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**AN INTANGIBLE-INTENSIVE PROFILE OF  
COMPANIES: PROTECTION DURING THE  
ECONOMIC CRISIS 2008-2009<sup>3</sup>**

This study explores the successful strategies of companies during the 2008-2009 economic crisis. We investigate whether it is reasonable for companies to intensify intangibles when markets fall. This paper aims to find empirical evidence that companies with a clear intangible-intensive profile are likely to outperform those without a strategy. The results established in this study shed some light on the global economic crisis in 2008-2009. More than 1600 European companies were involved in the empirical analysis. The findings of this study demonstrate that companies with a conservative profile in intangibles outperform moderate and innovative ones. Still an innovative profile enables a faster recovery after a crisis.

**Key words:** economic crisis 2008-2009, strategic profile, intangible-intensive company

**JEL:** O30, G30

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## Introduction

The failure and success of companies in economic crises is a widely discussed issue. It has been considered in conceptual and empirical research papers, in analytical overviews, and consulting reports such as those by Krugman (2009) and Elliott (2012), and in the Final report of the national commission in 2011. The latest global economic crisis of 2008-2009 attracted particular attention from researchers since it led to dramatic structural changes in some industries and companies. Nevertheless, the research around key strategies of successful company in an economic crisis has not been frequently addressed.

It is commonly assumed that the more unique resources at the disposal of a company, the greater the chance that they will be better off in an economic recession. Unique resources are mainly contained in a company's intangible portfolio (Barney, 1991; Grant, 1991, Wade & Hulland, 2004, Kristand & Bontis, 2007). The evidence that intangibles played a crucial role during the economic recession in 2008-2009 were introduced by Guevara & Bounfour (2013). This paper studies whether intangibles are more important during economic turbulence and which particular intangibles increase a company's ability to outperform others in hard economic conditions. This idea has been tested by Beltratti & Stulz (2009), Lee *et al.* (2009), Gaffeo & Santoro (2009), Schenker-Wicki *et al.*, (2010) and Cohen *et al.* (2014).

The current study contributes to the development of this research. Taking a step further we expect that particular isolated intangible resources do not play a critical role in a company's success, especially in crisis conditions. At the same time, companies are likely to intensify those intangibles which are aligned with their strategic vision. These intangibles form a company's strategic resource portfolio (Kristandl & Bontis, 2007). It is interesting to know what combination of intangibles allows companies to survive and even succeed while others fail. An economic crisis is a unique opportunity to study this phenomenon because it acts as a natural experiment with an exogenous shock for all companies and industries.

Shakina & Barajas (2014) show that when companies intensify their intangibles they have common features in their behaviour. In that study, three companies profiles were identified. Two of them are considered intangible-intensive. They are the two clusters of companies that introduce the clear predominance of a particular combination of intangibles in their resource portfolio. These two profiles were identified as conservative and innovative. Meanwhile the other profile, which was not characterized by a clear strategy with regard to intangible portfolio, was called moderate (low) profile. This profile is not considered an intangible-intensive one.

The current study examines the change in the performance of each one of these profiles in the condition of an exogenous shock associated with the global economic crisis of 2008-2009. The research question is: Which strategic profile provides protection or even success for companies during difficult economic conditions?

To answer this question, we take the results introduced in Shakina & Barajas (2014). Based on this study, we empirically test whether there is a significant difference between the performance of companies in each profile before and

after the crisis. Considering the economic crisis an exogenous interference, we attempt to establish a causal relationship between company performance and the moderation effect of the crisis, and intangible-intensive profiles.

This paper is organized as follows. The next section is a literature review. Section 3 introduces the research design and econometric strategy. Section 4 describes the results of the model estimation. The last section presents the discussion of the results, the limitations of the research framework and gives an overview of future steps of this study.

### **Theoretical foundation**

Economic crises usually attract the attention of scholars because of their negative impact on the behaviour of economic agents. The number of papers about crises sharply increases in the year after a crisis onset (Chang & Ho, 2010). Gaffeo & Santoro (2009), Schenker-Wicki *et al.*, (2010) and Cohen *et al.* (2014) consider shifts in company strategy under the collapse of markets, and financial and investment restrictions. The recent global economic crisis attracted particular interest to company investment behaviour. According to Guevara & Bounfour (2013), during a downturn companies are challenged to find the best ways to reallocate their resources. Intangibles are considered priorities since they are 'a stream for future benefits' (Patel & Narain, 2008).

An extensive body of managerial literature considers the intangible-intensive strategies of companies. It is studied in the papers by Williams & Nones (2009), Martínez-Torres, (2014) and Williams & Lee (2009). Many recent studies such as those by Clarkson *et al.* (2011) and Bocquet *et al.* (2013) deal with proactive and reactive strategic behaviour in changing environments. However, the analysis of proactive and reactive decisions in intangibles is underdeveloped in the literature. This impedes a deeper understanding of the role of intangible-intensive strategies in companies in economic crises.

As stated by Dahlmann & Brammer (2011) companies do not tend to change their strategies considerably regarding intangibles. That implies that intangible-intensive strategies that have been chosen before an economic crisis either provide companies with sustainable competitive advantages or aggravate the situation during a recession. These findings were established by surveys carried out by Wilson & Eilertsen (2010). However, as discussed by Kunc & Bhandari (2011) some companies follow reactive strategies by cutting a substantial part of the expenses associated with their intangible portfolio. Thus, proactive strategies along with reactive ones are of particular interest when considering economic distress.

