# THE DYNAMICS AND FINANCING OF STRATEGIC INVESTMENTS: AN EXAMPLE OF SLOVENIAN COMPANIES

**Vladimir Bukvič**
GEA College – Faculty of Entrepreneurship,
Slovenia
vladimir.bukvic@gea-college.si

## Abstract

The author shows how companies in the real sector of the economy carry out their investment activities, especially how they invest in long-term assets, in terms of both investment dynamics and investment financing, with an emphasis on strategic investments. In the theoretical part of the paper, the author presents certain laws that apply in the field of investment activity, addressing the issue of the intensity of the investment activity of companies over time and the issue of providing the necessary financial resources for the implementation of strategic investments. In the empirical part of the paper, on a sample of Slovenian large and medium-sized companies from the real sector of the economy, the investment activity of companies in the period 2010–2017, i.e. after the great financial crisis and economic recession, is shown. This is done through the prism of various factors and their effects on investment ability. The author puts forward several research hypotheses (6), which he fully confirms.

## Key Words

Strategic investments; investment opportunities; investment dynamics; investment financing; investment ability.

## INTRODUCTION

The term "investment" usually means investing money in the purchase of long-term assets, which are used in the business process for a long time and from which certain economic benefits are expected. Although investments can also be understood as investments in various forms of short-term assets, such as inventories, short-term securities, etc. – they are typical for the money market, and these are more or less liquidity operations – investments mainly mean investments for a longer term, upwards of one year.

We distinguish between productive investments and financial investments. The former are investments in tangible and intangible long-term assets. Tangible long-term assets are fixed assets, such as buildings, equipment, etc., while intangible assets are intangible investments, such as licenses, patents, know-how, etc. Long-term financial investments involve investing money in the purchase of various forms of long-term securities, such as shares, bonds, deposits, loans, etc.

We can shed light on investments from other angles as well. Thus, the terms "investments" and "investing," which can be found in almost all economic sectors, and of course also in the field of social activities, are closely related to the preservation, reduction or expansion of consumption. Investment plays a major role in the expansion of both personal and social consumption and in the increase or decrease in the economic growth of any national economy.

A distinction has to be made between so-called strategic and non-strategic investments. With strategic investments, such as investments in modern technological equipment, in the development of new products, etc., companies ensure their growth. With non-strategic investments, such as investments in transport equipment, storage facilities, and furniture, they support and maintain their strategic investments.

The purpose of investing is to direct current financial resources into various forms of real or financial assets to achieve expected returns in the future. Here we collide with the concept of uncertainty. The longer the period to which the investment relates, the greater the uncertainty regarding the generation of future returns. It accordingly follows that time and uncertainty are extremely important investment dimensions. We make an investment decision today, and reap its results (the expected returns) in the future. If the investment decision was not well considered enough, future consequences can be very painful for the investor, even fatal (failed investments as a result of wrong investment decisions). Therefore, when making investment decisions, information that can help form a vision about the levels of certainty of the investment's status in the future is very important.

Serious investors, i.e. companies in the real sector of the economy, various organizations in the field of social activities, individuals, "venture" capitalists (blue angels), and financial institutions such as banks, funds, etc., undertake investments in a prudent manner. This means, among other things, that before making any investment decisions they try to check and evaluate the economic benefits of the planned investment. For this purpose, they use a wide variety of investment criteria, giving preference to those that

also take into account the temporal aspect. The most widespread among dynamic investment criteria is net present value.

The purpose of investing money in various forms of assets (even money in a current account is a short-term financial asset) is to generate a return. Income generated either by the sale of real estate or a financial investment, or by unrealized capital appreciation (or depreciation), or from investment income, such as dividends or interest, or rental income, or exchange gains or losses, or from a combination of all the above, can be either a profit or a loss (negative return).

Investors generally expect higher returns from riskier investments. Risk is not the same for all investors. Different companies take different risks, i.e. have different risk appetites. Risk appetite is the amount of broad-based risk a company is willing to accept in achieving its strategic goals. Risk appetite reflects the risk management philosophy that a company's management adopts and that consequently influences its risk culture, its way of operating and decision-making (The Global Fund, 2018).

In this introductory part of the paper, we wanted to present briefly the essence of investments and investing, the types of investments, the purpose of investing, and the basic elements in making investment decisions to provide a starting point for the further presentation of our research. In the following, we only consider productive investments in the real (non-financial) sector of the economy, i.e. investments in long-term tangible fixed assets. Thus, we are primarily interested in strategic investments, their dynamics and their financing.

The purpose of this paper is to show how companies in the real (non-financial) sector of the economy carry out their investment activities, especially how they invest in long-term assets (in physical capital) both in terms of investment dynamics and in terms of investment financing, with a focus on strategic investments. In the theoretical part of the paper, we want to present certain laws that apply in the field of investment activity. We examine the question of the intensity of investment activity undertaken by companies over time and the question of providing the necessary financial resources for the implementation of strategic investments. Regarding the latter, we are also interested in the question of companies' access to long-term financial resources on the financial markets.

In the empirical part of the paper, using a sample of Slovenian large and medium-sized companies active in the real (non-financial) sector of the economy, we look at the investment activity of companies in the period 2010–2017. We do so through the prism of various factors that influenced their investment ability in terms of the exploitation of investment opportunities, the financing of investments or their creditworthiness, and their investment dynamics.

In the following, we first provide an overview of the current literature on investments. As mentioned, strategic investments are key for company growth, which is why we pay them special attention. We are particularly interested in investment dynamics over time, as it does not matter whether companies invest all at once or over time, more or less evenly at specific

time intervals. Special attention is also given to investment financing, the provision of financial resources for capital-intensive investments.

The following is an outline of the methodology used in our research. We propose six research hypotheses and briefly present the scientific methods used in the theoretical part of the study and the statistical methods used in its empirical part. We describe the sample of companies and the method of obtaining primary and secondary data. We also point out the main limitations of our research.

In the empirical part of the paper, we present the investment activity of large and medium-sized companies from our sample in the period 2010–2017. In this context, we are particularly interested in the financing of these companies' investments before and after the last financial crisis and recession. We purposely highlight their creditworthiness and their indebtedness during this time period as factors playing an important part in determining their investment ability. To this we add some of our key findings from the analysis of the companies' investment activity in the studied period, taken from the empirical part of our extensive research.

To conclude, in addition to stating the arguments why we fully accept all six research hypotheses, we provide suggestions and guidelines for further research in the field of the investment activity of companies.

## LITERATURE REVIEW

Schultes (2011) studied multiple factors that affect the performance of investments for years, and quite a few academics and other experts (Grazzi, Jacoby & Treibich, 2013; Pollack & Adler, 2014) examined similar topics, especially those that refer to investments in long-term assets (tangible and intangible), investment projects, and the measurement of their effectiveness from the point of view of the business performance of companies, which can ultimately be discerned from the long list of references provided at the end of this paper. Great interest has been shown in strategic investments, particularly their role in strategic planning and their treatment, as a key factor in company growth and progress (Weissenrieder, 1998).

### Strategic corporate investments and investments in long-term assets

Following the literature in the field of investment activity, we can define investments as expenditures intended to increase or maintain capital stock. These are only net investments, which mean a real increase in physical capital. Renewal investments or investment transfers do not increase the productive fund, unless they are technologically more advanced. The capital stock consists of durable goods that are used in the production process. While according to the statistical definition investments are everything that is not consumed, the most general definition states that an investment is any expenditure issued with the purpose of increasing income in the future (Senjur, 1995). Investment expenditures can be classified into three categories: corporate long-term investments, which are the subject of this

scientific discussion and consist of business expenditures on durable goods (equipment, buildings), housing investments, and inventory investments.

Whenever investments are analyzed at the corporate level, the first question is how much capital the companies would like to use, taking into account the given costs of and returns on the use of capital and the level of the product that is intended to be produced. So what determines the desired capital stock, i.e. the stock of capital companies would like to have in the long run? Of course, companies cannot immediately adjust their capital to the level needed in production. This requires a certain amount of time. We are talking about the level of adjustment by which companies adjust from the existing capital stock to the desired level of capital. The level of adaptation determines the level of investment. Investments therefore express the level of adaptation of the economy to the desired state (Senjur, 1995). Such micro-level adaptation is, for example, the technological modernization of production processes, such as robotization and digitization in companies. Today, we are facing the fourth industrial revolution, with cyber-physical systems, the Internet of Things (IoT), artificial intelligence, and, above all, rapidly growing production efficiency.[1]

From the point of view of value-based management, business owners are interested in which strategies create value and which do not. In this, they should be guided by business logic. Weissenrieder (1998) classifies investments into two groups: strategic and non-strategic investments. Strategic investments are those whose goal is to create new value for owners and which ensure company growth. According to Kaur & Kaur (2019), strategic investment decisions can be related to joint ventures, research and development, product and market diversification, new plant investment, new project investment, expansion investment and other capital expenditures. The authors' study has captured the effect of announcements of strategic investment decisions on market value of firm. On the other hand, non-strategic investments are those that maintain or preserve the value created by strategic investments. Strategic investments are followed by several non-strategic ones. A strategic investment can be an investment in tangible fixed assets, which is the subject of our research, or in intangible assets. It is irrelevant whether there is any investment expenditure or not. Everything that counts as a cash expense in the company is related to the creation of new value, which, according to Weissenrieder (1998), can be defined as a strategic investment.

