Štofa, Tomáš; Šoltés, Michal

Article

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Differences of Private Equity Determinants: Country-level Evidence from Europe

*Tomáš ŠTOFA – Michal ŠOLTÉS**

Abstract

This paper deals with private equity determinants within the European Union, based on data covering 11 years and 20 countries. We investigate driving forces of private equity activity in terms of the level of country maturity. The cluster analysis using Ward's method is performed suggesting three different clusters of countries with similar properties, to provide better country assessment than geographical distribution. We use panel data techniques to study 26 possible determinants of private equity activity. The study reveals the macroeconomic factors, labour market, and business environment have a significant impact on investment activity in countries, but the expected positive effect of the stock market was not confirmed. Furthermore, the differences between private equity determinants in individual clusters have been observed. While the positive impact of innovation prevails in the more developed countries, there is also a negative effect of the interest rate. The less developed countries tend to be more endangered by the crowding-out effect of government expenditures and strong property rights protection rather than socio-political stability and tax burden.

Keywords: *private equity, panel data analysis*

JEL Classification: C23, C52, E22, G24

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Introduction

Private equity capital has been a relatively well-known concept, especially since the 1980s when these investments have played an important role in global financial markets. Given the development of the world, these assets become widespread mainly in the USA. As stated by Jenkinson (2007), Europe culture

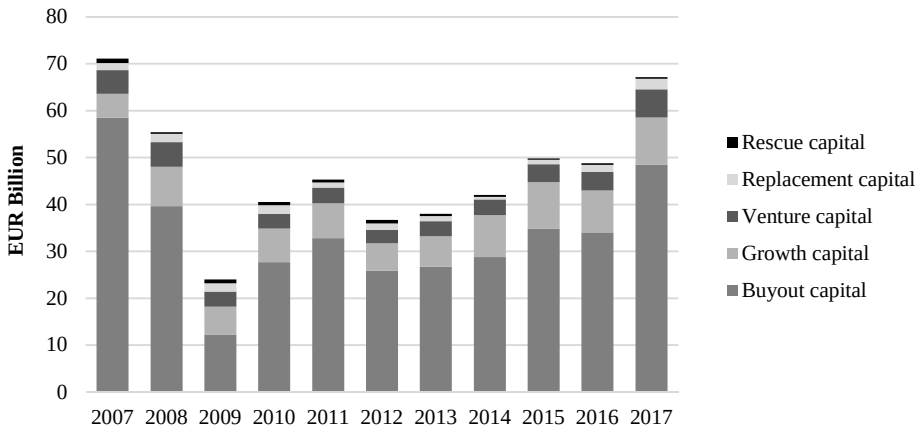
* Tomáš ŠTOFA – Michal ŠOLTÉS, Technical University of Košice, Faculty of Economics, Department of Banking and Investment, Nemcovej 32, 040 01 Košice, Slovakia; e-mail: tomas.stofa@tuke.sk; Michal.Soltes@tuke.sk

was oriented mainly on bank financing limiting the boom of these investments. However, globalisation and liberalisation of investor regulations allowed private equity to flourish there as well. The level of private equity activity is still significantly lower in comparison with the USA, but there are many differences between Europe countries. Especially less developed countries are experiencing a shortage and dependency on government investments.

The European definition of private equity capital refers to a broad category of investments targeting businesses of all sizes to improve performance and internationalize the business. These investments provide capital to start-ups, mature companies, and companies before bankruptcy, which leads to distinction into venture, growth, replacement, rescue capital and buyouts. These categories provide limited-time funding of perspective companies which will pass through the investors' filter (Invest Europe, 2018).

F i g u r e 1

Total Private Equity Activity in Analysed Countries



Source: Own calculation based on Invest Europe (2018).

Investments in private equity capital recorded 71.7 bn. EUR in 2017, the second-highest amount in the history of Europe. This represents a huge part of the total active European private equity capital representing 640 bn. EUR in more than 1,250 private equity companies. As shown in Figure 1, buyout investments represent the largest share, while flowing into mature companies. On the other side, venture capital investments flowing into start-ups and young companies take place on a smaller scale but more often.