This study meanwhile attempts to fill a gap in the literature dedicated to the analysis of proactive company strategies in intangibles. In putting forward a hypothesis that intangibles create competitive advantages, intangible-intensive strategies are addressed in this paper as protectors from the distress brought by the global economic crisis in 2008-2009. There is a cluster of papers that considers different elements of strategic company investments: in innovations by Archibugi *et al.* (2013) and Paunov (2012); in human resources, by Crook *et al.* (2011) and Unger *et al.* (2011); in marketing by Svenden & Haugland (2011) and Hasan *et al.* (2014).

Most of these studies were based on surveys and reveal the attitudes of decision makers to external economic shocks and the outcomes of these attitudes towards company performance. Undoubtedly, behavioural factors are some of the most relevant when turbulent conditions are present. Still this research does not challenge the objective capacity of different intangible-intensive strategies to keep a company performing well in an economic crisis.

This paper states that there are common features and strategies of different companies with regard to intangibles. Some idiosyncratic assets must support each strategic position (Nickerson and Silverman, 1997). Intangible assets are among those peculiar assets that can provide a company with competitive advantages and allow it to outperform rivals. This makes them core strategic resources for a business. They enable an organization to differentiate itself from rivals and consequently to create sustainable value (Lev, 2001; Kristandl & Bontis, 2007).

Intangible-intensive strategy deals with these idiosyncratic assets is the main counterpart of the strategic behaviour of any company. We argue along with Bottani (2010) that these common features form a strategic profile of a cluster of companies. Thus, the intangible-intensive profile is the core of our investigation. According to Barajas & Shakina (2014), an intangible-intensive profile is associated with prioritized investments in certain types of intangibles. In this research, it is important to distinguish a moderate (or low) profile from the intangible-intensive ones. A moderate profile is the projection of a smooth allocation of investment among intangible resources. While the clear predominance of a particular coherent group of intangibles is introduced by intangible-intensive profiles.

The research question in this paper requires the study of company profiles, avoiding their idiosyncratic characteristics. For the purpose of our study we consider not a company but its strategic profile as a unit of observation. This research approach is also employed in studies by Cho et al. (2012).

## **Research Design and Methodology**

This study gives a comparative analysis of the different strategic profiles in intangibles across three periods: before the global economic crisis (2006-2007), during the crisis (2008-2009) and after the crisis (2010-2011).

As stated in the previous section, the unit of our observation is a company intangible-intensive profile. The research agenda of this paper is based on the empirical findings established in the study by Shakina & Barajas (2014). Core findings of the exploratory analysis which was conducted in the paper are the following:

- There are three strategic profiles which were empirically validated for the sample of European companies observed from 2004 to 2011.
- Two of the discovered profiles introduce intangible-intensive strategies. The first intangible-intensive profile with a clear predominance of innovation and networking capabilities was called Innovative profile. The second profile represents management capabilities and business process

capabilities as key strategic intangible resources. This profile was called Conservative profile.

We carried out the research in the following steps:

1. To introduce the statistical description and analysis of the data in each profile in dynamics.
2. To elaborate the model to test whether a negative or positive jump in performance because of intangible use in each profile could be registered during the crisis. And how fast were companies recovering after the crisis in each profile.
3. To elaborate the model to compare the dynamics in performance of companies with different profiles.

Hereafter the most essential findings from the paper by Shakina & Barajas (2014) are represented and interpreted:

- Figure 2 demonstrates the coordinates of clusters with regard to intangibles. Each coordinate is associated with a number of indicators that describe company intangibles: Human resource capability, Management Capability, Customer Loyalty, Network Capability, Internal Process Capability and Innovative Capability. The precise description of the indicators involved into analysis is demonstrated in Attachment 1.
- The results of clustering are introduced in Table 1 and Figure 2. These findings give a clear picture of the three corporate profiles in intangibles: Conservative, Innovative and Moderate. These profiles are considered the core of the investigation in this paper.

#### Human Resource Capability

- Productivity
- Earnings per employee

#### Management Capability

- Qualification of the board of directors
- Corporate university
- Strategy implementation

#### Customer Loyalty

- Brand power
- Citation in search engines
- Site quality
- Number of subsidiaries

#### Networks Capability

- Proximity of the University
- Location in the city with the population of more than 1 mln
- Foreign capital employment
- Subsidiaries

#### Innovation Capability

- Intangible Assets
- Patents
- R&D expenditures

#### Internal process Capability

- ERP system
- knowledge management system
- Strategy implementation

## Figure 1. Core six elements of companies' intangibles\*

\*Source: E. Shakina, A. Barajas (2014). "Intangible-intensive profile of a company: the key to outperforming" (published as a working paper in the NRU HSE series "Management" in 2014).

As seen from Figure 1, each of the intangibles is measured by a set of indicators that reflect one of the core feature of this intangible resource. All the indicators employed in our analysis can be estimated on the publicly available information.