This division of investments into two groups guided Weissenrieder (1998) in designing the measure of cash value added (CVA), which is much easier to calculate than economic value added (EVA). His CVA model is mentioned here only because it is closely related to strategic investments. With the CVA model, we can very well explain the meaning and role of strategic

---

1 Despite many new technologies, the 4th industrial revolution is most marked by the growth of robots, with Asian economies being the most robotized. While South Korea leads the world with 631 robots per 10,000 employees, Slovenia ranks 16th with 137 robots per 10,000 employees (Prašnikar, Koman & Redek, 2018).

investments, as it refers to the specific outline of such investments. Strategic investments form the capital base of the CVA model, since the financial requirements of owners (the reward for their invested funds) come precisely from entrepreneurial (investment) projects, from strategic investment decisions, but by no means from investments in office space and similar equipment. This means that we have to treat all other investments that are supposed to maintain the new value created by the strategic investments as "costs" (Weissenrieder, 1998).

Let us see below how we define and calculate the so-called capital base for the CVA model, which is based on strategic investments. The operating cash flow demand is calculated for each strategic investment (i.e. the first factor out of the four that define value). The sum of the required cash flow of each strategic investment in a company is the capital base of that company. The required cash flow from operations (i.e. the second factor out of the four that define value) also represents the same amounts in real terms that are generated by strategic investments every year. Discounting them by the appropriate cost of capital (i.e. the fourth factor of the four that define value) yields a net present value of zero for each strategic investment over its lifetime (i.e. the third factor of the four that define value). The required cash flow from operations is a real annuity adjusted for actual annual inflation. If strategic investments are to create value, cash flow from operations, which is cash flow before strategic investments but after non-strategic investments, should satisfy the required cash flow needs. We cannot predict the required cash flow, which should essentially represent the future cash flow from operations. A strategic investment creates value if the cash flow from operations over a period of time is greater than the required cash flow from operations, which, according to Weissenrieder (1998), can be imagined as follows:

+ Net sales revenue
− Costs
= Profit/Loss from operations
+/− Change in working capital
− Non-strategic investments
= Cash flow from operations
− Required cash flow from operations
= Cash Value Added (CVA)

Unlike EVA, CVA is based solely on cash flow.

**The dynamics of corporate investment**

Modern literature in the field of investment activity gives significant weight to the dynamics of investing itself. While in one period of time companies may completely give up investing, in another they may approach the implementation of relatively large investment projects (Becker, Haltiwanger, Jarmin, Klinek & Dan, 2006). Depending on investment frequency, investment activity in companies takes place in two ways. First, investments in companies take place routinely, especially when it comes to, for example, the replacement of depreciated and economically obsolete equipment while

the company follows a normal business growth trend. Every viable company must generate enough cash flow from regular operations to replace worn-out equipment, to follow the long-term growth trend in the industry, and to finance routine investments (Im, Mayer & Sussman, 2017). The remaining cash flow should be sufficient to repay debt and provide a market risk-adjusted return for the owners.

Second, from time to time companies are faced with a larger comprehensive investment project (a lumpy, non-divisible investment project), such as the construction of a new production plant, the development and installation of a new production line, or the acquisition of another company. When it comes to capital adjustment in companies, quite a few studies (Caballero, Engel & Haltiwanger, 1997; Doms & Dunne, 1998; Barnet & Sakellaris, 1998; Letterie & Pfann, 2007) have revealed that companies adjust their production factors, such as capital, in a lumpy fashion.

A group of researchers (Grazzi, Jacoby & Treibich, 2013) has claimed that companies' decisions regarding large investment projects and their temporal dimension are related to managers' expectations of future business opportunities and investment cycles. In this regard, Gourrio & Kashyap (2007) demonstrate that most changes in aggregate investments can be explained by changes in the number of companies that are in the large-scale investment phase and have so-called investment spikes. Similar to macroeconomics, where we are interested in how to interpret changes in aggregate investments and how these changes affect economic growth, we would also like to have a good understanding of heterogeneous behavior at the micro level.

Evaluating the impact of investments at the corporate level has not been a common topic of research so far, primarily due to the lack of relevant data. Only in the last 20 years have some researchers begun to deal with the nature of the investment behavior of economic entities. One of the first among such experiments was conducted by Doms & Dunne (1998), who used data on American companies. Afterward, other researchers conducted similar studies in France (Duhautois & Jamet, 2001), Norway (Nilsen & Shantarelli, 2003; Nilsen, Raknerud, Rybalka & Skjerpen, 2009), and Sweden (Carlson & Laseen, 2005). Their common conclusion was the uneven or lumpy nature of business investments: there were years without investments or, conversely, investment maintenance was followed by years of extensive investments. Carlsson & Laseen (2005) showed that non-convex cost adjustment models offer a more appropriate explanation of investment decisions and reject those that assume a uniform pattern of capital accumulation. The aforementioned lumpy nature of investments at the corporate level can be explained in general as a consequence of investment irreversibility, which originates from the characteristic nature of the purchase of capital and the indivisibility of physical capital (Grazzi, Jacoby & Treibich, 2013).

In the literature, lumpy investment is defined as an investment-to-capital ratio that surpasses a certain threshold, called the investment spike, which is typically set at 20% (Cooper, Haltiwanger & Power, 1999). Nilsen et al.

(2009) define the relative threshold as the conditional expectation of the investment rate, multiplied by a fixed factor that reduces the relative threshold of large firms. The absolute threshold does not allow the threshold for the investment spike to be less than 20%.

Here it is necessary to take into account that such ratios above 20% are quite common among small companies and that the variance of the ratio between investment and capital decreases significantly with the size of the company. The threshold as an investment spike thus decreases as the size of the company increases.

Sometimes companies refuse to invest, while at other times they are caught up in a real wave of investment. Caballero (1999) argues that taking into account this lumpiness of investments is critical, as it has an impact on the formation of the dynamic behavior of aggregate investments. Gourio & Kashyap (2007) confirmed this thesis with their research on the case of American and Chilean companies. The waves of investment were called investment spikes. According to them, most of the changes in investment levels are due to changes in the investment of companies that had investment spikes. This can be explained by changes in the number of companies that made large investments (extensive limit), but not by changes in the average size of the investment spikes (intensive limit). The aforementioned authors found that the prevalence of investment spikes in a particular year makes it possible to predict aggregate investments in the following year. Years with a relatively greater number of investment spikes are followed by years with less investment (Gourio & Kashyap, 2007). In their research, the authors relied on the model proposed by Thomas (2002), which assumes that companies must pay a certain fixed cost to adjust their capital. However, this model does not foresee the dominant role of investment spikes and the extensive limit of investments. The average level of fixed costs is too low, as is the curvature of the profit function.

In theory, attempts have been made to define the investment spike in several ways (Power, 1994, 1998; Cooper et al., 1999; Nilsen et al., 2009). If the investment rate, which is measured by the ratio between total investments and total assets and the ratio between fixed investments and fixed capital, exceeds the absolute threshold, the investment is defined as an investment spike. The most commonly used threshold is, as already mentioned, 20% (Cooper, Haltiwanger & Power, 1999).

## The financing of more demanding corporate investments

Based on a thorough review of the literature dealing with the financing of corporate investments, we have outlined certain theories and laws that apply in this area. In companies, the regime of financing their business changes over time, when financial resources become limited. That time presents an excellent opportunity for studying various financial patterns. Thus, under normal conditions, companies can maintain their capital adequacy when they invest a lot, take on heavy debt, and pay off said debt after the investment spike (Im, Mayer & Sussman, 2017).

Relatively large investment projects require diverse financial resources. If there are not enough internal resources in the company, the company must find external resources if it is to implement its investment. Grazzi et al. (2013) discern two possible methods related to the external financing of investments. First, the investment activity of a company must be limited if the company has financial constraints, which is also advocated by Schintarelli (1996), Andretsch & Elston (2002), and Whited (2006). This means that the investment desires of the company are very limited, or they simply do not exist due to poor or completely closed access to external financial resources. Second, to the extent that investment affects the growth of a company, financial constraints will preclude the possibility of taking advantage of growth opportunities.2 In this case, limited access to external financial resources, resulting in insufficient investment, will limit the growth of the company. Oliveira & Fortunato (2006), Whited (2006), Angelini & Generale (2008), and Bottazzi, Secchi & Tamagni (2014) also prove this in their research.

The investment activity of companies is strongly influenced by the macroeconomic policy environment. According to Aktar, Abedin & Gupta (2021), monetary policy is one of the important macroeconomic variables that influence a company's investment decisions. In theory, it is well known that investment is one of the key channels of monetary transmission in a series of standard macro models. Nevertheless, there is still relatively little evidence on how monetary policy affects company investment and which types of companies are most likely to be most responsive to changes in monetary policy with different financial heterogeneities.

It has been found (Aktar, Abedin & Gupta, 2021) that both lower leveraged and higher cash holding companies tend to experience higher capital during a cash shock, implying that low leveraged and cash holding companies are more responsive to monetary policy shocks. Cash holdings play a more important role in explaining the different investment responses of companies to monetary policy shocks than leverage, strengthening the company's investments and increasing the efficiency level of the company's investments in times of contractionary monetary policy. This fact prompts the need to study the asset management and liquidity of companies in addition to their financing methods. Another important finding of the above-mentioned authors is that cash has a greater impact on the level of corporate investment than one period of leverage lag. In any case, the liquid assets of companies play a key role in their ability to finance investments, which should not be considered as a marginal source of financing at any time. Therefore, highly leveraged companies should pay more attention to monetary authorities.