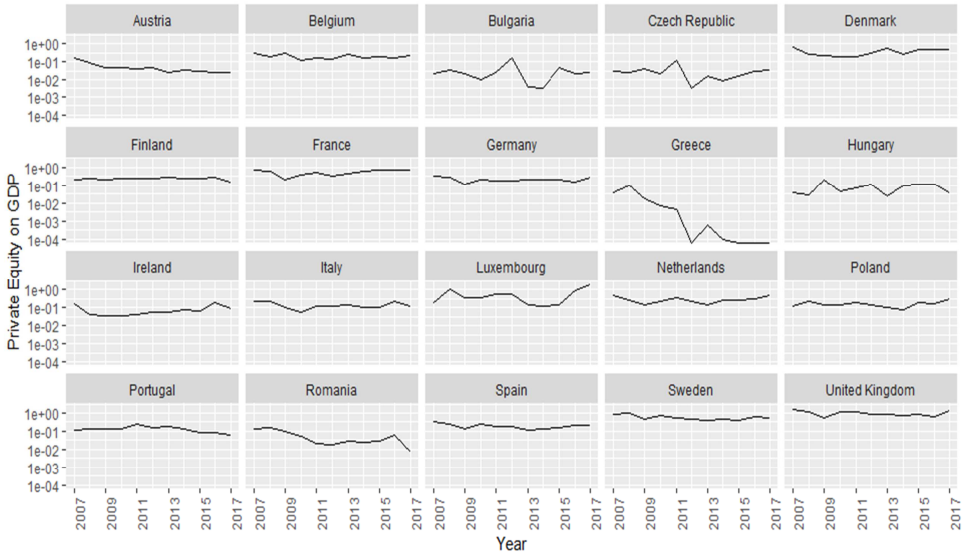
The aim of this paper is to analyse the differences in the driving forces of private equity capital in the European Union. We assume that the European Union is not as homogeneous as the United States, and so the predictors of

private equity capital may vary from country to country. The capital supply and demand are especially low in less developed countries of Eastern and Southern Europe. Zhang (2019) notes, the unified financial regulatory system is needed to establish an appropriate environment for private equity funds. However, such a solution may pose a problem for less developed countries that would require a tailored solution.

Private equity represents only a fraction of all investments made in these countries. The relative expression of private equity in relation to GDP shows the gap between Eastern and Western Europe. Unlike Bernoth and Colavecchio (2014), who used this division, we have found some exceptions that do not fit the geographical distribution, especially Italy and Hungary. Therefore, simple division on Eastern and Western Europe is not enough to quantify the impacts of different factors.

F i g u r e 2

Development of Private Equity Capital Activity in Europe



Source: Own calculation.

1. Literature Review

The importance of private equity is emphasised in various papers. There is a broad consensus that there is a positive relationship between private equity and economic, presented e.g. by Meyer (2006). A strong private equity market represents the driving force of commercialisation and innovation in modern

economies. As described by Popov and Roosenboom (2009), private equity investments also positively affect company formation in areas with higher research and development activities. This conclusion is most applicable in countries with a better legal system and law enforcement. The level of private equity activity in Europe is low and therefore the overall impacts of private equity are relatively small. However, this effect is still present and drives individual countries, but also the entire global economy, as stated by Aldatmaz and Brown (2020).

On the other side, the microeconomic effects can be seen in terms of higher employment and productivity, lower bankruptcy rate and higher research and development activities. From the investor's point of view, private equity capital is linked with associated with higher returns due to the higher risk profile of the investment. It should also be noted, that there are differences between first and last quartile of investments in terms of profitability (Kelly, 2010).

The determinants of private equity are examined in various papers with no broad consensus. According to Groh and von Liechtenstein (2009), economic growth expectations are highly important for investment creation in all emerging regions, but investors also focus on other allocation determinants. Oino (2014) states that growing economies with low inflation tend to attract all forms of investment into the country, hence venture capital. Gompers and Lerner (2000) contributions are based on assumption, that countries with rising GDP generate more business opportunities and so economic growth is the ideal situation for creating new businesses.

Regarding the business environment, Gompers and Lerner (2000) suggest that tax has a significant impact on every business. Lower tax burden leads to higher profits, which represent one of the main purposes of business. The results of Oino (2014) indicate the strong impact of the country's legal environment on attracting investment. Enforceability and property protection establish important conditions for the promotion of the entrepreneurial activity. On the other hand, bureaucracy, corruption, and insufficiently developed business environment create obstacles to the capital movements.

The availability of capital seems to have a significant negative impact on venture capital. Bonini and Alkan (2009) argue that rising interest rate reduces the attractiveness of risky investments, giving priority to risk-free investments. This reduces the supply of private equity capital affecting investment activity. They also state that the capital market does not have a significant effect, while Gompers and Lerner (2000) claimed otherwise.