Table 1. Results of cluster k-means analysis\*\*

Company Profile	Principal component of Intangibles	Management Capability	Human resources Capability	Customer Loyalty	Networks Capability	Business processes Capability	Innovative Capability
<b>Innovative profile</b>	min	-7,52	-63,05	-3,01	-0,60	-1,48	-0,61
	mean	-0,68	-0,09	0,21	1,16	-0,97	0,31
	max	9,94	36,62	9,35	2,25	4,41	14,41
<b>Number of companies</b>	<b>2529</b>						
<b>Conservative profile</b>	min	-2,30	-1,92	-1,95	-5,14	-0,48	-1,03
	mean	1,30	0,18	0,41	-0,26	1,89	-0,32
	max	2,91	28,71	11,05	2,24	9,86	19,88
<b>Number of companies</b>	<b>3001</b>						
<b>Moderate (low) profile</b>	min	-3,85	-2,46	-2,43	-2,18	-1,48	-1,03
	mean	-0,37	-0,05	-0,46	-0,88	-0,44	-0,03
	max	1,91	20,63	6,71	0,79	2,09	5,44
<b>Number of companies</b>	<b>3302</b>						
<b>Total</b>	min	-7,52	-63,05	-3,01	-5,14	-1,48	-1,03
	mean	0,11	0,02	0,03	-0,08	0,20	-0,03
	max	9,94	36,62	11,05	2,25	9,86	19,88

\*\*Source: E. Shakina, A. Barajas (2014). "Intangible-intensive profile of a company: the key to outperforming" (published as a working paper in the NRU HSE series "Management" in 2014).

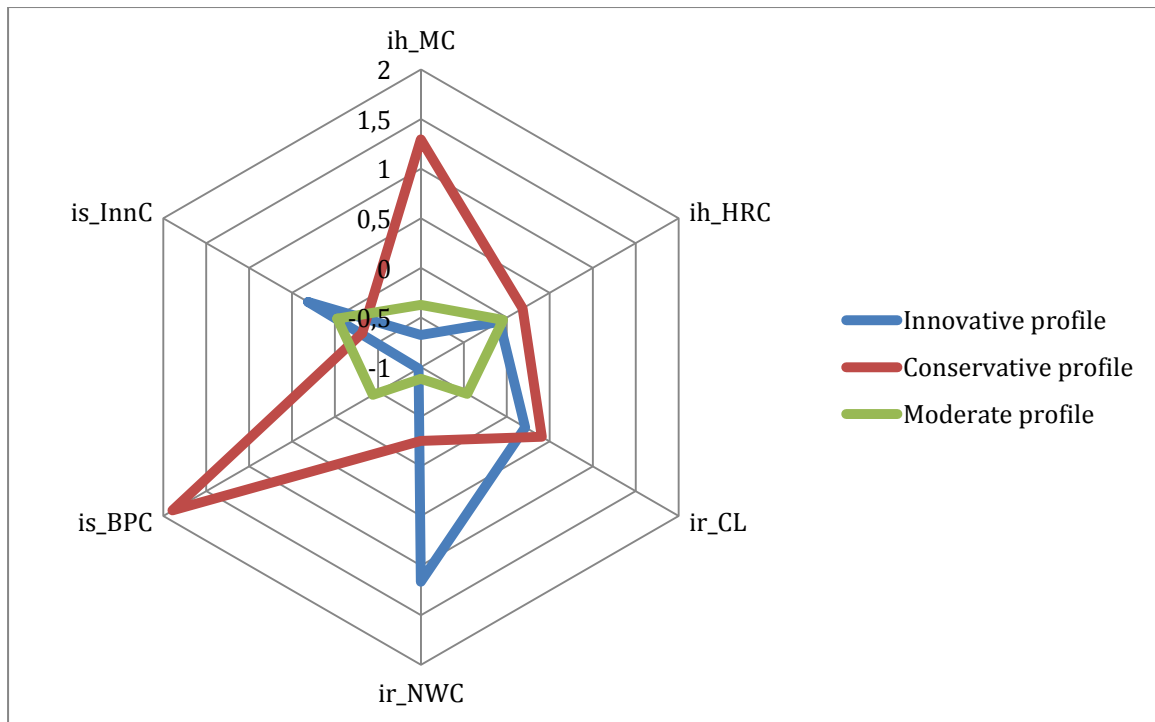


Figure 2. Radar diagram of three intangible-intensive clusters

### Econometric strategy

We carry out this examination on the dataset of European companies that operate in the five largest countries in Europe (UK, Germany, France, Spain and Italy). The data of these companies were observed from 2004-2011. To correctly control for the crisis effect we use three short panels: 2006-2007, 2008-2009, 2010-2011. The first panel is associated with the before-crisis period, the second panel the epicentre of the crisis, and the last the recovery after crisis.

The empirical analysis is carried out in two steps. Firstly, we estimate the comparative exploration of company performance across three periods: before, during and after the crisis. It is reasonable to consider two performance indicators when analysing intangible-intensive profiles of companies: economic value added (EVA) as a metric of intangible-driven output and market value added (MVA) as a metric of intangible-driven value creation. These indicators were employed in studies by Chen *et al.* (2005), Huang and Wang (2008), Shakina & Barajas (2013), and Molodchik *et al.* (2013). EVA and MVA are mainly associated with company intangibles. That makes them appropriate measurements of success in intangible-intensive strategy. The dynamics of EVA and MVA are explored for average representative companies, for the high-performing and the low-performing companies in each of three profiles.

