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Private Equity Determinants In European Union

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ABSTRACT

Purpose: This paper examines the determinants of private equity investments in the European Union. Theoretical part of this paper analyses the development and current situation of private equity activity within the European Union, as well as possible determinants of private equity capital. Methodology: To analyse impact of selected indicators based on literature review panel data analysis and Granger causality test was performed. Based on this literature review, we have chosen 28 indicators from five different groups to measure the impact on private equity investments. This analysis was based on aggregated data from organisation Invest Europe during 2007-2017 as well as macroeconomic data of analysed countries. Approach: Hausman test was performed to choose the best consistent model in panel data analysis, suggesting the fixed effects model is consistent. This paper supports the of various indicators affecting private equity activity in the country. Subsequently, the impact of various potential macroeconomic factors was measured, selected on the basis of literature as well as the mutual relationship between private equity and GDP itself. Findings: The results suggest there are different significant determinants of private equity investments in the European Union. Economic performance, low tax burden and low labour market rigidity have a positive effect on private equity investments. The low availability of other forms of funding increases the activity of private equity capital. Unexpectedly, we have also identified a negative effect of the trade freedom probably because of steeper competition. Negative effect of property rights index can be the consequence of limited opportunities in creating similar projects to those already introduced by competitors.

INTRODUCTION

Europe is currently facing a lack of capital that restrains its growth potential. One of the possible solutions to overcome this state is according to T. Stofa and M. Soltes (2017) to support alternative sources of business financing, for example individual forms of private equity. They can help to overcome this need throughout the business life cycle. The aim of private equity capital is primarily to finance start-up business activities in high-growth industries but also to increase competitiveness of mature companies. We work with the term private equity capital in the European way,

where this word represents all forms of long-term investments to companies of different size with the aim to help them grow faster and be more profitable. This includes venture capital, growth capital, buyouts, rescue and replacement capital. Private equity capital focuses on riskier transactions. Companies seeking capital in this market have limited access to traditional forms of financing, which narrows their further development.

This form of ownership reduces public pressure to make short-term profits at the expense of long-term profitability. This works through a direct relationship between the owner and the manager, where the goal is not the current profitability of the company but its future growth. In addition to providing financial support, private equity investors can also provide own know-how. These investors usually operate in the industry they know, therefore their experience can be directly and more effectively used to enhance and improve the company processes. Moreover, they bring to the company a wide range of contacts and practices which could create an advantage against competition. The effects of the private equity investment on the company itself have been under investigation for a long time, but there are different opinions about how it works inside the company. Most researchers as G. Chesini and E. Giaretta (2013) expose the opinion on increasing company revenues and decreasing short-term profits. This situation can be explained by the company's focus on long-term growth using different business opportunities. O. Blanchard et al. (1997) suggests negative impact of private equity on the short-term employment, due to creation of efficiency in business processes.

According to A. Boquist a J. Dawson (2004) Europe relies more on bank financing than other alternative forms of company financing. Although the importance of private equity investments has increased, the financial crisis of 2007–2008 caused a significant fall in supply and demand of this form of funding seen on Figure 1. On the other side, this period has reduced the disparities between Eastern and Western Europe, however, differences are still noticeable. The financial crisis was a very important element in the development of private equity but the market has already revived. In 2017 the total private equity investment amount reached €71.7bn in Europe, just 4% below the pre-crisis state, and thus increasing the total value of active European private equity investments to €640bn. On the Figure 1, it is shown development of private equity capital covering 21 analysed countries of this paper, representing the majority of the Europe private equity investments. (Invest Europe, 2018).

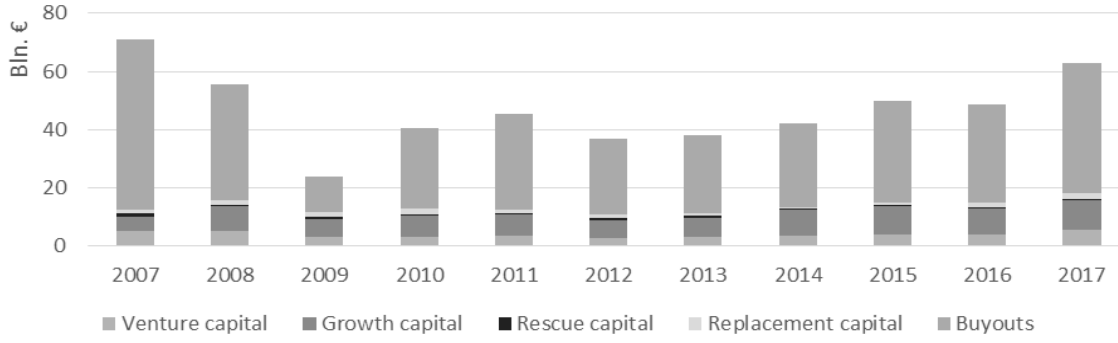

Figure 1 Private equity capital development in the 21 analysed countries of European Union