The question of how a company should meet its extraordinary financial needs for unusually large investment opportunities has become the subject of study of many authors (DeAngelo, DeAngelo & Whited, 2011; Elsas, Flannery & Garfinkel, 2014). DeAngelo, DeAngelo & Whited advocate a

---

2 In their paper, Rebernik et al. (2018) show the growth of entrepreneurial opportunities in Slovenia in 2017.

dynamic capital structure model, which means that companies can deliberately and temporarily move away from the permanent target leverage in the event that they temporarily take on debt to finance their investment spikes. The model of the mentioned authors better explains decisions related to borrowing and deleveraging than the static trade-off model and explains well the changes in financial leverage that accompany investment spikes. In their model, companies have a target leverage similar to the exchange model, and managers can make decisions from time to time that represent a departure from the target leverage. Such a strategy calls for the restoration of the financial balance by deleveraging with a certain delay, conditioned by the temporal dimension of investment opportunities and profit generation. Their model provides a plausible explanation of capital structure decision-making from several perspectives: first, it accounts for why companies often choose to move away from the target leverage, and second, it explains why empirical studies point to a slowness in re-establishing the target leverage. This can also be linked to financial flexibility (Bukvič, 2016).

We can conclude that the financing of investment spikes is quite different from the financing of routine investments. While retained earnings, viewed in aggregate, are by far the largest source of financing for corporate investment, they are not the primary form of financing spike investment. During investment spikes, external financing dominates, with debt as its largest source. The share of investments financed with long-term debt is much higher than the share of investments financed with equity capital. These findings are generalizable and consistent across industries. In contrast, there are noticeable differences in financial patterns over time and between companies. Investment spikes are more prevalent during economic booms than during recessions.3 Equity financing is more widespread in boom times than in times of stagnation and recession. The biggest differences are certainly between large and small companies. Investment spikes that include acquisitions (purchases of companies) are larger than those that involve only capital expenditures (capex) and are financed by companies predominantly with debt rather than with equity capital. This applies even to small companies, which, as already mentioned, use more equity than debt financing (Im, Mayer & Sussman, 2017).

## RESEARCH METHODOLOGY

In the course of our research, we set the following research hypotheses:
**H1:** Strategic investments are the only ones that ensure the organic growth of companies.
**H2:** Companies' investment decisions and investment dynamics are related to expectations about future business (investment) opportunities and investment cycles.

---

3 The share of companies with investment spikes was noticeably lower immediately after the financial crisis of 2008–2009 (Im, Mayer & Sussman, 2017).

**H3:** There are relatively many companies that are unable to take advantage of business (investment) opportunities.

**H4:** Financial patterns during investment spikes differ from patterns outside of this period.

**H5:** External sources of financing, especially debt, are more important for financing business investments than equity financing, especially when investment expenditures are relatively high.

**H6:** There is a strong relationship between the type of creditworthiness of the company and the level of indebtedness of the company.

In the theoretical part of the study, we used the scientific method of description, as well as the scientific methods of classification, comparison, analysis, and synthesis.

In the empirical part of the study, we used statistical methods and processed the data using the SPSS statistical package. The data were captured at a single point in time (cross-sectional data). This method is suitable for the type of research whose goal is to find connections between specific phenomena or factors (Churchill, 1995). Since our purpose was also to check the connection and influences between investments and the efficiency and effectiveness of business operations, in this case a survey of data referring to the same point in time is more suitable than a survey of data collected sequentially over time (longitudinal data). Another important reason for this choice of research method was the fact that it had been used in the majority of research in the studied field, especially as concerns the influence of the dynamics and volume of investments on the performance of business operations, so the results of our study can be compared to a certain extent with the results of others.

The primary data were collected in the period January–April 2017 by means of the questionnaire being distributed to 1142 Slovenian large and medium-sized enterprises, sorted from A to J according to the Standard Classification of Activities (SKD) 2008, V2. The segmentation into large and medium-sized companies was based on the Slovenian Companies Act (Paragraph 55, ZGD-1-NPB14). In total, 293 questionnaires were completed (of which 91.14% were useable). Thus, we have received 267 valid questionnaires (respondent rate 23.40%). The sample consists of large companies (29.21%) and medium-sized companies (70.79%). Companies from all Slovenian statistical regions (12) were included in the sample.[4] In terms of their legal and organizational status, the majority of the companies in the sample were limited liability companies (74.54 %) and stock companies (21.35 %). Almost 72% of the companies in the sample fall in the age span between 11 and 30 years, which means that the majority of the companies in our sample are mature from the perspective of their life cycle. The questionnaire was designed according to the relevant guidelines (Churchill, 1995; Fowler, 2002; Malhotra & Birks, 2007). The questionnaire consisted of two sections. The first section consisted of key questions inquiring about the opinions of respondents (mainly financial managers and

---

[4] Deviations of the sample data from the total population of Slovenian companies were negligible, which was verified by the Mann-Whitney U Test and the Related-Samples Willcoxon Signed Ranked Test.

CEOs) about investment ability and its impact on business performance, about financial flexibility and how they perceive it, about investment dynamics and investment financing, and about the HR capabilities in their companies. These questions were used to measure the indicators representing the constructs in our research model. The second section of the questionnaire gathered general data on the respondents, such as their position in the company, age, etc., as well as on their companies, for example the company's year of incorporation, size, average number of employees, technical staff, etc. The first draft of the questionnaire was pilot tested on a convenience sample of 20 financial managers and CEOs. The final version was designed with minor amendments.

The financial data of the companies who sent back the questionnaires were acquired for the period 2010–2017 from the GVIN database, generated from the annual reports of the companies.

The research refers to the period from 2010 to 2017 inclusive, and to a lesser extent to the longer period from 2000 to 2017 inclusive (for a comparison between the increase in tangible fixed assets and select financial categories). The data is covered on an annual basis for each individual year during this period.

At this point, we should mention the limitations we encountered in our research, which relate mainly to the empirical part of the study. The first limitation is the size of our sample, since we looked only at Slovenian companies. If the study had been set internationally, it would have included a larger number of larger companies, where the influence of strategic investments is more pronounced. The relevant literature led us to assume the direction of causality in our conceptual model (the economic effects of investments and their impact on the business performance of companies). Our research is based on cross-sectional data, which prevented us from determining causality. The direction of causality could only be determined through a longitudinal study, which represents one of the opportunities for further research. The next limitation relates to the size of our companies, which are relatively small compared to foreign competitors. That is why the average size of their investments, their investment spikes, is smaller compared to foreign companies. This applies to an even greater degree to medium-sized companies, which were also included in our research sample. The third limitation is related to the possible influence of subjectivity, since as a rule only one person responded to the questionnaire (usually a financial officer, in individual cases also a company director or other managerial staff).

## FINDINGS RELATING TO FINANCING OF INVESTMENT ACTIVITY FOR SLOVENIAN COMPANIES IN THE PERIOD 2010-2017

### Financing of investments by Slovenian companies before and after the last financial crisis and recession

The first decade of this century, with the exception of its last couple of years, was a period of economic growth, which was greater and faster in South-

East Europe, including Slovenia, than in Central Europe. This growth was based on large investments, which companies financed mainly through borrowing (Hunya, 2009). In the period before the last financial crisis and economic recession, Slovenian companies mainly financed their growth and larger investments in tangible fixed assets with borrowed resources, which culminated in high financial leverage and completely destroyed the ratio between net financial debt and the EBITDA required by the banks (2.5). This was the reason why during the aforementioned crisis investments stopped and companies were forced to deleverage afterward.

In the period before the last global financial and economic crisis, the relatively large supply of loan funds with low prices and long maturities drove credit growth directly and especially through banks, so it exceeded 30% annually in 2007 (Bradeško, 2016). The companies directed the borrowed funds to their core business, the expansion of production abroad, and to various takeover activities and real estate projects (Prašnikar, Domadenik & Koman, 2015).

After the global crisis, a discussion began in the academic sphere about how to stimulate economic growth and economic recovery. In the context of our research, this question is somewhat relevant, as it deals with the dynamics of investing in the period after the global crisis, from 2010 onwards. Considering that the crisis started in the financial sector and hit it very hard, one would expect (conventional assumption) that the rehabilitation of the financial sector would be a condition for the rehabilitation of the corporate sector. Although such an assumption seems reasonable, and many researchers around the world have examined it, the recovery of the real sector started before the recovery of the financial sector (Calvo, Izquierdo & Talvi, 2006; Claessens, Kose & Terrones, 2009; Abiad, Dell'Ariccia & Li, 2011). According to Calvo et al. (2006), declines in GDP are associated with sharp declines in the liquidity of a country's financial sector. These creditless recoveries were called the "phoenix miracle." The point is that while credit goes down along with revenue, revenue goes up without credit going up as well. The recovery of the corporate sector should accordingly take place without a renewed increase in credit, i.e. without renewed borrowing.