According to Bozkaya and Kerr (2014), there is a strong correlation between labour market rigidity and venture capital activity in Europe. Labour supply is also one of the important factors, as new and restructured companies often

require a skilled and innovative workforce. Therefore, the slower growth of private equity is expected in countries with the low-quality workforce. Also, too high labour market rigidity can have a negative impact on labour demand.

As can be seen above, there is an information base on the effects of private equity. However, most of these papers try to identify these factors in the USA, where the use of this capital is at a higher level. However as Mažer, Bolfek and Peša (2019) shows, entrepreneur activity is strong in CEE countries but primarily oriented on bank financing. They identified especially legal regulations, corruption, networking and poor corporate governance as the main obstacles for these countries. Skalická Dušátková, Zinecker and Meluzín (2017) point to issues in legal structures and tax handicap of the Czech Republic, where they recommend stimulate capital supply using pension reforms.

Jenkinson (2007) concludes that the distribution of the private equity industry is relatively concentrated, and the differences persist. Similar opinions were presented in Atkeson and Bayoumi (1993) on the example of the USA, which is considered as much more homogenous unit in comparison with the European Union. However, the literature is based primarily on the assumption that there are no differences between the determinants of private equity. In this context, Bernoth, Colavecchio and Sass (2010) seeks to find mutual as well as individual determinants of private equity investments across Western and Eastern Europe. Based on this, we assume that the level of country development affects the supply and demand of private equity capital differently. In the past there were huge differences mainly between Eastern and Western Europe. Recent development has reduced these disparities and pointed out that the geographical distribution of Europe no longer fully represented the level of individual states. In this paper, we have tried to find these boundaries between the parts of Europe using cluster analysis, not only the geographical layout. This should lead to the creation of more homogeneous blocks related to private equity activity. At the same time, this information can be useful for policymakers, as it will be possible to target the most needed areas to attract investments.

The motivation of this paper originates in the diversity of the results in this topis as well as providing a more detailed description of impacts based on country maturity level, that could serve as a basis for policymakers. We have also tried to update the results of researches as Balboa and Martí (2001), Bernoth, Colavecchio and Sass (2010) and Kelly (2010) which have focused on the European Union.

Based on this division, we should be able to identify factors, that should be targeted to support the activity of private equity capital in the country depending on its maturity. Hence, the following hypothesis:

H1: *Factors of private equity determinants vary depending on the maturity of the country*

Regarding the interest rate, its increase should cause a decrease in private equity activity (Gompers and Lerner, 2000). However, the effect of the interest rate can be driven by higher capital demand in less developed countries. As stated by Wai and Wong (1982) and Kinoshita and Campos (2003), capital inflow represents one of the main sources of domestic investment activity. A lower country level should be associated with lower savings and therefore lower private equity activity, implying:

H2: *The private equity activity in less developed countries is more dependent on foreign sources of funding.*

As stated by Gompers and Lerner (2000), public consumption could be beneficial in supporting private equity activity. We assume the significant impact of government expenditure on private equity capital, especially in less developed countries, where a substantial portion of investments is partly funded by the government budget. Presuming that government investment will be carried out jointly with the private, we expect:

H3: *Public expenditures are beneficial in supporting private equity capital activity.*

Healthy business environment is essential to ensure business activity and investment inflow. The investors are looking for secure space to earn, especially when talking about less developed countries. As reported by Balboa and Martí (2001), socio-political stability represented by government integrity and the protection of property rights should be a positive sign for a stable investment environment. Also, property rights protection is a good sign of the maturity of the country and should be positively connected with higher investment activity, as stated by Groh and von Liechtenstein (2009). Therefore, we expect:

H4: *Socio-political stability plays an essential role in less developed countries.*

2. Data

In this article, data from multiple sources have been combined to create one large data set with longitudinal data. We have used following sources: Eurostat (2018), Heritage (2018), Invest Europe (2018) and WorldBank (2018). Private equity dataset was available for the period 2007 – 2017, covering 11 years and all EU countries.

However, we only used data of 20 countries, as other data were only available for transnational groups as Baltic and CEE countries. The distribution of used significant variables is presented in Table 1. The created dataset contained 26 variables in total based on the literature review. All significant variables, as well as the dependent variable, are described in Table 1.

