0 [accessed: 20.10.2017]; S.C. Myers, *The capital structure puzzle*, "The Journal of Finance" 1984, vol. 39(3), http://dx.doi.org/10.1111/j.1540-6261.1984.tb03646.x [accessed: 20.10.2017].

[9] M. Harris, A. Raviv, *The Theory of Capital Structure*, "The Journal of Finance" 1991, vol. 46, No. 1, pp. 297–355, http://ecsocman.hse.ru/data/958/126/1231/harris_raviv_-_cs_1991.pdf [accessed: 20.10.2017].

[10] M. Amidu, *Determinants of capital structure of banks in Ghana: an empirical approach*, "Baltic Journal of Management" 2007, vol. 2(1), pp. 67–79.

[11] S.C. Myers, *op. cit.*, Business Source Premier, EBSCOhost.

[12] L. Chen, C. Jung, S. Chen, *How the Pecking-Order Theory Explain Capital Structure*, "Journal of International Management" 2011, https://pdfs.semanticscholar.org/4778/e51d44c1adf7bb50562c07d4bacd6d0494e5.pdf [accessed: 20.10.2017].

[13] B. Levy, *Obstacles to developing indigenous small and medium enterprises: an empirical assessment*, "World Bank Economic Review" 1993, vol. 7(1).

is limited access to financial resources available to smaller enterprises compare growth and survival of any organization. Capital structure (financing decisions) can be defined as the proportion of debt and equity used by a firm to finance its operations. The studies on the capital structure of young firms are few. Those that have been conducted present a divergence of opinions on whether the young enterprise should rely more on debt or on equity. For example, Hutchinson[14] and Cressy and Olofsson[15] sustain that young, small or start-up firms tend to rely more on debt finance while others, such as Berger and Udell[16] have a different point of view, these kinds of firm depend more on equity especially internal equity.

What is interesting, Pettit and Singer suggest that the capital structure of the small firm is determined in part by the interaction of the owner's risk-return preferences, the characteristics of the firm, and the costs of various types of financing. They discover agency problems and a high level of asymmetric information to be the major determinants of financing costs.[17]

Summing, we may claim that selection of the most optimal sources of financing often determines the possibility of survival in a highly demanding and volatile market. What is interesting, each industry sector or even each company due to the unique characteristics may presents extremely different needs in this area.

The financial needs of start-up companies in various stages of development

As it was proved, the capital structure of the firm is determined by a wide range of different factors. The company on each stage of development represents a different need of capital. Table 2 shows the stages of financing star-up companies that have different characteristics according to LCSsT (Life Cycle Start-ups Theory).

Despite of dynamic development of financial markets, the problem of effective Access to capital by start-ups is constantly visible. Except of Stock Exchange, the private capital market is often the only solution for financing innovative, young companies (Figure 2).

---

[14] R.W. Hutchinson, *The capital structure and investment decisions of the small owner-managed firm: some explanatory issues*, "Small Business Economics" 1995, vol. 7, p. 7, https://www.researchgate.net/publication/5158590_The_Capital_Structure_and_Investment_Decisions_of_the_Small_Owner-Managed_Firm_Some_Exploratory_Issues [accessed: 20.10.2017].

[15] R. Cressy, C. Olofsson, *European SME financing: an overview*, "Small Business Economics" 1997, vol. 9, pp. 87–96.

[16] A.N. Berger, G.F. Udell, *The economics of small business finance: the roles of private equity and debt markets in the financial growth cycle*, "Journal of Banking and Finance" 1994, vol. 22, pp. 613–673.

[17] R. Pettit, R. Singer, *Small Business Finance: A Research Agenda*, "Financial Management" 1985, Autumn, pp. 47–60.

Table 1. Lifecycle of startups and financing startegy

STAGE OF DEVELOPMENT					
Concept stage	**Launch**	**Start up**	**Chasm**	**Expansion**	**Mature**
OBJECTIVES OF FINANCING					
Creation process Market research Administrative costs of starting the enterprise	Investments in Assets Market research – Product/service development Initial marketing	Testing Business model Stuffing	Strategy Commitment Distribution channels Improving Product/service Strengthening capabilities in manufacturing, sales, and marketing	Professional Team – Stuffing Market research – Improving Product/service Expanding: engineering, technology platforms, sales, marketing manufacturing capabilities	Survival of firms or EXIT
Need of capital					
Low	**High**	**High**	**Very high**	**High**	**Medium**
SOURCES OF CAPITAL					
Personal Investments/ Family/ Friends	Personal Investments Business Angels Crowdfounding	Bank debt Suppliers Business Angels	New partners: Venture capital	Retained earnings New partners: Venture capital Secured long-term debt Financial Houses Factoring Leasing Common stock The resources of the public sector	Long-term debt Retained earnings REPURCHASE STOCK

Source: own study.