Based on a survey of CFOs, Campello, Graham, Giambona & Harvey (2011) found that credit lines are an important source of financing current operations in times of crisis, and that companies look for substitutes among credit lines and the internal resources of the company when there is a lack of credit. They found that when companies have limited access to credit lines during a crisis, they make a choice between saving and investing, but still want access to credit lines. Companies that have more financial resources also invest more. Almeida, Campello & Hackbarth (2011) found that companies that had a large proportion of their long-term loans due right at the time of the crisis recorded a significant drop in their investments, i.e. they invested much less.

To sum up, after the financial crisis, companies were expected to recover before the financial sector, i.e. independently of the recovery of banks and other financial institutions, which is called the phoenix miracle according to Calvo et al. (2006). However, in their investigation of different corporate

recovery patterns in both developed and developing markets, a group of researchers led by Ayyagari (2001) found that only a small proportion of companies (less than 31%) followed this pattern. Most companies continued their investments and had a positive cash flow from operations.

Based on a study by Bradeško (2016), our sample companies are among those characterized by the phoenix miracle phenomenon. In his research, the author covered the period from 2013 to 2015, i.e. the period after the last major financial crisis and recession, in which a pattern of creditless economic growth can be observed. Aggregate non-credit growth was generated by less than half of the companies that increased turnover and added value when credit was shrinking. The decomposition of cash flows shows that companies mostly deleveraged by reducing short-term bank loans, and the source of deleveraging was the growing positive cash flow from operations. All other items of the cash flow were negative, so that despite the reduction of debt to banks, companies still invested in net fixed assets (even to an increased extent), made financial investments, paid out net payments to owners, reduced their debts to other companies, and increased the balance of money on their accounts (Bradeško, 2016, p. 74). We will return to this question in the empirical part of this study.

**The creditworthiness of companies and their indebtedness as an important factor of investment ability**

A company's credit rating is crucial for its investment activity and investment ability. This is particularly important from the point of view of obtaining foreign sources of financing, especially bank credits. This particular segment of the empirical part of the study is sensibly linked to its previously published theoretical part (Bukvič, 2023), in which, within the framework of internal and external factors that influence a company's investment ability, we described in detail the role of financial constraints in defining investments and presented the connection between the company's net worth and capital (Hubbard, 1998). It is also linked to the theoretical part (Bukvič, 2023) that describes the effects on the investment ability of companies caused by restrictions on various types of capital, where we presented in detail the credit model developed by Holmstrom & Tirole (1997). Finally, it refers to the previously elaborated theoretical consideration (Bukvič, 2023) where, in the context of the financing of business investments, we learned about two possible methods related to the external financing of investments (Grazzi, Jacoby & Treibich, 2013), i.e. the limitation of investment activity due to financial constraints of the company and financial constraints to a certain extent excluding the possibility of taking advantage of growth opportunities. According to Fazzari, Hubbard & Petersen (1988), Kaplan & Zingales (1997), Dasgupta, Noet & Wang (2011), Gatchev, Pulvin & Tarhan (2010), Ostergaard, Sasson & Sørensen (2011), and Drobetz, Haller, Meier & Tarhan (2014), limitations arise from market irregularities, especially information asymmetry and improper choice, which depend on the creditworthiness of the company. It is precisely because of these limitations that companies cannot hire external financial sources to finance investments

that would be justified from the point of view of net present value. Therefore, they can finance investments only with their own resources. The volatility of own funds is therefore reflected in the volatility of investments, and the elasticity of investments with regard to cash flow from operations increases. On the other hand, good companies are not limited in terms of financing, their investments are independent of short-term fluctuations in business performance, and the relevant elasticity is zero or very low (Bradeško, 2016). According to Bradeško (2016), the analysis of responses to the cash flow impulse from operations does not support his hypothesis of the existence of a credit constraint, i.e. that banks and other financiers will systematically avoid solvent companies with slightly worse credit ratings. The responsiveness of investments as a measure of restrictions decreases monotonously with increasing indebtedness. Fazzari et al. (1988), however, predicted the opposite. When cash flow from operations improves, companies with limited access to financing and good investment opportunities spend it on investments.

In addition to the qualitative data (classification into credit ratings), which are shown for the last year of the studied period (2017) on the basis of the surveyed companies (their financial officers) in Table 1, we followed the example of some other authors (Bradeško, 2016), using, as an approximation of the credit rating for the same companies, the ratio between NFD/EBITDA (NFD meaning "net financial debt"), calculated on the basis of data obtained from the AJPES database for all years in the studied period. We did not use other criteria for the credit rating of companies, such as the amount of dividends paid out, as these criteria are rougher, less universal, or simply not available. The NFD/EBITDA indicator reflects a company's current ability to generate cash flow to repay debts well, which was also confirmed by other authors who used it (Bradeško, 2016). The indicator is not least suitable for the behavior of investors in cases of takeovers, especially during crisis periods. Bradeško (2016) warns that due to the weak theoretical basis and some other reasons, the results of his model should be interpreted with caution. Companies in crisis lowered their borrowing levels for their own reasons. We cannot overlook the consequences of pressure from buyers and suppliers, which increased the risk of insolvency of business partners. In such a situation, the greater part of the cash flow is dedicated to reducing indebtedness. As a result, the sensitivity of investments to cash flow from operations is lower than is usually the case. In Table 1, we provide the credit ratings of the companies in the research sample.

**Table 1:** Credit ratings of companies in the sample

| Creditworthiness | Count | % |
|---|---|---|
| **Class A:** companies for which the banks do not anticipate problems with paying their obligations | 215 | 80,52 |
| **Class B:** companies that have a temporarily weak financial situation, but do not show that it will significantly deteriorate in the future and do not repeatedly pay their obligations late | 40 | 14,98 |
| **Class C:** companies that do not have sufficient long-term sources of funds to finance investments and from whom the bank does not receive | 6 | 2,25 |

| | | |
|---|---|---|
| ongoing satisfactory information or appropriate documentation regarding borrowing | | |
| **Class E:** companies judged to be insolvent; with this, they determine their "expected" solvency, and based on this assessment, they manage their credit policy | 2 | 0,75 |
| **Unknown** | 4 | 1,50 |
| **Total** | **267** | **100** |

At this point, talking about the indebtedness of companies, we should highlight another aspect of the issue: the problem of indebted companies with late payments. Prašnikar, Pahor & Cirman (2014) concluded that those Slovenian companies that are in greater debt are also more likely to be late with their payments. Commercial banks that monitor the operations of their clients pay particular attention to those companies that have been late in repaying their debts in the past. Thus, they lowered their credit rating and restricted them from further borrowing (Prašnikar, Bole, Ahčan & Koman, 2003). As a result, companies that have a lack of financial resources and are relatively deep in debt try to solve their liquidity problems also by postponing payments to their suppliers. Thus, in addition to high financial obligations, they also have high obligations from operations.

In order to investigate in greater detail, on a selected sample of large and medium-sized companies, how the NFD/EBITDA ratio is reflected in a company's ability to generate cash flow for debt repayment, and at the same time indirectly indicates the company's investment ability, we divided all the companies in the sample into three segments according to indebtedness. For the period from 2013 to 2015, Bradeško (2016) found that the share of cash flow that companies used for deleveraging increased with the level of indebtedness. To a lesser extent, the share retained by the companies in monetary form also decreased at the same time. Into the first segment, we classified companies with an NFD/EBITDA ratio less than or equal to 2 (<= 2). There were 109 (40.8%) such companies at the beginning of the studied period (2010), and 164 (61.4%) at the end of the studied period (2017). These companies were able to repay their financial debts within two years, so banks and other financiers were ready to grant them new loans. In fact, we also included in the first segment all those companies that were net creditors, with a negative net debt. These are companies whose balance of cash and cash equivalents on the balance sheet date exceeded the balance of financial liabilities. There were 42 (15.7%) such companies in 2010, and 77 (28.8%) in 2017. Into the second segment, we classified companies with a debt of 2 to 5 times the EBITDA; there were 72 (27.0%) such companies in 2010, and 65 (24.3%) in 2017. The third segment included heavily indebted companies with an NFD/EBITDA ratio greater than 5. There were 71 (26.6%) such companies in 2010, and 37 (13.9%) in 2017. We excluded from the analysis those companies that had a negative EBITDA, meaning companies with a negative cash flow from operations. In our sample, there were 13 (4.9%) such companies in 2010, and 6 (2.2%) in 2017.

For the last year of the studied period (2017), we also performed a chi-square test. For this purpose, we created two categories for each variable:

for creditworthiness "good creditworthiness" and "bad creditworthiness," and for indebtedness "adequate indebtedness" and "inadequate indebtedness." The results are shown in Table 2.

Pearson's chi-square test, χ2, checks if there is a relationship between two categorical variables, in our case between the type of creditworthiness of the company and the company's level of indebtedness. With the crosstabs process, we get a contingency table of the results of the chi-square test and its characteristic, the significance value. Pearson's chi-square test checks whether the two studied variables are independent. If the significance value is small enough (conventionally less than 0.05), the hypothesis that the two variables are independent is rejected and confidence in the hypothesis that the studied variables are related in some way is gained (Field, 2013). The value of the chi-square statistic is given in Table 2 along with the degrees of freedom and the significance value. The value of the chi-square statistic is 42.341, which is within the rounding error. This value is highly significant (p < 0.001), indicating that the type of credit rating of a company has a significant effect on whether a company's leverage is adequate or not, or, vice versa, indicating that a company's level of leverage has a significant effect on whether the credit rating is good or bad.