T a b l e 1

Descriptive Statistics of Endogenous Variable and Significant Exogenous Variables

	mean	**sd**	**median**	**min**	**max**	**p25**	**p50**
Total PE	0.33	0.35	0.24	0.00	2.99	0.15	0.24
Public Consumption	0.05	0.01	0.05	0.03	0.07	0.04	0.05
Unemployment	8.78	4.63	7.55	2.89	27.48	6.11	7.55
Fundraising	0.30	0.53	0.10	0.00	3.91	0.04	0.10
Interest Rate	3.66	2.71	3.36	0.09	22.50	1.74	3.36
Employment	52.97	5.39	53.20	38.60	64.30	49.60	53.20
Property Rights Index	6.94	1.21	7.30	3.47	8.65	6.00	7.30
Inflation	1.83	1.93	1.65	–4.48	12.35	0.49	1.65
Tax Burden Index	61.89	14.41	61.35	32.70	94.00	51.70	61.40
Government Expenditure RandD	0.21	0.09	0.20	0.02	0.42	0.14	0.20
Market Capitalisation	59.32	41.93	48.14	8.49	326.36	26.60	48.10
Investment Freedom Index	78.09	12.01	80.00	50.00	95.00	70.00	80.00
Financial Freedom Index	70.45	11.50	70.00	40.00	90.00	60.00	70.00
Total Expenditure RandD	1.75	0.89	1.57	0.21	3.75	1.19	1.57

Source: Own calculation.

According to Bernoth and Colavecchio (2014), there is no uniform framework for analysing private equity investments, to select an appropriate model with the corresponding variables. In this paper, all identified variables have been classified into 4 basic groups relating to economic activity, taxes, labour market and business environment and shown in Table 2.

T a b l e 2

Explored Explanatory Variables

Economic activity	**Finance and taxes**	**Labour market**	**Business environment**
GDP Growth	Fundraising	Unemployed	Doing Business index
Corruption index	Market capitalisation	Employed	Number of patents
Government expenditure index	Harmonized long-term interest rate	Labour market flexibility index	Property rights index
Inflation	Total tax		Business freedom index
Monetary freedom index	Tax burden index		Trade freedom index
Economy freedom index	Tax attractiveness index		Finance freedom index
Government integrity index			Investment freedom index
Household consumption			
Public consumption			
RandD expenditures			

Source: Own processing.

The factors examined in this paper include both cyclical and structural components. While structural changes represent long-term to permanent changes in the environment, cyclical factors tend to return to their original values. The macroeconomic situation represents the impact of the business cycle itself on investors decision making. As it is a cyclical element, its effect is likely to be similar in all countries. This is suggested by the study by van Pottelsberghe de la Potterie and Romain (2004), who found clear evidence of the cyclical nature of private equity investment itself.

The data examined used different scales and there were huge differences between countries due to their different size, so it was necessary to standardise the variables. Nominal values were transformed into a percentage of GDP, which minimised the differences between the variables. Some variables already contained the required percentage form, such as inflation, so these values were not adjusted. Also, it was unnecessary to use exchange rate calculations because the data were converted to a percentage of GDP.

Total private equity industry activity was used as a dependent variable. These statistics cover all investment phases according to Invest Europe terminology: venture capital, buyouts, growth capital, rescue and debt replacement capital. These figures, therefore, apply to all private equity investments in the broadest sense, according to the location of the main partner (private equity firm), regardless of the location of the portfolio company. Therefore, this article examines in particular factors that determine the creation and subsequent allocation of resources.

3. Methodology

This research assesses differences in private equity determinants across Europe. Firstly, to identify countries with similar private equity activity cluster analysis was performed. Using all private equity statistics, we tried to find not only countries with a similar level of private equity investments but also with a similar distribution. Although the differences between Eastern and Western Europe were expected, cluster analysis can provide more objective results. Secondly, a panel regression analysis was performed based on clustering results. This regression could reveal differences between countries.

In this paper, Ward's method of clustering was used. Due to the presence of correlation of analysed variables, distances between countries were computed by Mahalanobis distance using formula (1). It takes into account correlations of the data set and is, therefore, according to Sambandam (2003), suitable for correlated data.

$$d(x,y)=\sqrt{(x-y)^{'}S^{-1}(x-y)} \tag{1}$$

where

x and y – individual vectors,
S – represents a variance-covariance matrix (Mahalanobis, 1936).

The clustering results were three groups with different levels of private equity activity marked as groups 1, 2 and 3. A higher group number is related to higher private equity activity.

Secondly, a similar approach was used to examine private equity determinants as in the case of Jeng and Wells (2000) and Kelly (2010), with some modifications. Fixed effects, as well as random effects models, were analysed and the most suitable model was selected using the Hausman test. According to Oino (2014), random effects model is preferred for reasons of efficiency, but if there is a correlation between the components, fixed effects model is preferred and random effects model is inconsistent. The test was accomplished only in the second group containing countries with relatively high private equity activity as Germany, Austria, and Nordic countries. In other clusters, random effect model could not be performed, because the number of explanatory variables was higher than the number of cross-sectional units (Botha and Ndlwana, 2018; Croissant and Millo, 2008).