It has become recognized that the funding requirements for start-up is difficult to obtain, but there some rules that make Maximize the probability of start-up success.

The method of financing depends on the stage of development of start-up. So the maturity implicates the way and source of financing. The type and stage of funding must correspond with what funders are looking for. Financing can facilitate growth but it often comes at the expense of reduced equity and corporate control.

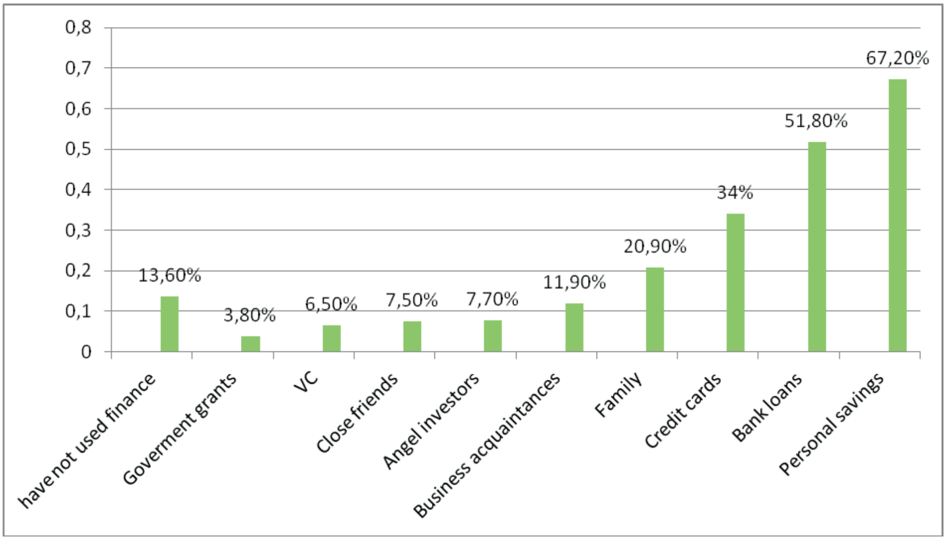

Figure 2. Sources of funding in start-up companies

Source: J. Wiens, J. Bell-Masterson, *How Entrepreneurs Access Capital and Get Funded*, 2015, http://www.kauffman.org/what-we-do/resources/entrepreneurship-policy-digest/how-entrepreneurs-access-capital-and-get-funded [accessed: 20.10.2017].

Surely, we are now entering a New Age in the world of startup finance, where clear-cut methodologies for financing startups often are ineffective. It doesn't mean that all theories are worthless. In opposite, some of them become more and more useful like Atherton is totally right saying, that equity gap is not a directly important condition of efficient functioning and development of business start-ups in the market, but bad proportions in the structure of financing start-ups are the real problem.[18]

It is a fact, failures caused by weak business model, poor product offering or a lack of vision on the part of the founders are not as common as one might imagine. A significant number of start-ups do fail because of inadequate capitalization. While most early stage businesses recognize a need for startup capital, many do not have the acumen required to secure these important resources.

System support startups

Start-ups' system support business as friendly law and tax conditions is very important for the success of such projects. In Europe they are treated as a group of actors playing a significant in the market, especially in terms of opportunities

[18] A. Atherton, *op. cit.*, p. 28.

to create new jobs. It is estimated that they guarantee 1.8 million new job openings in Europe alone. In the United States, in turn, start-ups make up the absolute majority of jobs.[19]

Table 2. Scope of the guidelines Startup Manifesto among the EU countries (in %)

Position	Country	The scope of application of the guidelines in %
1	Holland	85
2	Italy	82
3	UK	77
4	Ireland	72
5	Portugal	71
6	Belgium	71
	Germany	70
8	France	69
9	Austria	68
	Poland	68
	Romania	68
12	Spain	63
	Medium UE	60
13	Estonia	60
14	Greece	57
	Malta	57
16	Finland	56
	Sweden	56
18	Slovakia	55
19	Czech Republic	54
20	Cyprus	53
21	Denmark	53
	Slovenia	52
23	Luxemburg	48
24	Hungary	46
25	Bulgaria	45
26	Lithuania	44
	Latvia	44
28	Croatia	32

Source: Osimo and the Startup Manifesto Policy Tracker Crowdsourcing Community 2016, *op. cit.*, p. 8.

