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## PRACTICES OF PERFORMANCE MEASUREMENT IN COMPANIES IN THE REPUBLIC OF SERBIA

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A large number of acronyms which indicate different performance metrics, such as EBIT (Earnings Before Interest And Taxes), EBITDA (Earnings Before Interest, Taxes, Depreciation, And Amortization), ROIC (Return On Invested Capital), NPV (Net Present Value), EVA (Economic Value Added), IRR (Internal Rate Of Return), ROE (Return On Equity), ROA (Return On Assets) etc. are in use nowadays. In practice, managers cannot and do not want to apply all of these metrics and managers' choice does not necessarily rely on what theory emphasizes as their advantages and disadvantages. We surveyed 64 CFOs in order to explore the corporate practice in the Republic of Serbia. The DCF-based capital budgeting metrics are dominant compared to the traditional metrics, and the one that is used the most is the profitability index, only to be followed by the IRR and the NPV. The Payback Period is yet frequently used. The earnings-based corporate performance metrics are still the most important. However, the presence of EVA and balanced scorecard is not negligible. Large companies use them significantly more than small companies. The orientation towards EVA and balanced scorecard increases with the internationalization of a firm as well. Finally, companies using sophisticated capital budgeting metrics are prone to using sophisticated corporate performance metrics.

**Keywords:** performance measurement, capital budgeting metrics, corporate performance metrics

JEL Classification: G31, M21

### INTRODUCTION

All decisions of a company can be classified into three categories: strategic, tactical and operational. Strategic decisions concern the business portfolio, the level of the vertical integration and markets in which the company will run its businesses. Tactical decisions relate to investment projects (i.e. capital budgeting)

that implement a pre-formulated strategy. Operational decisions are made in daily operations for the purpose of the implementation of approved projects and business plans. The ultimate criterion in all decisions should be the maximization of the company value.

In a simplified interpretation, all decisions should be directed toward improving a company's performance. In order to improve performance, it is necessary to choose the measures or metrics that will credibly indicate the level of its achievement. Hence the great importance of performance measures - since what

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can be measured can be managed, too. They are clear guidelines in the planning, implementation and control of a business strategy, projects and daily operations. Measurement should not be an end in itself; it should have some meaning - it should indicate the quality of the goal achievement as well as the company's ability (or inferiority) to achieve these goals. A comprehensive and coherent structure of performance measures is called the performance measurement system - the PMS.

Today, a large number of metrics are used in textbooks on corporate finance, strategic management and strategic finance, not only for the measurement of companies' performances - corporate performance metrics - the CPM, but also for the evaluation of investment projects - capital budgeting metrics - the CBM<sup>1</sup>. Capital budgeting can be seen as a separate methodology, and, in a specific way, also as an integral part of the PMS enabling the creation of the shareholder value. Capital budgeting and the PMS can be said to represent the connecting point of corporate finance and strategic management systems making the cornerstone of strategic finance. Relying on the projected future costs and benefit, the CBM represent a kind of expected or *ex ante* metrics, while the CPM stand for the *ex post* measures of the achievement. In business practice, managers cannot and do not want to apply all available metrics and their selection process does not necessarily rely on the theoretical advantages and disadvantages of different metrics.

The aim of this research is to gain an insight into the presence of different performance metrics in companies in Serbia in order to contribute to the narrowing gap between the theory and practice of corporate finance. The research was conducted by surveying managers of 64 companies in the Republic of Serbia (RS), in the period from March to September 2014. This research of ours included a wide range of companies with different characteristics in terms of their size, industry, leverage level, degree of diversification and internationalization etc. Alongside a general insight into the usage of various measures, this allowed us to gain an insight into possible differences in practices between companies with different characteristics, e.g. between large and small companies, public corporations and private companies, diversified and

undiversified companies etc. Based on the aim of the research, three hypotheses were tested:

- H1: The Discounted-Cash-Flow-based metrics are dominant in capital budgeting in companies in Serbia;
- H2: The presence of the sophisticated corporate performance metrics and the performance measurement systems is not negligible;
- H3: The characteristics of the companies determine the presence of particular performance measures in practice.

This paper is organized as follows. The next section introduces the theoretical background and the literature review with respect to these subjects of study. Then, an overview of the research methodology is presented. Finally, the results are discussed and several conclusions are made.

## THEORETICAL BACKGROUND AND LITERATURE OVERVIEW

The PMS are formalized, information-based routines and procedures that managers use in maintaining or changing the direction of the business (Simons, 2000, 4). It is recommended that metrics should pass three tests before being included in the PMS (Simons, 2000, 234-240):

- they should be in line with the strategy,
- they should be objective and
- they should be aligned with the supreme aim of maximizing the enterprise's value.