Source: Own elaboration based on (Invest Europe, 2018)

The presence of private equity may be important for sustaining long-term economic growth, and thus their influx can maintain a strong economy. One way to attract private equity investments is to focus on the main determinants of the inflow of private equity and improve their status within the country. K. Amess et al. (2016) emphasize needs to shape the business environment, therefore the legislative and executive power in the country itself must be used to improve conditions in the country.

1. LITERATURE REVIEW

Private equity investments have important role in the financing of companies on the global market in recent years. Their presence encourages innovative activities of start-ups, but also supports activities of large corporations, in order to increase their competitiveness to gain higher market share. This positive influence is confirmed by Amess et al. (2016) while investigating effects of buyouts as well as venture capital. Their presence is also important for sustaining long-term economic growth, high employment, innovative activities and the use of new technological processes.

The factors examined in this paper contain both cyclical and structural components. While structural changes represent long-term to permanent changes in the environment, cyclical components tend to return to their original state. B. Van Pottelsberghe de la Potterie and A. Romain (2004) has found clear evidence of the cyclical nature of private equity investments themselves, which is the result of the business cycle itself.

B. Clarysse et al. (2009) has found several common determinants of the private equity development in the study of relatively different countries like the United States, the United Kingdom and Israel. The differences in these countries are at the cultural and social level, but also in the intensity of using private equity capital. While US private equity market has a rich history, in Israel it is a quite new form. The United Kingdom represents the Europe most advanced market in private equity activity, thanks to London's position as a global financial centre. All these countries utilize intensely private equity investments and despite their differences, the common factors determining the inflow of investments could be identified. Therefore, we can expect it will be possible to identify common driving forces of private equity activity within the European Union.

Economic growth was identified by P. Gompers and J. Lerner (1998) as a most important factor for venture capital activity. Capital activity is also positively influenced by the presence of the developed stock market, which can be measured by market capitalization. These findings were confirmed by van Pottelsberghe de la Potterie and Romain (2004), but in contrast with that L. Jeng and P. Wells (2000) found no evidence of GDP and market capitalisation effects on venture capital activity. I. Oino (2014) states that growing low-inflation economies tend to attract all forms of investment into the country, hence private equity capital.

S. Bonini and S. Alkan (2009) found a significant negative impact of the interest rate on the venture capital offer. With rising interest rates, risky investments become less attractive and investors look for less risky assets that offer lower but risk-free returns. Growth of risk-free investments reduces the supply of capital that flows into private equity funds, and eventually leads to a decline in the fund's investment activity. On the other side higher interest rate could lead to higher demand for this capital, because of higher costs of loans.

According to P. Gompers and J. Lerner (1998), we expect the tax burden reduction has a positive impact on private equity activity. This effect can be explained by the growth of entrepreneurial activity, which is according to D. Bruce et al. (2005) positively influenced by the lower tax burden in the country. A. Groh and H. von Liechtenstein (2009) have analysed Central and Eastern European countries with a result, that low corporation tax is the most important factor for investing in emerging markets. The decline in corporate tax burden has a significant impact on all forms of private equity. On the other hand, T. Gurley-Calvez et al. (2009) have shown there is no significant tax impact on business growth under New Markets Tax Credit in the US.

A. Bozkaya and W. Kerr (2014) also found that labour market expenditures as the mechanism for providing worker insurance is linked with stronger venture capital market. The results of the study of I. Oino (2014) indicate the strong impact of the country's legal environment on attracting investment. The legal system itself can create barriers to the inflow of investment into the country or support entrepreneurial activity. Therefore, creating a better business environment can lead into the inflow of capital. Enforceability and property rights protection represent important conditions

for the promotion of entrepreneurial activity. A. Groh and H. von Liechtenstein, 2009) found significant influence of property rights protection on the inflow of such investments.