For this reason, in 2013, 9 the most prominent start-ups created 14-pages document Startup Manifesto, containing 22 rules that constitute the basis for building a friendly environment for business start-ups. The document points out the five basic pillars of effective activities of companies in this group, among them

[19] Osimo and the Startup Manifesto Policy Tracker Crowdsourcing Community 2016, https://ec.europa.eu/research/participants/documents/downloadPublic?documentIds=080166e59ec18a51&appId=PPGMS [accessed: 20.10.2017].

the skills and education, companies' access to talented people, free access to capital, the ability to share experiences, data protection and privacy, and friendly institutional environment. The program most committed to the Netherlands, right behind Italy and the United Kingdom. Poland was not bad ranking 9th place with Austria and Romania, which are presented in Table 2.

Only 12 EU countries has created a convenient legal area for startups by simplifying administrative procedures, reducing the capital requirements for setting up and financing activities and the creation of preferential taxation. The most friendly area for startups is the Netherlands, which is 100% completed postulates least Lithuania, who performed the task in only 25%. In this classification, Poland maintained its average 10th place.

Polish start-ups have a much worse starting conditions than companies from the Netherlands and Great Britain. It can cause very dangerous phenomenon of relocation beyond the Polish borders, which unfortunately takes on an even wider range. For example, it is estimated that currently 90% of companies operates as a startup type of limited liability companies, because in fact it is the only form that gives the investor the opportunity to acquire and to reduce various types of risks to which new firms are exposed in a special way. This is a key undeniable benefit related to the choice of legal form, but on the other hand, there is taxation CIT, which in Poland is currently up 19% and there is no any real tax exemptions for newly established innovative companies. This is a fundamental obstacle to building a competitive advantage. For comparison, the rate of corporate tax in Latvia and Lithuania is 15%, Ireland 12.5%. Today, companies operating in the EU must apply the rules of 28 different tax systems. Certainly, corporate taxation is a competence of Member States, but regardless of whether the EU should establish clear and renewed framework for a fair and competitive corporate tax system. Hence, the problem remains constant current alignment of taxation in the area throughout the Union.

Conclusions

There is no doubt that access to finance is of crucial importance for the ongoing and sustainable growth and profitability of firms, specialty those s of dissipative structures, always in a state of imbalance, acting in chaotic and unpredictable environment where the the most import ant rule is enormously fast growth and the effects or the lack of themare visible extraordinary fast. Their main role is creation of new products or services and nurturing the innovation process which in turn, boost national economic growth. The main motive of this paper is that start-ups significantly differ from normal – typical firms in many terms, specialty in their financial decisions and life cycle, where effects must come nearly immediately.

In the light of the recent results, it is not possible to indicate which of the leading approaches to the capital structure more fully describes the decisions of start-ups as to the financing structure. Nevertheless, the results indicate that managers of companies often include similar decisions competitors and modulate the policy of his company within the capital structure for a particular, market standard, which is confirmed by Abdulsaleh and Worthington.[20]

References

Abdulsaleh A.M., Worthington A.C., *Small and Medium-Sized Enterprises Financing: A Review of Literature*, "International Journal of Business and Management" 2013, vol. 8, No. 14.

Amidu M., *Determinants of capital structure of banks in Ghana: an empirical approach*, "Baltic Journal of Management" 2007, vol. 2(1).

Atherton A., *Extending pecking Order considerations of New venture Financing to incorporate Founder experience, knowledge and networks*, "International Small Business Journal" 2012.

Berger A.N., Udell G.F., *The economics of small business finance: the roles of private equity and debt markets in the financial growth cycle*, "Journal of Banking and Finance" 1994, vol. 22.