The highly characteristic result shows that there is a relationship between the type of credit rating and the level of leverage, regardless of whether the latter is adequate or inadequate. In other words, there is a significant difference in the response pattern (i.e. the proportion of companies with good credit versus the proportion of companies with poor credit) in the case of two levels of indebtedness. On the example of the z-test, we saw that companies with a good credit rating are significantly less indebted, whereas companies with a bad credit rating are significantly more indebted. This important finding can be expressed in percentage terms as follows: more than 60% of companies with good credit ratings (A and B) are adequately leveraged and more than 85% of companies with bad credit ratings (C, D, and E) are inadequately leveraged.

**Table 2:** The relationship between a company's creditworthiness and its indebtedness, measured by the NFD/EBITDA ratio

| Contingency table for the relationship Creditworthiness * Indebtedness |
| --- |

|  |  |  | Indebtedness | | Total |
|---|---|---|---|---|---|
|  |  |  | Inadequate | Adequate |  |
| Creditworthiness | Good | Count | 68a | 149b | 217 |
|  |  | Expected Cunt | 87.3 | 129.7 | 217.0 |
|  |  | % within Creditworthiness | 31.3% | 68.7% | 100.0% |
|  |  | % within Indebtedness | 64.8% | 95.5% | 83.1% |
|  |  | % of total | 26.1% | 57.1% | 83.1% |
|  |  | Standardized Residual | -2.1 | 1.7 |  |
|  | Bad | Count | 37a | 7b | 44 |
|  |  | Expected Count | 17.7 | 26.3 | 44.0 |
|  |  | % within Creditworthiness | 84.1% | 15.9% | 100.0% |
|  |  | % within Indebtedness | 35.2% | 4.5% | 16.9% |
|  |  | % of total | 14.2% | 2.7% | 16.9% |
|  |  | Standardized Residual | 4.6 | -3.8 |  |
| Total |  | Count | 105 | 156 | 261 |
|  |  | Expected Count | 105.0 | 156,0 | 261.0 |
|  |  | % within Creditworthiness | 40.2% | 59.8% | 100.0% |
|  |  | % within Indebtedness | 100.0% | 100.0% | 100.0% |
|  |  | % of total | 40.2% | 59.8% | 100.0% |

Each subscript letter denotes a subset of the Indebtedness categories whose column proportions do not differ significantly from each other at the p = 0.05 level.

### Chi-square Tests

|  | Value | df | Asymptotic significance (2-sided) | Exact significance (2-sided) | Exact significance (1-sided) |
|---|---|---|---|---|---|
| Pearson's Chi-Square | 42.341a | 1 | .000 | .000 | .000 |
| Continuity Correctionb | 40.175 | 1 | .000 |  |  |
| Likelihood Ratio | 43.388 | 1 | .000 | .000 | .000 |
| Fisher's Exact Test |  |  |  | .000 | .000 |
| N of Valid Cases | 261 |  |  |  |  |

a. 0 cells (0.0%) have an expected count of less than 5. The minimum expected count is 17.70.

b. Computed only for a 2x2 table.

We can conclude that the level of indebtedness of a company has a significant impact on its creditworthiness: the creditworthiness of a company is good if the company is adequately (i.e. less) indebted. We calculated the correlation between these two types of data, which are shown in Table 3.

**Table 3:** Number of companies in terms of creditworthiness and indebtedness measured

| NFD/EBITDA | Creditworthiness | | | | | |
|---|---|---|---|---|---|---|
| | A | B | C | E | Unknown | Total |
| ≤ 2 | 151 | 10 | 1 | | 2 | 164 |
| > 2 and ≤ 5 | 47 | 13 | 2 | 2 | 1 | 65 |
| > 5 | 16 | 17 | 3 | | 1 | 37 |
| n/a | 1 | | | | | 1 |
| Total | 215 | 40 | 6 | 2 | 4 | 267 |

Source: AJPES database for 2017.

For example, it can be seen from Table 3 that in 2017 there were 151 companies to which the surveyed financial officers in the companies assigned a credit rating of A (indicating that this is how their parent banks should treat them), and according to AJPES data these companies had a calculated NFD/EBITDA ratio less than or equal to 2. Such a result is logical. It is also logical that a company with an E rating is placed in the class with the highest NFD/EBIDTA ratio, so it is highly indebted. However, it is not logical, for example, that 16 companies have a credit rating of A and are at the same time highly indebted, or that a company has a credit rating of C while featuring in the first class, with a low level of indebtedness. For four companies in the returned survey questionnaires, it was not indicated what kind of credit rating they have with their parent bank.

We calculated the rank correlation, or Spearman's correlation coefficient, r. We assigned the appropriate rank to both types of data, rating A as the highest rank, i.e. 5, and E as the lowest, i.e. 1. To the least indebted companies, i.e. companies with an NFD/EBITDA ratio of less than 2, we assigned rank 3, to medium-indebted companies rank 2, and to the most indebted companies rank 1. The results are shown in Table 4.

Table 4 shows that the correlation coefficient between the studied variables, i.e. the creditworthiness of the company and the ratio between NFD and EBITDA, is r = 0.437. Under the correlation coefficient, the significance value of the correlation and the sample size (N = 261) are written. As mentioned, 6 companies were excluded from the sample population because they had negative EBITDA. The significance of the correlation value is less than 0.001 (as indicated by the double asterisk after the correlation coefficient). This significance of the value indicates that the probability of obtaining such a large correlation coefficient in the sample of 261 companies, if the null hypothesis (that there is no relationship between these two variables) were valid, is very small, in fact very close to zero. All significance values are below the standard criterion of 0.05, indicating a

"statistically significant" relationship between the variables. Given the lack of normality in some variables, we should be more concerned about the bootstrapping method or confidence intervals than the significance itself (Field, 2013). This is because this interval will not be affected by the distribution of scores, while only the significance of the value can be. The confidence interval is marked in Table 4 with "BCa 95% Confidence Interval" and two values are given for it: the lower and upper limits, i.e. 0.332 and 0.539.

Let us highlight two important points. First, since the confidence limits are derived empirically from a random sampling procedure (or bootstrapping), the results will differ very little when we repeat the analysis. Therefore, the confidence limits will not always be the same, which is normal (Field, 2013). Second, let us consider what it means if the correlation between the studied variables is zero, i.e. if there is no effect. A confidence interval is the range within which the population value lies (within 95% of the samples). If this interval exceeds zero, it means that the population value could be zero, i.e. without any effect. If the interval exceeds zero, it furthermore means that the population value could be a negative number (a negative relationship between the variables) or a positive number (a positive relationship between the variables), making it impossible to say whether the actual relationship between the variables proceeds in one direction or a completely different one. In our case, the confidence interval for the correlation coefficient does not exceed zero, so we can trust (be sure) that there is a true, real effect in the population. This means that if the company has a high credit rating, say A or at least B, it is not heavily indebted, or the ratio between NFD and EBITDA is low. Note that we assigned a rank to both variables: both a high credit rating and a low ratio between NFD and EBITDA received high ranks. Both types of rank values are increasing, so the correlation coefficient is positive, which means that an increase in creditworthiness often occurs simultaneously with a decrease in the NFD/EBITDA ratio and vice versa.

**Table 4:** Calculation of rank correlation, or Spearman's correlation coefficient, for two variables of the company's creditworthiness and the *NFD/EBITDA ratio*

Correlations

| | | | | | Creditworthiness | NFD/EBITDA |
|---|---|---|---|---|---|---|
| Spearman's rho | Creditworthiness | Correlation Coefficient | | | 1.000 | 0.437** |
| | | Sig. (2-tailed) | | | . | 0.000 |
| | | N | | | 261 | 261 |
| | | Bootstrap[b] | Bias | | .000 | .000 |
| | | | Std. Error | | .000 | .055 |
| | | | BCa 95% Confidence interval | Lower | 1.000 | .055 |
| | | | | Upper | 1.000 | .539 |
| | NFD/EBITDA | Correlation Coefficient | | | .437** | 1.000 |
| | | Sig. (2-tailed) | | | .000 | |
| | | N | | | 261 | 261 |
| | | Bootstrap[b] | Bias | | .000 | 0.000 |
| | | | Std. Error | | .055 | 0.000 |
| | | | BCa 95% Confidence interval | Lower | .332 | 1.000 |
| | | | | Upper | .539 | 1.000 |
| **. Correlation is significant at the p = 0.01 level (2-tailed). | | | | | | |
| b. Unless otherwise noted, bootstrap results are based on 1000 bootstrap samples. | | | | | | |

In the empirical part of the study, we also took into account the longitudinal aspect, since for some indicators we were interested in how the NFD/EBITDA ratio changed in the eight-year period under study and whether anything improved. Unfortunately, we did not have the credit ratings for these companies at our disposal, as we obtained data for the last year of the studied period on the basis of a survey questionnaire. Table 5 shows the distribution of companies in the sample according to their indebtedness, measured by the NFD/EBITDA ratio, at the beginning and end of the studied period.