The main objective of this paper is to identify the determinants of private equity investments in a European union. These determinants may support domestic private equity capital activity, as well as stimulating the inflow of private equity capital from abroad. According to this review 5 main groups of indicators have been identified: economic growth, taxation, funding availability, labour market and business environment. We assume that economic growth, low taxation, developed capital market, favourable conditions of the business environment and low rigidity of labour market positively affect the level of private equity activity.

2. METHODOLOGY

We have harvested data from different sites including Invest Europe (2018), Eurostat (2018), WorldBank (2018), The Heritage Foundation (2018) and from the Ludwig-Maximilians University in Munich (LMU) - D. Shanz et al. (2017). The variables were selected according to literature review on the subject. Few missing records were replaced by linear interpolation to create balanced panel. In order to reduce differences between countries due to disproportions of investment volume and due to different units in our dataset, the ratio indicators expressed in relation to GDP have been used.

As a depended variable volume of private equity investments in a country was used. We have tried to identify driving forces of total private equity investments, but also of its individual types, namely venture capital, growth capital, buyouts, rescue and replacement capital. In contrast to the study of R. Kelly (2010), which used private equity volume based on the location of the investor, we have selected an investment activity of the country of the supported enterprise regardless of the origin of the private equity firm. This activity was reported in the form of investments volume made in the country, with data denominated in Euro. The reason of this choice was to find out what determinants influence the investment activity of private equity investment in the country and therefore affect the economy.

The cross-sectional dimension of the data is represented by individual countries of the European Union. This paper deals with 21 countries of the European Union due to unavailability of data for smaller and less developed countries. Following countries were included in this analysis: Austria, Belgium, Bulgaria, Czech Republic, Denmark, Finland, France, Netherlands, Ireland, Italy, Luxembourg, Hungary, Germany, Poland, Portugal, Romania, Slovakia, Spain, Sweden and United Kingdom.

Due to the nature of the data, the panel data analysis was carried out. F-test has also confirmed, it makes sense to perform panel data analysis over the linear regression model. Models with random and fixed effects were subsequently performed. According to performed Hausman test, random effects models are inconsistent, and therefore fixed effect models were preferred. In fixed effects model individual and time effect can be quantified. Although F-test has recommended in one case using two-way fixed effects model, Lagrange Multiplier Test has preferred in every combination only one-way model with individual effects. Based on these results, we assumed that time effects were not present. All test results were monitored at a significance level at least 5%.

Panel data analysis requires fulfilment of multiple assumptions, that have been successively verified for each created model. Within the model, the multicollinearity hypothesis (variance inflation factor) and cross-sectional dependence (Pesaran's cross-sectional dependence test) were rejected, and the stationarity (Maddala-Wu test) of the data was confirmed. On the other side there were problems with heteroscedasticity (Breusch-Pagan test) and autocorrelation (Breusch–Godfrey test), which was solved by using a robust covariance matrix. In this procedure, the Arellano method of calculation of covariance matrix was used, which counts with the existence of heteroscedasticity and autocorrelation (Arellano, 1987; Croissant and Millo, 2008).

The general form of studied equation had the form:

$$y_{it} = \alpha + X'_{it}\beta + u_{it}, \quad (1)$$

where

$i = 1,2,\dots,N$ is entity index,
$t = 1,2,\dots,T$ is time index,
y_{it} is dependent variable for entity i in time t, depended on K exogenous variables,
X_{it} represent vector of K exogenous variables for entity i in time t,
α is intercept,
β is vector of slopes,
u_{it} is random error with normal distribution. (Baltagi, 2005)

We have studied effect of 28 variables representing basic indicators of economic activity, taxation in the country, possibilities of financing companies, labour market and business environment. These variables were selected on the basis of literature review and these predictor variables were statistically eliminated. They can be found in

Table 3 in the Annexes section. According to (Balboa and Marti, 2007) most of the information about economy development are available with a lag. At the same time, it takes some time for information to be absorbed by the market, which in turn will cause a change in our observed variable. Therefore, the delayed effect was also investigated in this article. All variables were delayed by one year, and so the impact of past values on the current state of private equity investments was examined. A longer delay could lead to false results due to a short data timeframe, where every new variable could significantly reduce the degrees of freedom. Due to the large differences between the analysed countries, absolute values were not used. Such values were transformed into a ratio indicator compared to GDP. Other variables expressed as percentage change, index value or ratio were not homogenized because of their nature. This step was intended to reduce the differences that arose mainly from the different sizes of the countries. The differences between absolute and relative values of private equity investments in 2017 can be seen in the Figure 2. The countries of eastern and southern Europe indicated low private equity activity even after conversion to ratio to GDP, but the differences were reduced.