At the second stage the causality between MVA, EVA and the moderation effect of intangible-intensive profiles is examined. According to Stern (2001) and Copeland *et al.* (2000) EVA a key value driver. For that reason a correct model should simultaneously contain the relationship between EVA, MVA and all other value drivers. The specification of such model is represented as Formula 1.

$$\begin{cases} MVA = f(EVA, CP, IP, ME_{CPbc}, ME_{CPdc}, ME_{CPac}, ME_{IPbc}, ME_{IPdc}, ME_{IPac}, CV) \\ EVA = g(CP, IP, ME_{CPbc}, ME_{CPdc}, ME_{CPac}, ME_{IPbc}, ME_{IPdc}, ME_{IPac}, CV) \end{cases}, \quad (1)$$

where *MVA* – market value added

*EVA* – economic value added

*CP* – conservative profile

*IP* – innovative profile

*ME<sub>cpbc</sub>* – moderation effect of the conservative profile before the crisis

*ME<sub>cpdc</sub>* – moderation effect of the conservative profile during the crisis

*ME<sub>cpac</sub>* – moderation effect of the conservative profile after the crisis

*ME<sub>ipbc</sub>* – moderation effect of the innovative profile before the crisis

*ME<sub>ipdc</sub>* – moderation effect of the innovative profile during the crisis

*ME<sub>ipac</sub>* – moderation effect of the innovative profile after the crisis

*CV* – control variables (country, industry, crisis years)

The model is introduced by two dummy regressions. The moderation effects are interpreted with the benchmark in moderate (low) profile. Three-stage least square estimator is used to get empirical results for these simultaneous equations.

#### Data description

The empirical analysis is based on data of more than 1600 European public companies observed during the 8-year period from 2004 to 2011. Information about companies located in five European countries has been collected: United Kingdom (44%), Germany (24%), France (25%), Spain (5%) and Italy (2%). The entire GDP of these countries covers more than 70% of the European GDP. The composition of this database represents the European market according to the country criterion. It also accurately represents these countries in relation to the industry structure of the European economy. The Statistical Classification of Economic Activities in European Community (NACE) has been applied and the following sectors are included in the database: Management of Companies and Enterprises (25%), Manufacturing (20%), Professional, Scientific and Technical Services (12%), Finance and Insurance (10%) and other industries (33%). The representative rate of SME and large enterprises in the database is 36% and 64% respectively.

The dataset in this study has been collected from a combination of detailed longitudinal databases, namely Bureau Van Dijk (Amadeus) and Bloomberg. The database consists of financial and non-financial indicators underlying the variables which reflect several quantitative and qualitative characteristics of IC. The database includes figures from annual statistics and financial reports. Other information was collected from publicly available sources such as company websites, patent and information bureaus, and rating agencies.

As a result 22 variables are involved in the empirical investigation carried out in our study. Attachment 1 introduces the description of these variables with the references to the papers, which have employed the same or nearly the same indicators in their analysis of intangibles.

Most of the indicators included in the exploration of intangibles in this study are measured by continuous variables. All of them are not normally distributed



having skewness and being long-tailed. Nevertheless, significant outliers are observed only in financial indicators. This appears to be easily explained since the database included all listed companies not putting any restrictions on the scale of their activity.

## Results

According to the research algorithm described in the previous section the first step of the analysis illustrates the dynamic in EVA and MVA for the profiles. The comparative dynamic of EVA and MVA is shown on Figure 2.

The variables EVA and MVA were preliminarily proceeded to the percentiles. This expression of EVA and MVA distribution enables an appropriate smoothing for the purpose of this stage of analysis.

As seen from Figure 2 companies with a conservative profile have greater mean values and variation of both EVA and MVA across all periods. An innovative profile has allowed companies to have smaller drawdown during the economic crisis on average. A moderate (low) profile has demonstrated relatively low average values and variation in EVA and MVA in contrast with conservative intangible-intensive profiles.