The measures can be identified as Key Results Indicators - the KRIs, in the case of past achievements, or Key Performance Indicators - the KPIs, in the case of the possibilities and capabilities of the company to achieve its goals in the future (Parmenter, 2007). In this way, it is emphasized that a comprehensive PMS should be facing both *ex ante* and *ex post*. Also, a comprehensive PMS should include both financial and non-financial performance measures (Kaplan

& Norton, 1992; Niven, 2006). The lack of the PMS can have very negative effects on the formulation and implementation of a business strategy (Micheli, Mura & Agliati, 2011). These assumptions were used to develop a comprehensive PMS called Balanced Scorecard - the BSC (Kaplan & Norton, 1992; 1996). That PMS integrates in one framework the whole structure of objectives and their measures, targets and initiatives enabling their achievement. Objectives, measures, targets and initiatives can be included in one of the next perspectives: the financial perspective, the consumer perspective, the perspective of internal business processes and the learning and growth perspective. A special advantage of this system is its being derived from the strategy map - a graphically described business strategy (Kaplan & Norton, 2000).

The traditional system of performance was predominantly based on accounting metrics (Net Profit, Earnings Per Share - the EPS, Earnings Before Interest and Taxes - EBIT, Return on Assets - the ROA, Return on Equity - the ROE etc.) and on the traditional CBM such as the Payback Period - the PP and the Accounting Rate of Return - the ARR. With a further development of corporate finance, the CBM based on the Discounted Cash Flow - the DCF, such as the Net Present Value - the NPV, the Internal Rate of Return - the IRR and the Profitability Index - the PI come to life. Finally, respecting the request of the owners (shareholders) to maximize the value of their stakes in companies, the concept and methodology of Value-Based Management - the VBM - was created. The vanguard of the VBM is the value-based performance measurement (Kaličanin, 2005). There was a sporadic development of these metrics in the second half of the twentieth century; however, their full development and usage started in the last few decades of the twentieth century. Some of the most famous CPM developed in those years were based on the market value of companies or on the concept of the economic profit or on the discounted cash flow such as the Market Value Added - the MVA, the Economic Value Added - the EVA, Residual Income, Cash Flow Return on Investment - the CFROI, the Shareholder Value Added - the SVA, the Cash Value Added - the CVA, Excess Return, the Future Growth Value - the FGV etc. EVA is world-wide expected to be one of the most

popular VBM measures. On the other hand, the BSC is the framework for describing value-creating strategies (Speckbacher, Bischof & Pfeiffer, 2003). These metrics are seen as complementary ones. The BSC should lead to value creation explicitly shown by EVA. Also, EVA could be used as one of the financial metrics in a BSC formulation. Therefore, the contemporary PMS usually include not only accounting metrics but also value-based performance metrics rather than only financial as well as non-financial metrics.

Empirical researches into corporate finance have generally been rare in Serbia, the region, Central and Eastern Europe and developing countries in general. On the other hand, most of the researches in the US, Western Europe and other developed countries are based on samples with a large number of companies using historical data from financial statements (book values), financial markets (market values) or the intersection of these two sets of data. The advantages of such researches are in the good statistical design and reproducibility of results because of the big size of the samples and the good availability, reliability and objectivity of historical data from financial statements or financial markets. The major drawback of these studies is that one can hardly conclude how financial managers in business practices actually make decisions. This aspect can be explored only through field studies.

It is interesting to note that, after sporadic and relatively poorly observed researches in the last century (e.g. Lintner, 1956; Moore & Reichert, 1983; Jog & Srivastava, 1995; Pike, 1996; George & Chong, 1998; Kester, Chang, Echanis, Haikal, Isa, Skully, Tsui & Wang, 1999), the first field study which drew academics' attention was published by J. R. Graham and C. R. Harvey (2001) no sooner than in 2001. In this famous study, these two authors collected 392 responses from financial managers of companies on over 100 questions in the survey about capital budgeting and financial decisions. The aim of this study was to elucidate to what extent the practice of corporate finance (decisions that managers make) coincided with the theories of corporate finance (what they learned at university). The overall conclusion of the study was that practice significantly deviates from theory, especially in the domain of the capital structure, but also in the domain

of capital budgeting. After this study, a number of later studies sought to confirm or deny the Graham-Harvey finding or to analyze the practice from new perspectives (Ryan & Ryan, 2002; Sandahl & Sjögren, 2003; Brounen, De Jong & Koedijk, 2004; Lazaridis, 2004; Dedi & Orsag, 2007; Truong, Partington & Peat, 2008; Verma, Gupta & Batra, 2009; Baker, Dutta & Saadi, 2011; Correia, 2012; Andrés, Fuente & San Matin, 2014).