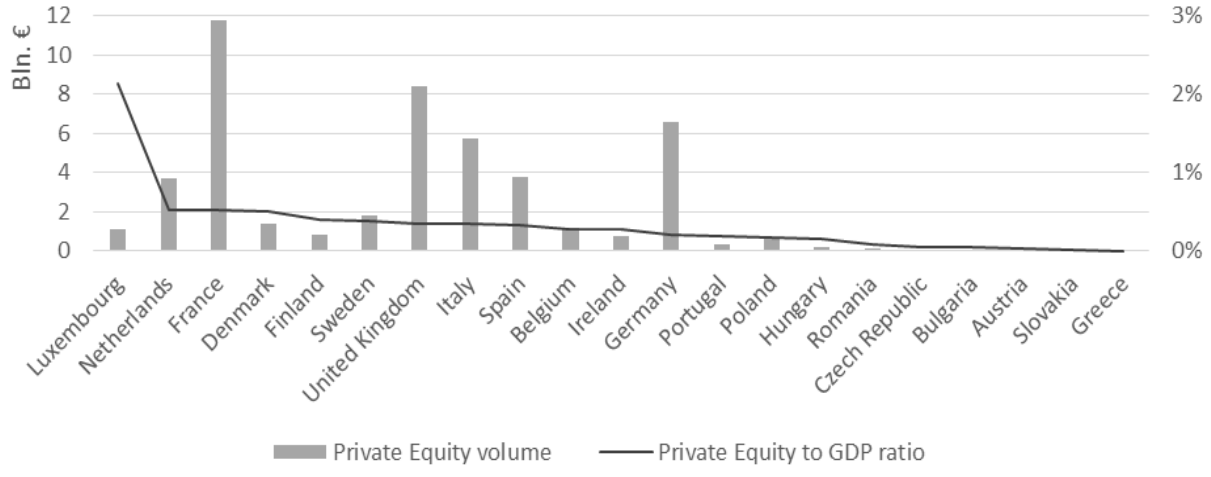

Figure 2.Absolute and relative volume of Private equity investments in year 2017

Source: Own elaboration based on (Invest Europe, 2018)

This recalculation made it impossible to include GDP in the panel analysis. Its effect was measured using GDP growth variable, however, its effect was not significant. Therefore, Granger causality test was performed to determine if GDP is predicting our analysed dependent variables. Since the original Granger test was not created for panel data, a variation of (Hurlin a Dumitrescu 2012) was used. This test creates linear model, where the variability of y_t is analysed using y_{t-k} and x_{t-k} with regression parameters as follows $\gamma_i^{(k)}$ and $\beta_i^{(k)}$. In this model, the individual regression coefficients $\gamma_i^{(k)}$ and $\beta_i^{(k)}$ may vary between countries. The null hypothesis is expressed as follows:

$$H0: \beta_i = 0 \ \ \forall i = 1, \dots, N\,, \tag{2}$$

where $\beta_i = \left(\beta_1^{(k)}, \dots, \beta_i^{(k)}\right)'$..

In the case of independence, the regression coefficients $\beta_i^{(k)}$ at x_{t-k} would be zero. Alternative hypothesis represents existence of Granger causality. The more delayed values we use, the better we can capture the influence of the explanatory variable and the explained one, but at the same time the strength of the test decreases. Due to the short timeframe it was possible to use at most one delayed value x_{t-1}, and therefore the use of this test may not reveal relationships between variables with a delay of more than one year.

3. RESULTS AND DISCUSSION

Dependent variables are shown in individual columns and exogenous variables in individual rows. The labels *, ** and *** are used to represent significance levels 1%, 5% and 10%. The average value of the adjusted coefficient of determination was 30%, however, models with Rescue and Replacement capital have shown much lower values around 10%.