Concerning previous studies and our assumptions, the equation has to be examined as follows:

$$y_{it}=\alpha+X_{it}^{'}\beta+u_{it} \tag{2}$$

where

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

All necessary testing has been carried out when creating models. The stationarity of the data was checked using panel cointegration test proposed by Maddala and Wu (1999). All standardised variables series have no unit roots, and therefore can be characterised as stationary. However, serial correlation (Breusch-Godfrey/ Wooldridge test) and heteroscedasticity (Breusch-Pagan test) were identified as the main sources of potential problems in regression, therefore Arellano (1987)

robust covariance matrix was calculated. This method is also characterised by robustness to serial correlation and heteroscedasticity. According to Pesaran CD test, the cross-sectional correlation absented in the models. The next step represented testing of individual and time effects in the model using Lagrange Multiplier Test by Honda (1985), while only individual effects seem to be significant.

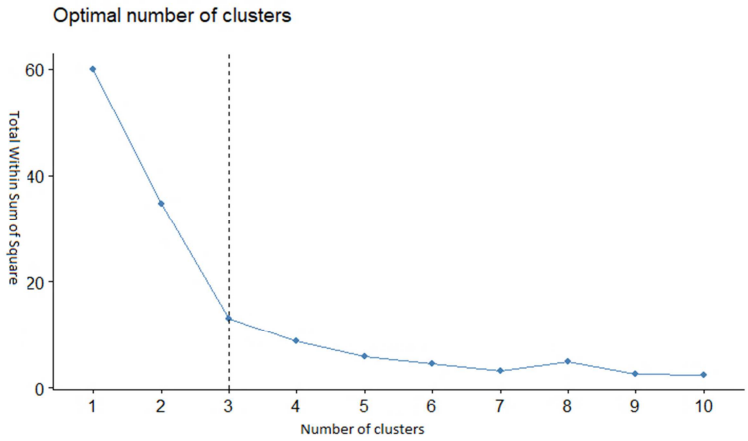
Only statistically significant variables should remain in the model to save degrees of freedom and to avoid multicollinearity, as Bernoth, Colavecchio and Sass (2010) did. Thus, for each regression, we then statistically insignificant and correlated variables. This was done using a backward elimination process, which is important for small data samples like ours (Bernoth, Bernoth, Colavecchio and Sass, 2010). Backward elimination methods produce larger attribute sets, while forward elimination can produce not enough predictors. Also, a suppressor effect may be present in the model, which according to Menard (2002) should be preserved when using backward selection. Regressions were made separately for every group, in order to focus on the similarities and differences in the driving forces of PE investment.

4. Results and Discussion

Firstly, the clustering was done using standardized data, therefore differences resulting from the different size of the country should be overcome. Elbow method is shown in Figure 3 recommended 3 groups as a basic division for panel data analysis. Every group should contain countries with a similar level of private equity activity (Charrad et al., 2014).

Figure 3

Results of Elbow Method

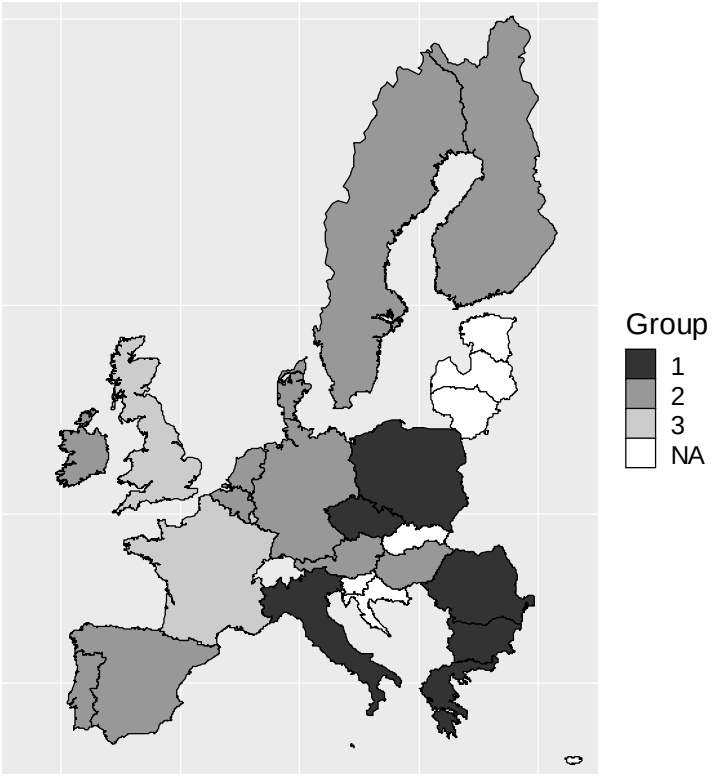


Source: Own calculation.