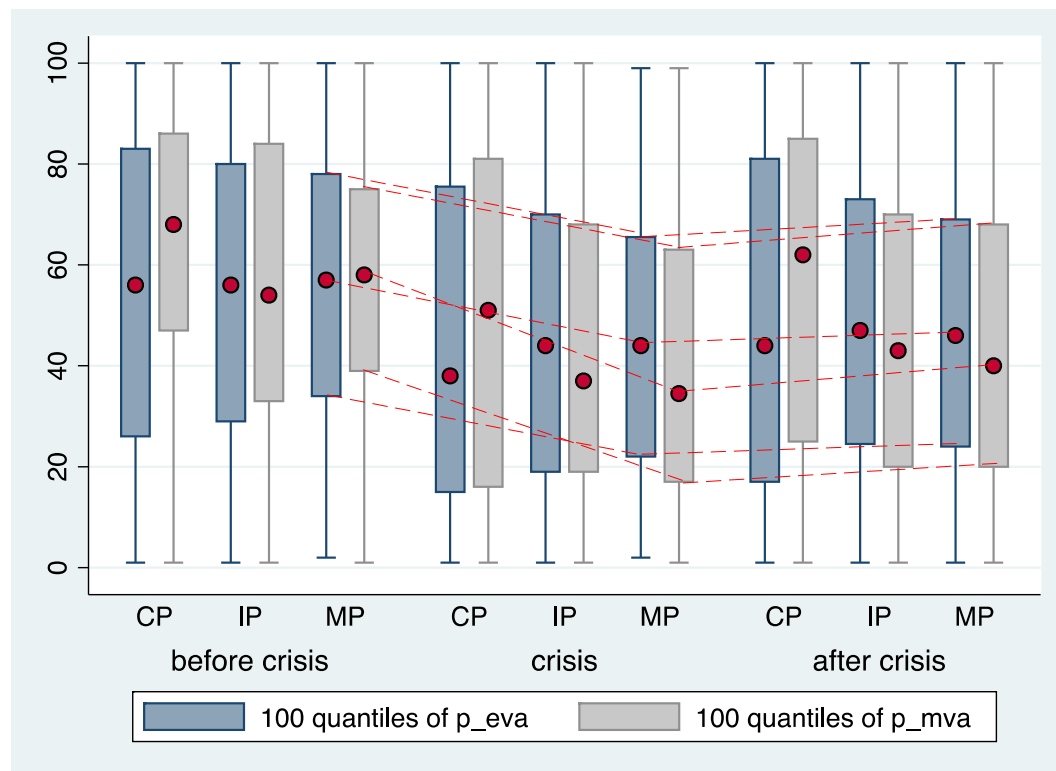


Figure 2. Dynamics of market value and economic value added before, during and after the crisis of 2008-2009

Figures 3, 4, and 5 represent the dynamics in EVA and MVA for the average, high-performed and low-performed companies in each profile separately.

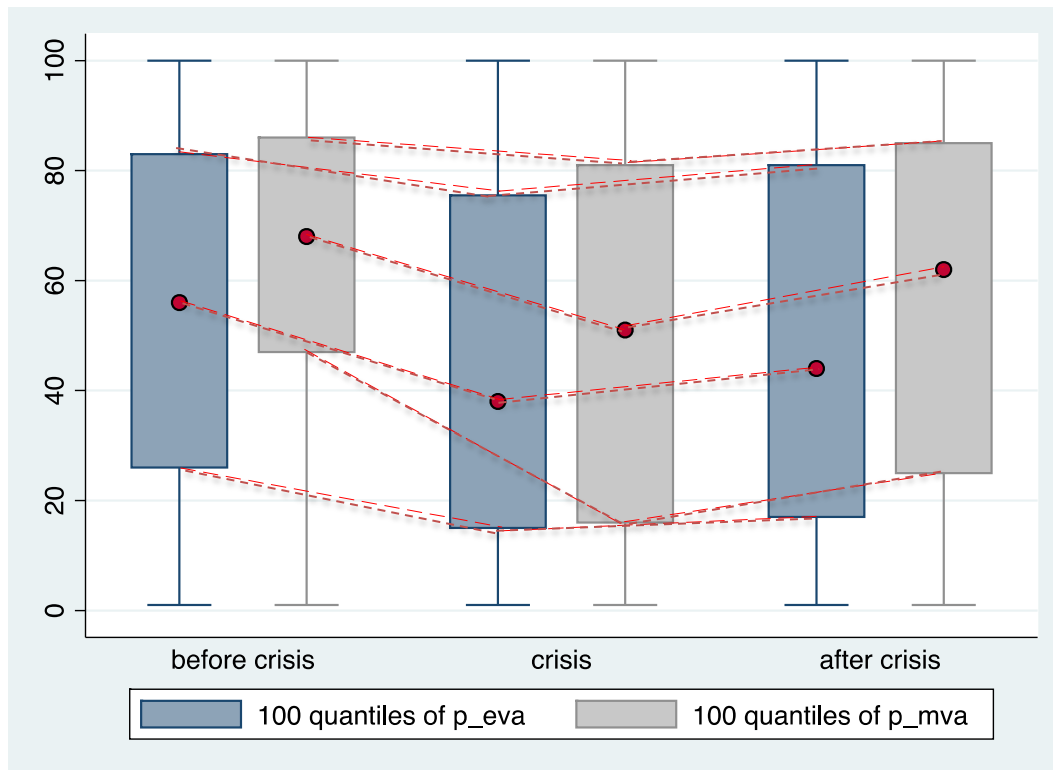


Figure 3. Dynamics of market value and economic value added in companies with conservative profile

According to Figure 3 a representative company with a conservative profile had equal decreases in EVA and MVA in the crisis years 2008-2009. This fact means that financial markets recognized negative trends in company performance and reacted to this expectation. Considering this we did not find an excessive response to the economic downwards for average company with conservative profile from the investors. Meanwhile the growth in both EVA and MVA started in 2009 and enabled an almost full recovery by 2012. The high-performing companies with the conservative profile show an insignificant fall in performance and a complete recovery after the crisis. Low-performing companies meanwhile dropped considerably in MVA. This might be evidence that investors tended to sell the shares of these companies under difficult financial conditions.