**Table 5:** Distribution of companies by indebtedness at the beginning and end of the studied period 2010–2017

| Value of indicator NFD/EBITDA | 2010 | | 2017 | | Index |
|---|---|---|---|---|---|
| | Count | % | Count | % | 2017/2010 |
| ≤ 2 | 109 | 40.82 | 164 | 61.42 | 150 |
| of which net creditors (< 0) | 42 | 38.53 | 77 | 46.95 | 183 |
| > 2 and ≤ 5 | 72 | 26.97 | 65 | 24.34 | 90 |
| >5 | 71 | 26.59 | 37 | 13.86 | 52 |
| n/a | 15 | 5.62 | 1 | 0.37 | 7 |
| **Total** | **267** | **100** | **267** | **100** | |
| Average value NFD/EBITDA | 7 | | 1.92 | | 3.65-times |
| Weighted average value NFD/EBITDA5 | 1.94 | | 1.2 | | 1.62-times |

*Source:* AJPES database for the period 2010 to 2017.

## DISCUSSION RELATING TO THE ANALYSIS OF THE INVESTMENT ACTIVITY OF SLOVENIAN COMPANIES IN THE STUDIED PERIOD 2010-2017

In the following, we summarize some of the key findings from the extensive empirical research we conducted regarding the investment activity of Slovenian companies in the period 2010–2017.

### Utilization of business/investment opportunities

Table 6 shows how companies took advantage of those business opportunities on the market that required certain investments.

**Table 6:** Utilization of business opportunities in the market related to investments

| Utilization | Large | | Medium-sized | | Total | |
|---|---|---|---|---|---|---|
| | *Count* | *%* | *Count* | *%* | *Count* | *%* |
| Partly | 37 | 47.44 | 102 | 53.96 | 139 | 52.06 |
| Fully | 39 | 50.00 | 82 | 43.39 | 121 | 45.32 |
| No | 2 | 2.56 | 4 | 2.12 | 6 | 2.25 |
| Unknown | | | 1 | 0.53 | 1 | 0.37 |
| *Total* | *78* | *100* | *189* | *100* | *267* | *100* |

Table 7 shows the reasons why companies did not take advantage or only partially took advantage of those business opportunities on the market that required certain investments.

Covering an eight-year period, the present research also examines the last two years of the great financial and economic crisis, i.e. 2010 and 2011. Therefore, it is understandable that almost 15% of the sample companies responded that their company was forced to deleverage primarily due to borrowed credits in the past, which meant that the companies did not use or

---

5 As weights, we took into account the shares of net sales revenue for an individual company in the sum of the total sales of sample companies, specifically for the years 2010 and 2017.

only partially used those business opportunities on the market that required certain investments.

**Table 7:** Reasons for lost business opportunities in the market related to investments

| Reason | Count | % |
|---|---|---|
| Our company did not have enough of its own financial resources for the necessary investments. | 72 | 22.72 |
| Our company was forced to pay off debt primarily due to loans taken out in the past. | 47 | 14.84 |
| The investments were too demanding in terms of value. | 27 | 8.52 |
| No strategic guidelines were adopted for the necessary investments (the investments were not part of the strategic plan of our company). | 26 | 8.2 |
| Our company was unable to obtain debt (borrowed financial resources) for the necessary investments. | 26 | 8.2 |
| The owners (via the supervisory board) did not approve the investment programs or business plans. | 20 | 6.31 |
| In our company, we were not yet ready to realize the necessary investments (in the sense of preparing the necessary project documentation and obtaining the relevant permits and consents). | 17 | 5.36 |
| Other. | 17 | 5.36 |
| During this time, there were major organizational changes in our company. | 15 | 4.73 |
| Our company did not have enough personnel (lack of qualified physical labour). | 12 | 3.79 |
| Our company did not have enough human resources (lack of technical knowledge). | 10 | 3.15 |
| Our company failed to acquire new customers for products/services from newly planned investments. | 10 | 3.15 |
| Our company failed to get new orders from existing customers. | 8 | 2.52 |
| The investments were too demanding from the technological point of view. | 8 | 2.52 |
| Our company has been overtaken by the competition in terms of investments. | 2 | 0.63 |
| **Total** | **317** | **100** |

Almost 23% of the companies included in the sample answered that their company did not have enough of its own financial resources for the necessary investments, and more than 8% of the companies said that their companies failed to obtain debt (borrowed financial resources) for the necessary investments. As a result, it can be concluded that during this period a certain number of companies did not take on new debt for new investments, because they already had too much financial leverage, i.e. an inadequate capital structure, or they could not get new loans due to the credit crunch.

More than 45% of the sample companies answered that during the studied eight-year period they fully utilized those business opportunities on the market that required certain investments, which means that these companies mainly increased the volume of their operations during this period, that is, if we exclude those that only made investments in order to modernize their production process (automation). This post-crisis period was, as mentioned, a credit crunch period that lasted quite a few years. Therefore, we can talk about credit-free economic growth, which was typical

of Slovenia in the period from 2013 to the end of 2015 (Bradeško, 2016). Credit-free growth is only a special (marginal) form of reducing financial leverage. This reduction continued even later, after the revival of credit growth. Indeed, there are episodes when the economy recovered after the crisis without a simultaneous or prior recovery of credit growth. This phenomenon was observed in cases of crisis exits by Calvo, Izquierdo & Talvi (2006). The emergence of these crises was associated with the sudden stoppage of the inflow of capital to developing countries, but later these same authors and others (Claessens, Kose & Terrones, 2009) found similar patterns also in exits from crises that had a different genesis, even in developed countries. This phenomenon of creditless growth is known as the "phoenix miracle."

According to Bradeško (2016), the current quarterly rates of economic growth turned positive at the beginning of 2013, while the annual rates turned positive at the end of 2013 and then increased further in 2014. The dynamics remained similar throughout 2015. Later, we can already talk about a full economic recovery. Solid economic growth took place right after the crisis at the same time as the credit of domestic banks was shrinking. According to Bradeško (2016), the economic recovery of Slovenia up to and including 2015 corresponds to a pattern of creditless growth or recovery, which can be account for by: (a) the re-allocation of production factors to sectors with lower requirements for external financing, (b) the increase in alternative sources of financing, (c) improved cash flow from business operations, and (d) the reduction of investments and assets sales. Alternative sources of financing include securities, long-term financial leasing, the sale of receivables (recourse factoring), and borrowing from foreign banks.

We checked whether creditless recovery also applies to our sample companies after the great financial crisis. Figure 2 shows that from the beginning of the previous decade until the great crisis of 2009, investments in tangible fixed assets increased in parallel with bank loans. This means that bank credits were a generator and accelerator of investment growth.6 After the great financial crisis and recession, investments in the vast majority of companies in our sample stagnated (investment took place in the scope of depreciation, i.e. with so-called replacement investments in tangible fixed assets), but picked up again after 2014, while bank loans visibly decreased until 2016. The recovery of the companies in our sample was accompanied by a decrease or negative growth of bank loans. Based on the aggregate data shown, we cannot conclude that the phoenix miracle applies to the companies in our sample, since it would be necessary to take into account and analyze the data at the micro level, which can be the subject of further research.

---

6 In the statistical software tool SPSS 24, we calculated the linear regression between investments as a dependent variable and bank loans as an independent variable. The $R^2$ value is 0.842, which means that bank loans can explain as much as 84.2% of the variation in investments. The F statistics for this data is 74.49, which is statistically significant at $p < 0.001$.

**Figure 1:** Increase in tangible fixed assets, net sales revenue, and value added versus the decrease in financial liabilities (bank loans) after the last recession
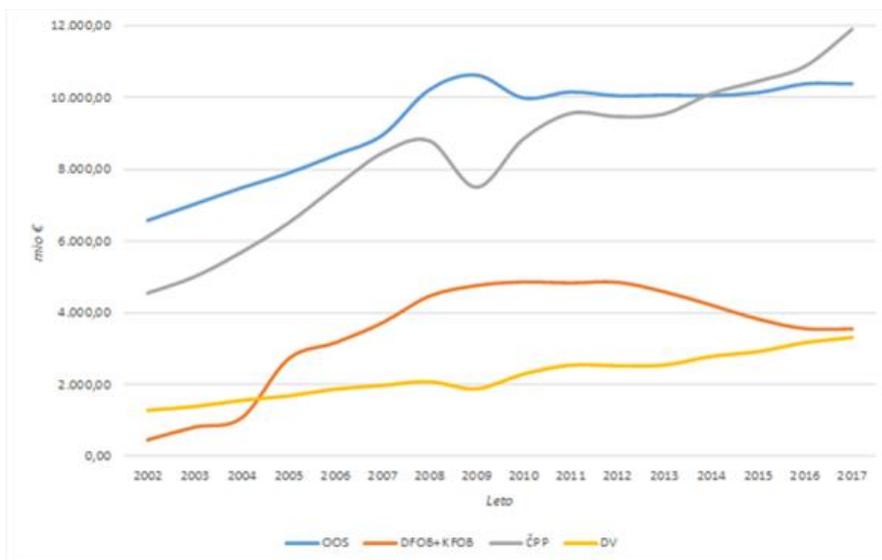


Legend:
OOS – tangible fixed assets
DFOB + KFOB – long-term and short-term financial liabilities
ČPP – net sales revenue
DV – Added value

## Dynamics of investing

Table 8 shows the dynamics with which companies realized larger and more financially demanding investments during the studied period.