The clustering results are shown in Figure 4. A better look at the chart indicates, that the first group contains especially less developed countries, and second and the third group contains higher developed countries of the European Union. In comparison with Bernoth, Bernoth, Colavecchio and Sass (2010), we can say, that especially eastern countries tend to be in Group 1. According to collected data, these countries show lower levels of private equity investment activity, because of relying on traditional forms of company financing. The second Group has higher levels of private equity activity, while the third group shows the highest activity in these investments, but also in fundraising. We can say second, and the third group are primary sources of nearly all private equity investments in European union. The countries marked in grey have available only aggregated data for country groups.

F i g u r e 4

Distribution of EU Countries According to Cluster Analysis



Source: Own calculations based on Invest Europe (2018).

The results of the cluster analysis serve as a basis for the division of Europe into the clusters, where the panel data regression is done. Using this division has the advantage the countries should be on the same level of private equity activity.

The results of panel data analysis are shown in Table 3 with all subsequent tests to ensure the quality of the model.

T a b l e 3

Results of Panel Data Analysis

	Group 1		Group 2		Group 3	
Public Consumption	–7.110	(**)	–3.475	(*)		
Unemployment	–0.001	(**)	–0.027	(**)	–0.212	(**)
Fundraising	0.045	(***)	0.089	(**)	0.137	(***)
Interest Rate			0.015	(**)	–0.073	(*)
Employment			–0.029	(**)		
Property Rights Index	–0.003	(***)	–0.004	(*)		
Inflation	0.007	(**)			0.124	(***)
Tax Burden Index	–0.005	(***)			–0.046	(***)
Government Expenditure RandD	–0.305	(**)				
Market Capitalisation					–0.002	(*)
Investment Freedom Index					0.009	(***)
Financial Freedom Index					0.025	(*)
Total Expenditure RandD					0.114	(*)
R-Squared	0.330		0.191		0.615	
Lagrange Multiplier Test – individual effects	2.901	(***)	3.821	(***)	1.94	(**)
Lagrange Multiplier Test – time effects	–1.206		1.064		–0.397	
Breusch-Godfrey/Wooldridge test	13.826		25.469	(***)	12.874	
Pesaran CD test	–0.087		0.269		–0.031	
Breusch-Pagan test	12.058	(*)	30.698	(***)	20.022	(**)

Note: According to Table 3, symbols (***), (**) and (*) represent significance levels 1%, 5% and 10%.

Source: Own calculation.

Examination of H1:

Based on these results, we can assume there are differences between the determinants of private equity capital across Europe. Firstly, common factors tend to have different forces of action, especially when talking about Fundraising, Unemployment, Inflation, and Interest rate. These effects of these variables vary in our final models by the highest numbers. Secondly, the less developed countries are negatively affected by Public consumption and Property rights protection, while the most developed countries showed no effect on these variables. These countries were influenced by Market capitalisation, Financial and Investment freedom, but also by Research and Development expenditure in contrast with less developed countries. This suggests that less developed countries are not the target of investment because of innovation activity or government support, but because of the higher expected return while having a relatively stable business environment. Even the tax burden seems to be not so important, probably because of possible tax reliefs, which is in contrast with Bernoth, Bernoth, Colavecchio and Sass (2010) suggesting tax competition is an important role in CEE countries. This fact contradicts our expectation that the lower tax burden will affect interest in investing, especially in less developed countries and should

be a subject of further studies. On the other side, developed countries are preferred due to higher innovation activity and overall economic freedom. The growth of innovation activities in less developed countries could therefore cause a further wave of capital inflows.

All these results support the first hypothesis of different effects of private equity factors across Europe.

Examination of H2:

As expected in Balboa and Martí (2001), fundraising is closely linked to investment activity. According to the beta coefficient values of fundraising, we can conclude, that the more the country is developed, the more it relies on own resources. Therefore, especially developing countries should support the collection of own resources as well as the inflow of capital into the country. Bernoth, Bernoth, Colavecchio and Sass (2010) pointed out that the CEE countries are more sensitive to the availability of financial resources, and a large part of domestic fundraising of less developed countries flows into the most developed regions.