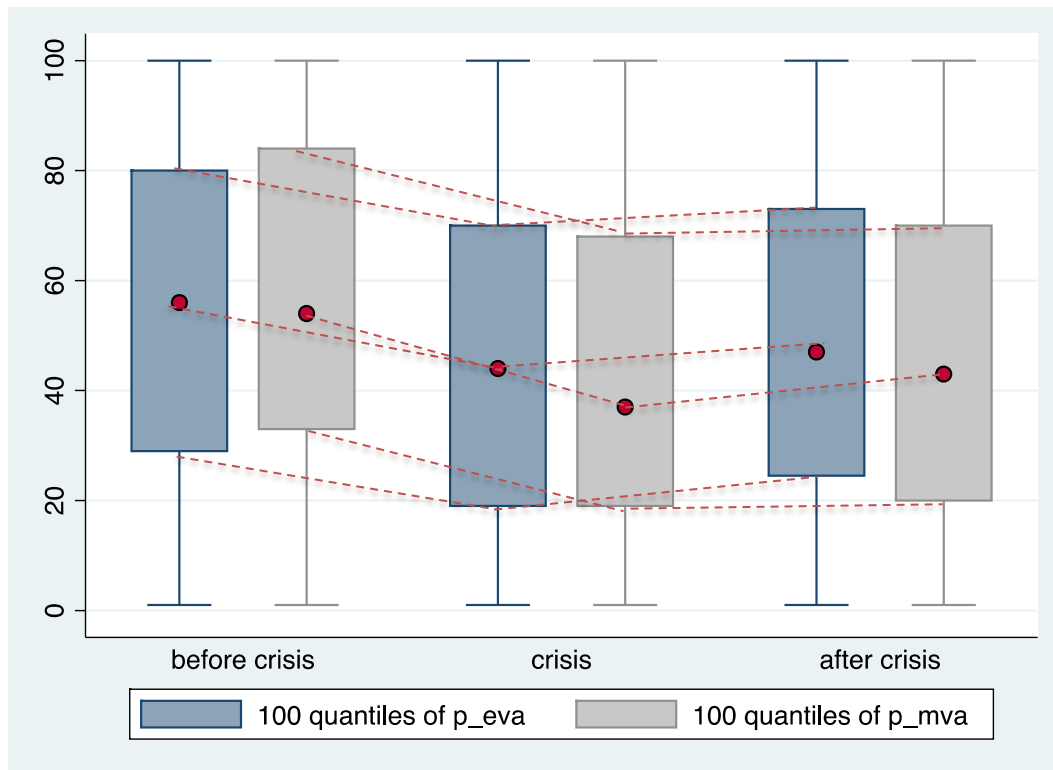


Figure 4. Dynamics of market value and economic value added in companies with innovative profile

The figure 4 demonstrates a slight volatility of EVA and MVA values during the crisis years. This fact probably shows that companies with an innovative profile were more protected during the recent economic recession. Still the recovery process for high- and low-performing companies with an innovative profile seems to be slow. These growth rates did not enable them to reach precrisis positions.

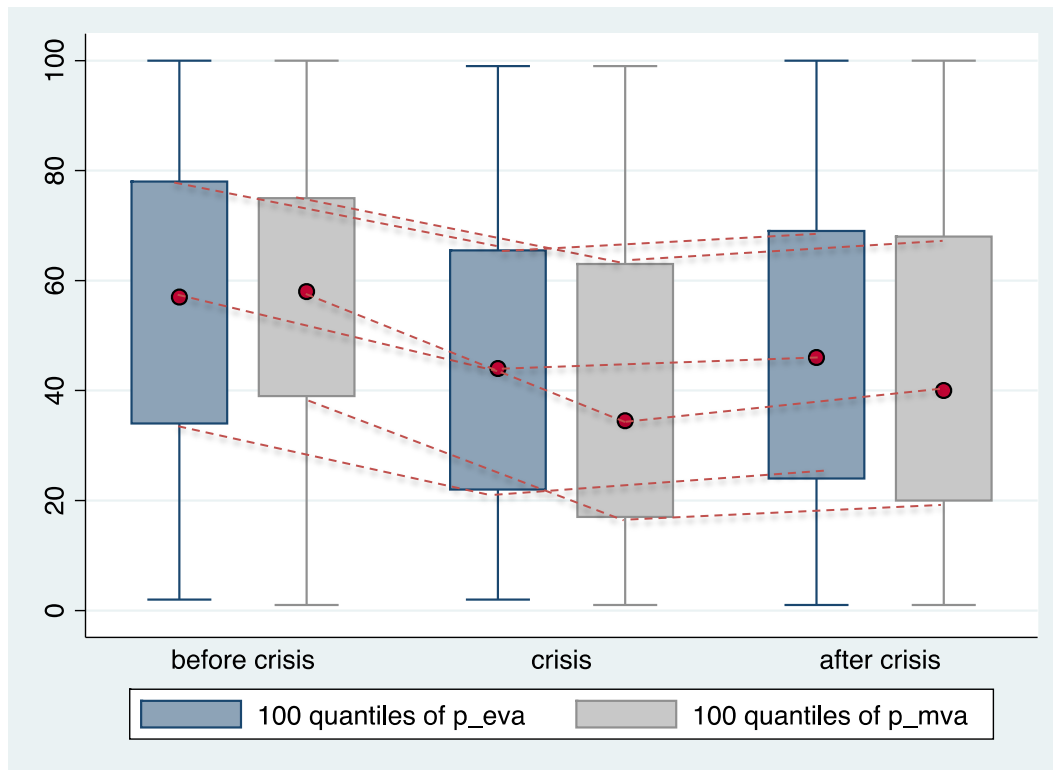


Figure 5. Dynamics of market value and economic value added in companies with moderate profile

The worst comparative dynamics is observed for companies without intangible-intensive profile (moderate profile). According to our findings these companies were considerably worse off during the crisis compared to the previous years. MVA fell more significantly than EVA. If financial markets overestimate negative trends that mean that investors have a pessimistic perception of non intangible-intensive strategies. High-performing companies among those with moderate (low) profile in intangibles demonstrated a lesser fall in value. Low-performing companies meanwhile showed no recovery after the crisis after a sharp decrease in EVA and MVA in 2008-2009.