**Table 8:** Investment dynamics of Slovenian large and medium-sized companies in the period 2010–2017

| Dynamics of investing | Medium-sized | | Large | | Total | |
|---|---|---|---|---|---|---|
| | Count | % | Count | % | Count | % |
| Equally, in approximately the same amount every year | 98 | 51.85 | 42 | 53.84 | 140 | 52.44 |
| Concentrated, with an investment spike in one or two years at the end of the eight-year period | 49 | 25.93 | 16 | 20.51 | 65 | 24.34 |
| Concentrated, with an investment spike in one or two years in the middle of the eight-year period | 18 | 9.52 | 9 | 11.54 | 27 | 10.11 |
| Concentrated, with an investment spike in one or two years at the beginning of the eight-year period | 21 | 11.11 | 8 | 10.26 | 29 | 10.86 |
| Unknown | 3 | 1.59 | 3 | 3.85 | 6 | 2.25 |

| Positive growth | 150 | 56.18 |
|---|---|---|
| Negative growth | 105 | 39.33 |
| Zero growth | 12 | 4.49 |
| **Total** | **267** | **100** |
| Average rate of increase in the book value of tangible fixed assets | 16% | |
| Average rate of decrease in the book value of tangible fixed assets | 8% | |
| **Average investment growth rate for all companies in the survey sample** | **6%** | |

Slightly less than 5% of the companies in the research sample had zero investment growth during the studied period. In the period 2010–2017, the average annual growth rate of investment in tangible fixed assets for all companies in the research sample was 6%. This means that almost three fifths of the companies invested more rather than wrote off the value of their tangible fixed assets during this period. Of course, the increase in the book (present) value of tangible fixed assets could also be influenced by the revaluation of these assets. We did not take this factor into account in our research, as we did not have the relevant data at our disposal, which means that the calculations may not be completely accurate. However, given the fact that the eight-year period under study was subject to a low inflation rate, and even deflation in the last years of said period, we assume that companies predominantly did not revalue their tangible fixed assets during this period and that this error is therefore negligible in the scope of the analysis.

## CONCLUSIONS AND IMPLICATIONS

Based on a thorough review of the literature on the topic of investment activity of large and medium-sized companies in the real (non-financial) sector of the economy and on the basis of empirical research, which included a relatively large and very representative sample of Slovenian companies, we can fully accept the research hypotheses set out in the introduction to this paper. Let us look at them again and provide arguments in favor of their confirmation.

H1: Strategic investments are the only ones that ensure the organic growth of companies.

It is an undeniable fact that only strategic investments, meaning investments in long-term assets whose goal is to create new value for the owners, are the only ones that ensure the organic growth of companies. From the point of view of value-based management, business owners are interested in which strategies create value and which do not.

H2: Companies' investment decisions and investment dynamics are related to expectations about future business (investment) opportunities and investment cycles.

Exploitation of business (investment) opportunities is one of the key variables of investment ability according to resource-based theory. Therefore, the investment decisions of companies and the dynamics of their

investments are strongly related to expectations about future business (investment) opportunities and investment cycles.

Depending on its intensity and frequency, investment activity in companies takes place in two ways. First, companies invest routinely and follow the normal trend of business growth. Second, from time to time, during campaigns and in certain cycles, companies undertake larger and more demanding investments when they want to take advantage of select investment opportunities, leading to so-called uneven investments and investment spikes. If we look at our sample of Slovenian companies, we find that in the studied eight-year period 2010–2017 more than half of the surveyed companies invested evenly, routinely and without major investment spikes. About a quarter of all companies included in the research sample invested in a concentrated fashion, with an investment spike in one or two years at the end of the eight-year period. Undoubtedly, an important reason for such an investment pattern was the deleveraging of companies after the last great crisis.

H3: There are relatively many companies that are unable to take advantage of business (investment) opportunities.

Given the results of our empirical research, in this context, we can accept the research hypothesis that there are relatively many companies that are unable to take advantage of business (investment) opportunities. Among the most frequently cited reasons for such a state of affairs, we can point out those related to financial resources, such as a lack of own financial resources, excessive indebtedness, too capital-intensive investments, and denied access to borrowed financial resources. Together, these account for more than half of all stated reasons why companies did not take advantage of the offered investment opportunities.

H4: Financial patterns during investment spikes differ from patterns outside of this period.

In terms of investment dynamics, we can also confirm the research hypothesis that during investment spikes financial patterns differ from patterns outside of this period. While in most periods internal financial resources mainly cover routine investments, debt resources dominate during investment spikes. Debt resources are less important in the period immediately after investment spikes, as companies are slowly re-establishing their target leverage.

H5: External sources of financing, especially debt, are more important for financing corporate investments than equity financing, especially when investment expenditures are relatively high.

This research hypothesis is related to the previous one (H4) and can also be fully confirmed, since during investment spikes the share of investments financed by debt is much higher than the share of other sources. This is especially true for large companies, where it is only a matter of capital expenditure and which companies finance to a greater extent with debt than with equity capital. This is true even for small businesses that use equity rather than debt financing.

H6: There is a strong relationship between the type of creditworthiness of the company and the level of indebtedness of the company.

In the context of obtaining debt sources of financing, the credit rating of the company as an investor is crucial. In an empirical study of a representative sample of Slovenian companies, we used the z-test to verify that companies with a good credit rating are significantly less indebted and, conversely, that companies with a bad credit rating are significantly more indebted. At the end of the studied eight-year period, according to their financial officers, a good half of the sample Slovenian companies had a credit rating of A, and the studied ratio was less than or equal to 2. Among other things, we used the ratio between net financial debt and EBITDA that, in the case of Slovenian companies, this ratio is reflected in the ability of companies to generate cash flow to repay debts.

Despite the limitations stated in the methodology section of the paper, we estimate that we have achieved our stated goals. These goals represent a relevant contribution to investment theory as well as to real-world practice, suggesting that company management should be encouraged to achieve lasting competitive advantages so as to strengthen the company's investment ability continuously. As previously mentioned, the results of our study offer quite a few opportunities for further research in the area under consideration. In order to be able to confirm the cause-and-effect relationships in our conceptual model, it would be prudent to undertake a longitudinal study to investigate the time lag and the delayed effects of investments (the dynamic aspect of investing). Here, we should once again point out that we set our research in the period after the last major financial crisis and economic recession, in the immediate aftermath of which companies, with certain exceptions, mainly deleveraged rather than invested heavily.

It would also make sense to extend the research to small companies and perhaps include some other aspects that may be important for a company's investment activity, such as the influence of ownership structure on investment decisions. It would be interesting to compare investment activity and its specifics by industry.

Finally, it would be sensible to examine to what extent strategic investments in companies are the result of prior investment in own development and research, in own knowledge. This connects investments in physical capital with investments in human capital, providing a clue for further, more extensive research in the field of investment.

## REFERENCES

Abiad, A., Dell'Ariccia, G., & Li, B. (2011). Creditless recoveries. *IMF Working Paper No. 11/58*. Washington: IMF. http://www.imf.org/external/pubs/ft/wp/2011/wp1158.pdf

AJPES, Agencija Republike Slovenije za javnopravne evidence in storitve, Ljubljana

Aktar, R., Abedin, M. Z., & Gupta, A. (2021). The impact of monetary policy shocks on corporate dynamic investment activity with financial heterogeneity. *SAGE Open*.

Almeida, H., Campello, M., & Hackbarth, D. (2011). Liquidity mergers. *Journal of Financial Economics, 102*(3), 526–558.

Andretsch, D. B., & Elston, J. A. (2002). Does firm size matter? Evidence on the impact of liquidity constraints on firm investment behavior in Germany. *International Journal of Industrial Organization, 20*(1), 1–17.

Angelini, P., & Generale, A. (2008). On the evolution of firm size distribution. *American Economic Review, 98*(1), 426–438.

Barnett, S. A., & Sakellaris, P. (1998). Non-linear response of firm investment to Q: Testing a model of convex and non-convex adjustment. *Journal of Monetary Economics, 42*(2), 261–288.

Becker, R., Haltiwanger, J., Jarmin, R., Klimek, S., & Dan, W. (2006). Micro and macro data integration: The case of capital. In D. Jorenson, S. Landefeld, & W. Nordhaus (Eds.), *New architecture for the U.S. national accounts* (pp. 541–609). Chicago: University of Chicago Press.

Bole, V., Oblak, A., Prašnikar, J., & Trobec, D. (2017). Financial frictions and indebtedness of Balkan firms. A comparison with Mediterranean and Central European countries. *Journal of Policy Modeling*. Accepted Manuscript.

Bottazzi, G., Secchi, A., & Tamagni, F. (2014). Financial constraints and firm dynamics. *Small Business Economics, 42*(1), 99–116.

Bradeško, J. (2016). *Economic growth without borrowing in Slovenia after 2013* (Master thesis. Ljubljana: School of Economics and Business University of Ljubljana.

Bukvič, V. (2016). Financial flexibility as one of the key factors that influence firm investment ability. In Ajda Fošner (Ed.), *Conference proceedings*. Ljubljana: Gea College - Faculty of Entrepreneurship.

Bukvič, V. (2020). *Impact of Slovenian companies' investment ability on their business performance.* Doctoral Dissertation. Ljubljana: School of Economics and Business University of Ljubljana.