Table 1. Beta coefficients of panel data analysis models with significance levels

	Private Equity	*Venture Capital*	*Growth capital*	*Buyouts*	*Rescue capital*	*Replacement capital*
Fundraising	1,84E-01 *			8,47E-02 *	-6,42E-03 *	4,64E-02 ***
Tax Burden$_{t-1}$						-2,18E-03 **
Trade Freedom$_{t-1}$			-9,67E-03 ***		1,07E-03 *	
Labour Market Rigidity$_{t-1}$			-2,23E-03 ***		6,71E-04 *	
Employment	-9,72E-02 *			-7,89E-02 **		
Unemployment				-5,55E-02 *		
Property rights index		-4,32E-03 **	3,61E-02 ***			
Market Capitalisation		-2,59E-04 **				1,14E-04 *
Market Capitalisation$_{t-1}$	2,28E-03 ***	1,31E-04 **	1,12E-03 **	1,38E-03 ***		1,58E-04 **
Interest rate$_{t-1}$	6,52E-03 *	9,38E-04 *		7,67E-03 *		
Government expenditure$_{t-1}$		3,20E-04 **				

Source: Own calculation in R software

In consideration of the nexus between fundraising and investment, effect of fundraising is not only a confirmation of dependence, but also the reminder of importance of resources collected in the country. Every country should primarily focus on own accumulation of capital by encouraging citizens to invest, e.g. by smaller taxes. This result is an unfavourable report for the smaller and less developed countries of the European Union because they rely only on the inflow of private equity capital into the country.

The impact of the tax burden was significant only in the replacement capital, which tries to balance the ratio of own and foreign capital in an enterprise to an optimal value. The higher tax burden has negative effects on private equity investments, but according to our results only to very small extent.

The labour market flexibility index is a significant determinant in the case of growth and rescue capital, thus suppressing the impact of variable employment and unemployment. In the case of a rescue business, higher labour market flexibility leads to a rise in rescue capital. Rescue capital, involves terminating the employment relationship with unnecessary workers and so higher rigidity is unwelcome. These operations are performed to higher productivity and remove non-profit parts of the company. The negative impact on growth capital may be explained by the need for low staff turnover, because keeping a trained and skilled staff is essential to achieve rapid growth in the company. High employment rate in the country may indicate that it will be more difficult to find experienced workers, which is crucial for an expected further development of a company. On the other side, high levels of unemployment can indicate the existence of an unskilled labour force that may be an obstacle to the investor's entry into the country.

In context with trade freedom, we have experienced a mixed effect. It positively influences business funding for struggling companies, but on the contrary, there is a slight negative impact on the growth capital. This situation can be interpreted by easy access to foreign markets. On the one hand, this access expands the market where the company can place its products, but on the other hand, increases competitiveness due to the presence of foreign substitutes on domestic market.

There are various controversial views on the optimum level of property rights protection. R. Horii and T. Iwaisako (2007) point out that in the case of strong ownership protection there is a negative impact of property rights on the level of the country's development. Imitation and adaptation have an important role in the technological development of developing countries, therefore strong protection can create barriers to investment inflows and so to reach the level of advanced countries is much harder task. This situation may not only concern the differences within the European Union but also in the international context. A high level of property rights protection can also be associated with higher costs, which ultimately can influence the investor himself when choosing an investment (Haydaroglu, 2015).

Market capitalization has a positive impact on the inflow of private equity investments with an exception of venture capital. The impact of market capitalization in a lagged form has acted as expected, and therefore developed and liquid capital market lead to a rise in private equity. Given the characteristics of this capital, the completion of the equity market investment is expected, and this effect has not been proven to be due to the use of a short period of time. The impact of the interest rate on the volume of private equity is positive, and hence high long-term interest rates of loans lead the company to find alternative forms of company financing as private equity capital.

It was possible to observe the extractive effect of government consumption. This effect was observed this time by including the Government Expenditure Freedom Index variable. Higher levels of this index refer to lower government spending, leading to a rise in private equity.

Although the impact of GDP growth was not significant for any dependent variable, Granger causality test of GDP revealed partial influence of economic activity on private equity capital. According to

Table 2, GDP Granger causes variables Venture capital and Buyouts. Considering the development of the economic cycle and private equity activity, we can assume that this relationship is positive.

Table 2. Granger causality results of GDP on dependent variables

	Private Equity	Venture Capital	Growth capital	Buyouts	Rescue capital	Replacement capital
GDP–> y	0,3227	0,0002577 (***)	0,559	0,02939 (**)	NA	NA

Source: Own calculation in R software

The impact of GDP on venture capital and buyout supports the idea that private equity is cyclical. If data were available for a longer period of time, (Robinson and Sensoy, 2016) thesis that negative shocks in economic development are first reflected in fundraising and then in the volume of private equity investments could be verified. In this context, it can be assumed that the use of a larger number of delayed values of an independent variable in explaining the volume of investment as well as GDP would also reveal the relationship between private equity itself and GDP.