To conclude, the dynamics of company performance in profiles are evidently different. Still the results can be interpreted with a certain amount of cautions. On this stage we can only identify that companies clustered in the profiles according to intangibles employed have common features in dynamics of their performance and are clearly distinct between clusters according to this criterion. Moreover we can affirm that moderate (low) profile fails to outperform intangible-intensive conservative and innovative profiles under turbulent conditions. However, the estimation of causality is required to answer the research question if an intangible-intensive profile sustainably protected companies during the recent global economic crisis.

The second step of the analysis allows the estimation of two simultaneous equations. Following the theory in the value-based concept we estimate the model according to formula 1. We state that this specification is valid to check causality as does not significantly influenced by endogeneity. Company profiles as well as moderation effects of crisis are exogenous with regard to value of MVA and EVA of companies. Our model introduces the interrelation between MVA,

EVA and a number of value drivers that apparently influence these both performance indicators. The results of the three-stage least square estimation is shown in the table 2.

Table 2. Results of the three-stage least square estimation

Factors	MVA	EVA
EVA	0.52 (0.59)	
Conservative profile	933.22*** (290.56)	-229.67*** (69.21)
Innovative profile	468.27* (271.72)	-53.19 (73.61)
Moderation effect of CP before the crisis	1169.13*** (321.51)	-48.21 (87.30)
Moderation effect of CP during the crisis	398.79 (374.30)	-214.57** (96.05)
Moderation effect of CP after the crisis	397.35 (406.75)	-450.28*** (84.34)
Moderation effect of InnP before the crisis	976.64*** (357.24)	61.19 (96.85)
Moderation effect of InnP during the crisis	159.21 (386.17)	2.62 (105.30)
Moderation effect of InnP after the crisis	-120.09 (350.22)	41.19 (95.16)
Crisis period	-276.20* (161.17)	-24.27 (43.81)
Intercept	57.78	94.22
R-sq	6,02%	5,11%
Number of obserations	11741	11741
Chi-sq	443,40***	632,63***

\*\*\* significance level < 0.01

\*\* significance level < 0.05

\* significance level < 0.10

As seen from the table 2 both estimated equations are significant on 99% confidence interval. Despite the low level of predicting power reflected by about 5-6% R-sq, the model still demonstrate the ability to consistently explore causality. Unfortunately, we failed to justify the cohesion between MVA and EVA on the level of a company profile. The estimated coefficient is not significant in our model. Nevertheless this relation was found in the study by Shakina & Barajas (2014) on the firm level on the same dataset. It is clear from our findings that both innovative and conservative intangible-intensive profiles are more attractive for investors and might have more long-term payback horizon. That is in line with the previous studies like those by Kristandl & Bontis (2007), Orens *et al.* (2011), Shakina & Barajas (2014). Meanwhile conservative profile does not demonstrate outperformance in EVA with the benchmark in non intangible-intensive profile. The conservative profile moreover appears to be aggravating in

crisis as shows negative moderation effect for crisis and recovery periods. Probably this phenomenon is caused by high-level investment commitment that a company with conservative intangible-intensive profile has. According to our framework conservative profile is associated with high investment in human capital and business processes. These intangibles are least liquid and usually are characterized with significant switching costs. Even under hard financial conditions companies with conservative profile might be bound to follow this resource consuming strategy. All that is likely to lead to rigid overinvestment in intangibles during and after the crisis.

In our results we did not find evidence that innovative intangible-intensive either outperform or underperform moderate profile. The estimates in the model are insignificant. We can explain that with a high heterogeneity of companies with innovative profile. That is justified by the first step of the above-introduced analysis. It was demonstrated that innovative profile could not protect common representative company during the crisis. Still dynamics in high-performed and low-performed companies with the innovative profile are considerably different.

### **Conclusion and Discussion**

This study has addressed the question about company's strategic profile as a protector in hard economic conditions. For that purpose the case of the recent economic crisis 2008-2009 has been explored. As a result of empirical investigation on the base of large European companies observed during 8 years before, during and after the global economic recession a number of findings should be emphasized:

1. Three studied profiles – two intangible-intensive and one non intangible-intensive – have demonstrated significantly different dynamics in performance, specifically in EVA and MVA. The lower drawdown in MVA and EVA has been observed for high-performed companies with conservative profile. Still that has not been revealed for an average company with conservative profile. On contrary, conservative profile has shown clearly negative moderation effect during and after the crisis.
2. The worst comparative dynamic in intangible-driven performance has been found as expected for moderate profile. These companies fell dramatically in 2008-2009 and have not been recovering after the crisis by 2012.
3. Innovative profile has demonstrated lower drawdown in EVA still high decrease in MVA for all companies. That might be explained by high risk aversion of investor under strong financial constraints. Innovative profile have enabled the lower recovery process comparing to those with conservative profile.