Bukvič, V. (2023). Investment ability as a source of the company's competitive advantage based on human and financial resources - theoretical outline. *Poslovodno računovodstvo, 16*(2-3), 4–57.

Caballero, R. J. (1999). Aggregate investment. In J. B. Taylor & M. Woodford (Eds.), *Handbook of macroeconomics* (Vol. 1, Part B, pp. 813–862). Amsterdam: Elsevier.

Caballero, R. J., Engel, E. M. R. A., & Haltiwanger, J. C. (1997). Aggregate employment dynamics: Building from microeconomic evidence. *American Economic Review, 87*(1), 115–137.

Calvo, G. A., Izquierdo, A., & Talvi, E. (2006). The economics of sudden stops in emerging economies: Sudden stops and Phoenix miracles in emerging markets. *American Economic Review, 96*(2), 405–410.

Campello, M., Graham, J. R., & Harvey, C. R. (2010). The real effects of financial constraints: Evidence from a financial crisis. *Journal of Financial Economics, 97*(3), 470–487.

Carlson, M. & Laseen, S. (2005). Capital adjustment patterns in Swedish manufacturing firms: What model do they suggest? *Economic Journal, 115*(506), 969–986.

Claessens, S., Kose, M. A. & Terrones, M. E. (2009). What Happens During Recessions, Crunches and Busts? IMF Working Paper WP/08/274. Washington, D. C.: IMF.

Churchill, G. A. (1995). *Marketing Research-Methodological Foundations. 6th ed.* Fort Worth: The Dryden Press.

Dasgupta, S., Noe, T. H. & Wang, Z. (2011). Where did all the dollars go? The effect of cash flow shocks on capital and asset structure. *Journal of financial and Quantitative Analysis, 46*(5), 1259–1294.

DeAngelo, H., DeAngelo, L. & Whited, T. M. (2011). Capital structure dynamics and transitory debt. *Journal of Financial Economics, 99*(2), 235–261.

Doms, M. & Dunne, T. (1998). Capital adjustment patterns in manufacturing plants. *Review of Economic Dynamics, 1*(2), 409–429.

Drobetz, W., Haller, R., Meier, I., & Tarhan, V. (2014). Cash flow sensitivities during financial crises. *HFRC Working Paper No. 6*. Hamburg: Universität Hamburg, Hamburg Financial Research Center e. V.

Duhautois, R., & Jamet, S. (2001). Hétérogénéité des comportements d'investissement et fluctuations de l'investissement aggrée. *Economie et Prévisions, 149*(3), 103–115.

Elsas, R., Flannery, M., & Garfinkel, J. A. (2014). Financing major investments: Information about capital structure decisions. *Review of Finance, 18*(4), 1341–1386.

Fama, E., & French, K. R. (2002). Testing trade-off and pecking order predictions about dividends and debt. *Review of Financial Studies, 15*(1), 1–34.

Fazzari, S. M., Hubbard, R. G., & Petersen, B. C. (1988). Financing constraints and corporate investment. *Brookings Papers on Economic Activity, 19*(1), 141–206.

Field, A. (2013). *Discovering statistics using IBM SPSS statistics* (4th ed.). Los Angeles: SAGE Publications Ltd.

Fowler, F. J., Jr. (2002). Survey Research Methods, 3rd ed. Thousand Oaks: SAGE.

Gatchev, V. A., Pulvino, T., & Tarhan, V. (2010). The interdependent and intertemporal nature of financial decisions: An application to cash flow sensitivities. *Journal of Finance, 65*(2), 725–763.

Gourrio, F., & Kashyap, A. K. (2007). Investment spikes: New facts and a general equilibrium exploration. *Journal of Monetary Economics, 54*(Supplement 1), 1–22.

Grazzi, M., Jacoby, N., & Treibich, T. (2013). Dynamics of investment and firm performance: Comparative evidence from manufacturing industries. (Working Paper). Pisa: Sant'Anna School of Advanced Studies, Laboratory of Economics and Management (LEM).

Holmstrom, B., & Tirole, J. (1997). Financial intermediation, loanable funds, and the real sector. *The Quarterly Journal of Economics, 112*(3), 663–691.

Hunya, G. (2009). FDI in the CEECs under the impact of the global crisis: Sharp declines. Vienna: The Vienna Institute for International Economic Studies Database on Foreign Direct Investment in Central, East and Southeast Europe.

Im, H. J., Mayer, C., & Sussman, O. (2017). Investment spike financing. *Asian Finance Association (Asian FA) 2017 Conference*. http://dx.doi.org/10.2139/ssrn.2468424

Kaur, P., & Kaur, R. (2019). Efffects of Strategic Investment Decisions on Value of Firm: Evidence from India. *SAGE Journals, 23(1)*, 1-19.

Kaplan, S. N., & Zingales, L. (1997). Do investment-cash flow sensitivities provide useful measures of financing constraints. *The Quarterly Journal of Economics, 112*(1), 169–215.

Letterie, W., & Pfann, G. A. (2007). Structural identification of high and low investment regimes. *Journal of Monetary Economics, 54*(3), 797–819.

Malhotra, N. K., & Birks, D. F. (2007). *Marketing Research. An Applied Approach. Third European Edition*. London: Prentice Hall.

Myers, S. C. (1984). The capital structure puzzle. *Journal of Finance, 39*(3), 575–592.

Nilsen, Ö. A., & Schantarelli, F. (2003). Zeros and lumps in investment: Empirical evidence on irreversibilities and nonconvexities. *Review of Economics and Statistics, 85*(4), 1021–1037.

Nilsen, Ö.A., & Raknerud, A., Rybalka, M., & Skjerpen, T. (2009). Lumpy investments, factor adjustments, and labour productivity. *Oxford Economic Papers, 61*(1), 104-127.

Oliveira, B., & Fortunato, A. (2006). Firm growth and liquidity constraints: A dynamic analysis. *Small Business Economics, 27*(2), 139–156.

Ostergaard, C., Sasson, A., & Sørensen, B. E. (2011). The marginal value of cash, cash flow sensitivities, and bank-finance shocks in nonlisted firms. *CEPR Discussion Paper 8278*. Oslo: BI Norwegian Business School, Centre for Economic Policy Research.

Pollack, J., & Adler, D. (2014). Does project management affect business productivity? Evidence from Australian small to medium enterprises. *Project Management Journal, 45*(6), 17–24.

Power, L. (1994). Causes and Consequences of investment spikes. (Doctoral Dissertation). College Park: University of Maryland.

Prašnikar, J., Bole, V., Ahčan, A., & Koman, M. (2003). Sensitivity of the exporting economy on the external shocks: Evidence from Slovene firms. Paper presented at the 8th Conference "Economics in Transition," Budapest, July 3–5.

Prašnikar, J., Domadenik, P., & Koman, M. (2015). Skrivnost državne lastnine v Sloveniji. Ekonomska fakulteta v Ljubljani. http://webv3ef.ef.uni-lj.si/_documents/wp/Skrivnost_drzavne_lastnine_v_Sloveniji.pdf

Prašnikar, J., Koman, M., & Redek, T. (2018). Industry 4.0, robots and us. In J. Giacomelli (Ed.), Knowledge and productivity growth: The role of science and innovation in sustaining economic growth and social prosperity (pp. 16-18). 6th Italian Business Forum. Ljubljana: Italijansko slovenski Forum.

Prašnikar, J., Pahor, M., & Cirman, A. (2014). Late payments in accession countries: Causes and international comparison. *The Journal of Entrepreneurial Finance and Business Ventures, 9*(1), 51–69.

Prašnikar, J., Tekavčič, M., Bukvič, V., & Bole, V. (2020). The impact of companies' capabilities on investment ability and performance. *European Journal of International Management*.

Rebernik, M., & Širec, K. (2018). Fostering innovation by unlearning tacit knowledge. In K. Širec (Ed.), Building an entrepreneurial society: 25 years of entrepreneurship at FEB UM (pp. 57–72). Maribor: University of Maribor Press.

Schiantarelli, F. (1996). Financial constraints and investment: Methodological issues and international evidence. *Oxford Review of Economic Policy, 12*(2), 70–89.

Schultes, A. (2011). The relationship between investment performance and organizational ownership structure in U.S. small cap value equity managers. *Dissertation Abstracts International: Section A*, (UMI No. 3439091). *Humanities and Social Sciences, 72*(3).

Senjur, M. (1995). Makroekonomija majhnega odprtega gospodarstva. Ljubljana: Ekonomska fakulteta.

SI-STAT B.1. (2015). Podatkovni portal Statističnega urada Republike Slovenije. http://pxweb.stat.si/pxweb/Database/Ekonomsko/Ekonomsko.asp

Slovenian Companies Act. (ZGD-1-NPB 14).

Standard Classification of Activities. (2008). V2.

The Global Fund. (2018). Risk appetite framework. Board approved GP/B39/DP11.

Thomas, J. K. (2002). Is lumpy investment relevant for the business cycle? *Journal of Political Economy, 110*(3), 508–534.

Weissenrieder, F. (1998). Value based management: Economic value added or cash value added? Study No. 1997:3. Gothenburg Studies. Göteborg: Gothenburg University.

Whited, T. M. (2006). External finance constraints and the intertemporal pattern of intermittent investment. *Journal of Financial Economics, 81*(3), 467–502.