We have also observed mixed effect of interest rate. While developed countries are positively affected probably due to higher demand for investments (Gompers and Lerner, 2000), the higher interest rate should also lead to a lower supply of private equity capital, because it will cause the drop of interest in risky investments (Bonini and Alkan, 2009). According to our results, lower developed countries seem to be primarily affected by demand, while the higher developed countries by supply of capital.

According to our assumptions, market capitalisation should be positively linked to private equity capital, because divestments can be carried out using stock market. This is confirmed by Balboa and Martí (2001) and other older publications. We cannot accept this assumption, because of low significance level of this variable. European private equity industry is much less reliant on the stock market than American and is no longer dependent on the existence of the stock market. According to Black and Gilson (1998) this represents a comparative advantage of US venture capital industry. One of the possible reasons could also be that only venture capital is strongly affected with the liquidity of financial markets, while this represents only a small part of EU private equity activity. According to Invest Europe (2018), only 9% of the private equity volume represents venture capital. This is however questionable because of Kelly (2010) results, where he states buyouts are also positively affected by a developed stock market. According to Group 3, there is even a negative effect of market capitalisation on private equity capital. This can be a sign, that a stock market

represents a competitive environment for investment funds in these countries, and so crowding-out effect of stock markets is much stronger than synergic effect.

Different levels of private equity dependence on fundraising together with the positive effect of interest rate support the second hypothesis.

Examination of H3:

According to Gompers and Lerner (1998) and Meyer (2006), we have expected positive effects of public consumption and government expenditure on private equity investments especially in less developed countries, because they form a significant part of resources used in the private equity funds. Private resources are invested in line with government steps to stimulate own business, leading to a growth of private equity.

However, according to the results of panel data regression, there seems to be a negative effect of expansive fiscal policy on private equity capital. Expansionary fiscal policy leads to an increase in interest rate, which significantly affects the private investors' decisions. Although the positive effect of government expenditures must be present, the crowding-out effect of these investments has to be at a much higher level. Thus, excessive government expenditures led to lower private equity activity. Although the resulting effect is dependent on type of expenditure, we can see significant negative impact in both variables of public consumption and government RandD expenditures. In line with neoclassical theory, we must state that government spending has therefore crowded out private investment.

This is especially a problem in less developed countries, where both the effect of private consumption and government spending was negative. This finding is in line with Furceri and Sousa (2011), who have confirmed a crowding-out effect on a global scale. However, we were not able to confirm its higher impact in developed countries as in Gjini and Kukeli (2012), probably due to low proportion of government expenditures in private equity capital of developed countries.

These results suggest the third hypothesis cannot be accepted. Government spending leads ultimately to lower private equity activity, especially in less developed countries.

Examination of H4:

We also did not observe any significant effect of government integrity and corruption level in the data examined, suggesting the level of socio-political stability in the European Union is at a sufficiently high level. This is in contrast with Mažer, Bolfek and Peša (2019) and Botha and Ndlwana (2018), where they state, government corruption has a high impact on venture capital. The impact of the business environment presented by Bonini and Alkan (2009) can be

confirmed in a limited way and thus the growth of investment and financial freedom creates a favourable investment environment for the growth of business activity accompanied by higher private equity activity. However, this effect was observed only in the more developed countries.

In all groups, we have observed similar results as Bernoth and Colavecchio (2014), who states political stability and regulatory quality do not seem to play any significant role in PE investment decisions in the CEE countries. However, we cannot confirm the negative effects of these variables on more developed countries as they stated. An explanation might be the European Union represent a developed part of the world, where the stability and rights enforcement is not questionable.

On the other side, Desai, Gompers and Lerner (2006) talk about the need for adequate legal and regulatory structures and the protection of property rights. Positive effects of property rights protection are described also by Groh and von Liechtenstein (2009). However, imitation is the simplest form of progress and therefore high protection of property rights can lead to higher operating and development costs. This may result in a lower level of investment. We cannot say that property protection is undesirable, but too high protection is restrictive, especially in developing countries. This crowding-out effect of high property rights protection causes a slowdown of investment activity in the less developed economies. These findings are in line with the assumption of Horii and Iwaisako (2007), where they point out that by imitation less-advanced states can catch up to the more advanced ones.

In conclusion, we can say, socio-political stability may be an important role of private equity activity, but in the examined dataset of the European Union, no such conclusion could be confirmed. The economic level and business environment, however, indicates a significant effect in our data.