CONCLUSION

The main aim of this paper was to identify the determinants of private equity capital influencing the demand and supply of these assets. This analysis was carried out on data obtained from Invest Europe, enriched with possible determinants of private equity capital based on the literature review. However, the availability of data represents a major obstacle in the field of private equity, which complicates the conduct of scientific research in any form.

Each type of private equity contains more or less different determinants based on the results of panel regression, so we can assume that the differences between these forms play a larger role than is commonly understood. By examining economic activity, it has been confirmed that in economic growth conditions companies are trying to take advantage of business opportunities, and thus increasing venture capital and buyouts. Unexpectedly, the positive effect of low inflation was not confirmed.

Higher trade freedom and property rights can have a positive effect on some forms of private equity, but we have also found negative impact on innovative investments of venture and growth capital. Higher trade freedom causes higher competition, which can negatively affect competitiveness of domestic products and so influence investment volume in the country. Similar effects were recorded in the condition of higher protection of property rights, which can lead to limitation of start-up projects supported by venture capital and prevent creation of substitutes to existing products by other companies. On the other hand, already established businesses show the importance of protecting property rights, which can reduce theft of the original ideas.

Government resources are one of the main sources of capital in less developed countries, and therefore public consumption reduces the amount of available funds that the government is willing to invest into private equity capital. According to (Invest Europe, 2018), venture capital is one of the main sources of start-up financing in less developed European Union countries, where the government remains as one of the main funders of this capital. This creates exclusion effect of public consumption with a significant impact on venture capital.

Although the capital market might appear as a competitive form of company funding, the presence of an advanced capital market increases private equity capital activity. Growth of interest rate had a nearly uniform positive effect, and so in the case of expensive loans other ways to finance the company projects were sought.

Tax burden also represents a driving force of private equity capital, but its effect is according to our results limited only on replacement capital. Furthermore, the labour market appears to be more significant predictor, however, mixed effects of its individual variables were found.

These conclusions are in most cases a confirmation of the results of the literature studied. Unlike other publications, we have focused on investments made in the country to identify immediate and delayed determinants of private equity capital for the European Union as a whole. Using panel regression and Granger causality test, we have confirmed that it is possible to stimulate the influx of private equity investment into the country, but these changes require significant interventions in the country's economy and business environment.

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ANNEXES

Table 3. List of all used variables

Variable	*Variable description*	*Source*
	Economic activity	
GDP	GDP growth in%, change from last year	Eurostat
HC	Final household consumption expressed as % of GDP	Eurostat
PC	Final public sector consumption expressed as % of GDP	Eurostat
Inf	Inflation rate	Eurostat
CPI	Consumer price index compared to 2010	Eurostat
MFI	The monetary freedom index calculated as the weighted average of inflation over the last three years and the use of price controls	Heritage
EFI	Economic Freedom Index calculated as an average of all partial indicators	Heritage
GI	Government Integrity Index calculated from Corruption Perceptions Index	Heritage
GSI	Index of independence from government spending in that with rising government spending due to their lower efficiency decreases	Heritage
R&D	Total R&D expenditure in the country expressed as% of GDP	Eurostat
R&DG	Government R&D expenditures in the country expressed as% of GDP	Eurostat
	Taxation	
TT	Total tax paid by enterprises, expressed as % of commercial profits	WB
TA	Country tax attractiveness index for companies	LMU
TB	Tax burden index	Heritage

Funding		
FR	Funds collected in the country for private equity investment as % of GDP	Invest Europe
MC	Market capitalization of listed companies in% of GDP	WB
IR	Harmonized long-term interest rate created for convergence purposes at 10 - year maturity in %	ECB
Labour market		
UN	Percentage of unemployed people expressed as % of labour force	Eurostat
EM	Percentage of the employed in the country in %	Eurostat
LMF	Labour market flexibility index taking into account various aspects of the country's labour market legal and regulatory framework	Heritage
Business environment		
TR	Time required to complete the procedures required to obtain legal authorization to conduct business	WB
NP	Number of procedures required to obtain legal authorization to conduct business	WB
PAT	Number of patents filed by residents in a given country per 100,000 inhabitants	Eurostat
PRI	Property Rights Index	Heritage
TFI	Trade freedom index representing the absence of barriers to the import and export of goods	Heritage
BFI	Business Freedom Index reflecting government business regulations for starting and ending business	Heritage
IFI	Investment freedom index expressing the possibility of free flow of investment	Heritage
FFI	Financial Freedom Index to measure banking efficiency and independence from government control	Heritage

Source: Own elaboration based on given sources