The findings established in this study might be valuable for future research on crisis issues. Unforeseen conclusions about intangible-intensive strategies of companies should be precisely investigated for more homogeneous samples by taking into account common patterns in company behavior. This analysis gives general understanding that the long-term investment commitment aggravate conditions of companies. Still the intangible-intensive strategies provide them with high sustainable performance in long run.

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## Attachement 1. Short description of the variables involved in the analysis

Name of the variable	Reference to the literature	Source of the information
<b>Cost of employees</b>	Baiburina & Golovko, (2008) Orens, et al (2009)	Company's Annual Report*, section Financial data
<b>Productivity</b>	Baiburina & Golovko, (2008) Orens, et al (2009)	Company's Annual Report, section Financial data Earnings before interested and taxes divided by Sales
<b>Qualification of board of directors</b>	Tseng & Goo (2005) Orens, et al (2009) Kamukama, et al (2010) Shakina & Barajas (2012)	Company's Annual Report, section Directors information If more than one third of directors have postgraduate level of qualification and more than 5 years experience – 2 points. If more than one third of directors have postgraduate level of qualification or more than 5 years experience – 1 point. Another – 0.
<b>Human brand</b>	Thomson (2006)	Search on company name in the ranking LinkedIn's Most In Demand Employers on the website: <a href="http://www.rankingthebrands.com/">http://www.rankingthebrands.com/</a> If it has a rank – 1 point, otherwise – 0 point
<b>R&amp;D expenditures</b>	Poletti Lau (2003) Gleason & Klock (2003) Sellers-Rubio & Mas-Rubio (2007) Huang (2008) Huang & Liu (2005)	Company's Annual Report, section Financial data
<b>Intangible assets</b>	Sellers-Rubio & Mas-Rubio (2007) Shakina & Barajas (2012)	Company's Annual Report, section Financial data
<b>Awards for innovation</b>	Anton & Yao (1989)	Company official websites, sections 'Awards' and 'Press releases'
<b>Patents, licenses, trademarks</b>	Tseng & Goo (2005) Sellers-Rubio & Mas-Ruiz (2007) Shakina & Barajas (2012)	Search on company name and number of patents on the website QPAT: <a href="http://library.hse.ru/e-resources/e-resources.htm">http://library.hse.ru/e-resources/e-resources.htm</a>

<b>Strategy implementation</b>	Tseng & Goo (2005) Kamukama, et al (2010) Shakina & Barajas (2012)	Search on company location on their website using the following words as strategy, strategy implementation  If company has news about these as listed above – 1 point, otherwise – 0 points  Important to put 1 or 0 in the year of implementation
<b>ERP implementation</b>	Kamukama et al. (2010) Murthy & Mouritsen, (2011) Shakina & Barajas (2012)	Search on the web-site of the company using the following words as «ERP», «Oracle», «NAVISION», «NAV», «SQL», «SAP»  If company has news about these things – 1 point, otherwise – 0 points.  Important to put 1 or 0 in the year of start implementation
<b>Knowledge management system</b>	Kamukama et al. (2010) Murthy & Mouritsen, (2011) Shakina & Barajas (2012)	Search on the web-site of the company using the following words as «knowledge management», as «intellectual resources», If company has news about these things – 1 point, otherwise – 0 points.  Important to put 1 or 0 in the year of start implementation
<b>Brand value</b>	Riahi-Belkaoui (2003) Murthy & Mouritsen, (2011) Shakina & Barajas (2012)	Search on company name in the ranking BrandFinance Global 500 on the website: <a href="http://www.rankingthebrands.com/">http://www.rankingthebrands.com/</a>  If it has a rank – 1 point, otherwise – 0 point
<b>Citations in search engines</b>	Shakina & Barajas (2012)	Search on company's name and its score in the web-site: <a href="http://www.prchecker.info/check_page_rank.php">http://www.prchecker.info/check_page_rank.php</a>
<b>Advertising expenditures</b>	Hirschey (1982)	From Bloomberg (according to the company ticker)
<b>Associations</b>	Molodchik et al (2014)	Company Annual Report, section Common information + Company Website  For those who involved in business associations it is given 1 point and otherwise 0 points
<b>Foreign capital employment</b>	Shakina & Barajas (2012)	Company Annual Report, Section Shareholder name, vertical vector country  If company has foreign investors it gains 1 point and otherwise 0 points
<b>Subsidiaries</b>	Shakina & Barajas (2012)	Company's Annual Report, section «Subsidiary name».  If company has less than 100 subsidiaries put the total number, otherwise use the following vector «First 100 out of Y subsidiaries».
<b>Proximity of University</b>	Huang & Liu (2005) Swartz & Firer (2005)	Company's Annual Report, section Common information,

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	Orens, et al (2009)	The main activity.
	Shakina & Barajas (2012)	
<b>Location in the capital of a country</b>	Shakina & Barajas (2013)	Search on company's location on their website, see the status of the city location in Wikipedia  If it is the capital of the state (or region) – 1 point, otherwise – 0 points
<b>Global Competitiveness Index – Labor markets</b>	Molodchik et al (2014)	Search on the website of World Economic Forum in the relevant reports. The scores are different within countries and years.
<b>Dummy variables for 2008 and 2009</b>	Molodchik et al (2012)	If year=2008 or 2009, is 1, otherwise 0

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