High unemployment may be a sign of labour market rigidity, and therefore negatively impact on private equity is expected. If there are barriers for hiring and dismissing employees, unemployment rises. This variable can also represent an economic cycle effect. In a recession unemployment is high, savings are decreasing and that also leads to lower private equity activity. Too high employment limits the potential of new staff, and so slows down private equity investments. In particular, advanced countries are more sensitive to changes in employment. A possible explanation may be that employee turnover is higher in less developed countries. There is a higher sensitivity to unemployment changes in more developed countries. The same rise in unemployment in every group mostly affects a developed country where this situation is least expected. Our results seem to fit the expectation of Botha and Ndlwana (2018).

In contrast with Oino (2014) and Bernoth and Colavecchio (2014) we have found small but a positive impact of inflation on private equity activity. This situation may be caused by the fact that low inflation is beneficial to the country, and it motivates people to save and invest their money, as concluded by Pajooyan and Khosravi (2013). This positive effect was much stronger in higher developed countries, probably because of higher funds available to invest. We expect negative effects of high inflation on private equity investments at home, but a positive effect on fundraising and investing abroad.

Involved tax burden behaved as expected by Bonini and Alkan (2009), Gompers and Lerner (1998) and Groh and von Liechtenstein (2009). Tax burden leads to higher costs, which can negatively affect investment activity. This situation is visible in Groups 1 and 3, where higher tax costs represented an obstacle for investors resulting in lower private equity activity. Tax is definitely important determinants of private equity capital, but in contrast with Skalická Dušátková, Zinecker and Meluzín (2017) we cannot identify the tax burden as one of the main needs for the reform in less developed countries.

Conclusion

Private equity capital has become an important part of company funding and innovation and the literature of driving forces in developing countries seem to be obsolete to apply in less developed parts of Europe nowadays. Although there are studies of determinants of private equity activity, there is no broad consensus which determinants significantly affect private equity activity. We assume the country maturity is an important factor for demand and supply of private equity capital, influencing the effect and direction of individual variables. Analysing 20 countries of the European Union within years 2007 – 2017 we have tried to identify the most important differences.

This study adds the division of the European Union into 3 clusters with similar level and distributions of private equity investments to identify main differences between these countries. Subsequently, the fixed effects model was carried out to identify and point out the possible gap in understanding of private equity determinants. We have found only 13 variables from 26 variables identified by the literature review to be significant in created models. One of the main problems is the availability of data, which led us to examine a relatively small sample.

The main findings are as follows. We have confirmed the differences between countries with different level of private equity activity. This implies the need for a different approach to improve private equity activity in analysed regions. We have found evidence, that fundraising is very important in trying to explain the

activity of private equity. The less developed countries show lower efficiency of fundraising, stemming from its flow to the most developed parts of the European Union. In this sense, more developed countries have higher benefits from fundraising, because most of the money collected remains inland. Therefore, supporting domestic investment in less developed countries is favourable. On the other side, government expenditures and investments constitute the obstacle for private equity activity. This can be demonstrated as a crowding-out effect operating mainly in countries where the government represents a significant source of capital. A positive effect of a liquid stock market was not observed, and therefore it can be expected that capital has found a different effective way of divestments in Europe.

Unlike literature suggests, the effect of socio-political stability remains in the model subtle and almost absent. However, the most developed countries have been shown to be much more sensitive to the same shocks than less developed countries caused by unemployment or lack of domestic savings. Thus, we can assume that our cluster analysis approach to divide Europe into smaller parts can better reflect the needs of countries in their transformation.

In conclusion, almost all significant variables seem to have the same direction of effect across the Europe, although the strength of this effect is different. All this information can be used by policymakers of especially less developed European countries to stimulate private equity activity. Firstly, governments should be careful in implementing expansive fiscal policy through government expenditures because crowding-out effect was much more powerful than crowding in-effect thus displacing other investments. Secondly, the tax policy positively affects especially developed countries. Although a positive effect is also present in less developed areas, the tax appears to be a less significant factor for the activity of private equity. This result could be the subject of further studies. Thirdly, it would be appropriate to provide an environment where higher savings will be generated, while encourage and favour domestic investments. Lastly, the government should promote business environment and also note reducing investment and financial freedom to stimulate supply and demand of private equity capital.

The research findings can be a guide for policymakers to adjust their decisions, where repeating the actions of developed countries may not be the most advantageous. We have found several differences in comparison with the literature, which may be due to rapid changes connected with level of globalisation. Especially, effectiveness of government expenditures in RandD and low sensitivity of tax burden and government integrity in less developed countries have opened several interesting research questions, that could be the subject for further research. However, this study was performed on a relatively small sample that may limit the informative value of the results.

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