Chen L., Jung C., Chen S. *How the Pecking-Order Theory Explain Capital Structure*, "Journal of International Management" 2011, https://pdfs.semanticscholar.org/4778/e51d44c1adf7bb-50562c07d4bacd6d0494e5.pdf [accessed: 20.10.2017].

Cressy R., Olofsson C., *European SME financing: an overview*, "Small Business Economics" 1997, vol. 9.

Harris M., Raviv A., *The Theory of Capital Structure*, "The Journal of Finance" 1991, vol. 46, No. 1, http://ecsocman.hse.ru/data/958/126/1231/harris_raviv_-_cs_1991.pdf [accessed: 20.10.2017].

Hutchinson R.W., *The capital structure and investment decisions of the small owner-managed firm: some explanatory issues*, "Small Business Economics" 1995, vol. 7, https://www.researchgate.net/publication/5158590_The_Capital_Structure_and_Investment_Decisions_of_the_Small_Owner-Managed_Firm_Some_Exploratory_Issues [accessed: 20.10.2017].

Kraus A., Litzenberger R., *A State-Preference Model of Optimal Financial Leverage*, "Journal of Finance" 1993, vol. 28, No. 4.

Levy B., *Obstacles to developing indigenous small and medium enterprises: an empirical assessment*, "World Bank Economic Review" 1993, vol. 7(1).

MacKie-Mason J.K., *Do taxes affect corporate financing decisions?*, "The Journal of Finance" 1990, vol. 45.

Modigliani F., Miller M.H., *Corporate income taxes and the cost of capital: a correction*, "The American Economic Review" 1963, No. 53(3).

Modigliani F., Miller M.H., *The cost of capital, corporation finance and the theory of investment*, "The American Economic Review" 1958, No. 43(3).

Myers S.C., *The capital structure puzzle*, "The Journal of Finance" 1984, vol. 39(3), http://dx.doi.org/10.1111/j.1540–6261.1984.tb03646.x [accessed: 20.10.2017].

Myers S.C., Majluf N.S., *Corporate Financing and Investment Decisions When Firms Have Information Investors Do Not Have*, "Journal of Financial Economics" 1984, vol. 13, http://dx.doi.org/10.1016/0304–405X(84)90023–0 [accessed: 20.10.2017].

[20] A.M. Abdulsaleh, A.C. Worthington, *Small and Medium-Sized Enterprises Financing: A Review of Literature*, "International Journal of Business and Management" 2013, vol. 8, No. 14, pp. 36–54.

Osimo and the Startup Manifesto Policy Tracker Crowdsourcing Community 2016, https://ec.europa.eu/research/participants/documents/downloadPublic?documentIds=080166e59ec18a51&appId=PPGMS [accessed: 20.10.2017].
Pettit R., Singer R., *Small Business Finance: A Research Agenda*, "Financial Management" 1985, Autumn.
Reiss E., *The Lean Startup, Crown Business*, 2011, https://www.amazon.com/Lean-Startup-Entrepreneurs-Continuous-Innovation/dp/0307887898 [accessed: 20.10.2017].
Wiens J., Bell-Masterson J., *How Entrepreneurs Access Capital and Get Funded*, 2015, http://www.kauffman.org/what-we-do/resources/entrepreneurship-policy-digest/how-entrepreneurs-access-capital-and-get-funded [accessed: 20.10.2017].

Abstract

Effective financial management and optimal capital structure are important for companies to obtain better operational performance. The purpose of this study is the review of the most important theories in terms of optimal financial structure and to explore the most important factors affecting decisions in that area. A bad decision about the capital structure may lead to financial lack of balance and even to bankruptcy.

There are many alternative theories on how to build optimal capital structures, which, as indicated by practice, may occur to be insufficient. There is no significant studies that clearly indicate the determinants of a particular solution in the financial structure of companies, especially those referred to as startup companies, mainly because of specifics of that group of companies. It is not possible to indicate which of the leading approaches to the capital structure more fully describes the decisions of start-ups as to the financing structure. Nevertheless, the results indicate that managers of companies often include similar decisions competitors and modulate the policy of his company within the capital structure for a particular, market standard, which is confirmed by Abdulsaleh and Worthington.

Keywords: capital structure, asset specificity, information capacity, startup financing, pecking order theory

JEL classification: G32, O31