To our best knowledge, no wider field studies on the use of performance metrics in corporate practice in Serbia have been conducted so far. Based on the content of domestic academic textbooks (Kaličanin, 2006; Todorović, 2010; Ivanišević, 2012; Djuričin, Janošević & Kaličanin, 2013), one could get the impression that, as early as at university, managers acquire sufficient knowledge that investment projects should be evaluated before their execution and, because of their obvious superiority, it is thought that managers ought to use only the DCF CBM, especially the NPV. Additionally, they should use the value-based CPM, especially EVA, as well as the complex and multidimensional technique of the BSC. In the absence of empirical research in Serbia, the possibility that managers of domestic companies still do not behave in this „expected manner” was in the domain of a „reasonable doubt”.

## THE RESEARCH METHODOLOGY

The main objective of the study was to contribute to the narrowing gap between the theory and practice of corporate finance, with a focus on the use of performance metrics. The starting point was the

consideration of the extent to which theoretical concepts are actually applied by the managers in business practice. In this sense, the managers of 64 companies were surveyed. Our study included a relatively wide range of companies with different characteristics in terms of their size, industry, listing status, leverage level, degree of diversification and internationalization etc. Apart from our gaining a general insight into the usage of various measures, this also allowed us to gain an insight into possible differences in practices between companies with different characteristics, for example, between large and small companies, public corporations and private companies, diversified and undiversified companies etc.

The survey was conducted between March and September 2014, by collecting responses to the survey with Chief Financial Officers - the CFOs (or Chief Executive Officers - the CEOs) of the companies. In order to determine how various companies' characteristics affect their practice of performance measurement, all firms in the sample were divided into seven sets of two subsamples. The sample overview is given in Table 1.

Twenty-eight companies (or 43.7% of the total number) were classified as large companies (L) with revenues of more than EUR 10 million<sup>2</sup>. The average revenue per company in the sample was EUR 40.08 million, and the average total asset was EUR 53.73 million. More than half of the companies in the sample (51.56%) belonged to the food and beverage industry (F). The majority of the companies (70.31%) had sold abroad (I). The eighteen companies were included in the diversified companies (D) that operated in three or more industries and/or generated more than 5% of

**Table 1** Sample characteristics

Sample	Groups														
	Size		Industry		Internation.		Diversific.		Leverage		Public		Profitability		
	S	L	O	F	N-I	I	UnD	D	UnL	Lev	N-P	P	LP	HP	
No.	64	36	28	31	33	19	45	46	18	41	23	53	11	37	27
%	100	56.25	43.75	48.44	51.56	29.69	70.31	71.88	28.13	64.06	35.94	82.81	17.19	57.81	42.19

Source: Authors

their revenue from non-core businesses. We classified 23 companies as the leveraged companies (Lev), with the total debt ratio (short-term and long-term debts) in the total resources above 30%<sup>3</sup>. The majority of the companies (85.81%) were not listed (N-P) in Belgrade or any other stock exchange. Twenty-seven companies were classified as profitable companies (HP), with the ROA (net earnings to total assets) greater than 5%.

In the area of the CBM, the following modalities were offered to managers: 1) the NPV, 2) the IRR, 3) the Profitability Index - the PI<sup>4</sup>, 4) the Payback Period - the PP, 5) the Discounted Payback Period - the DPP 6) the Accounting Rate of Return - the ARR. All the CBM, especially the DCF CBM, could be calculated using different sets of estimates. In this regard, managers were asked whether they calculated capital budgeting metrics exclusively with the use of one set of inputs (estimates) or different sets of inputs - scenarios (such as „good”, „average” and „bad”) - a scenario analysis or otherwise tested the impact of changes in certain inputs on a certain metric - a sensitivity analysis. Within the CPM part of the survey, the respondents were offered the following options: 1) the accounting earnings (net profit, EBIT, EBITDA etc.) as absolute indicators, 2) the accounting rates of return (ROE, Return on Invested Capital - the ROIC, the ROA etc.) as relative indicators, 3) EVA and 4) the BSC. The frequency of the use of different metrics in business practice was examined using a 5-point Likert scales (1-never, 5-always). In order to detect any statistically significant differences in the practices of using different metrics between companies with different characteristics, we ran a t-test to compare the mean values of the two samples<sup>5</sup>.

The limitation of this type of research is that the attitudes, beliefs and opinions of the managers examined are not necessarily the way they actually behave when making business decisions. To avoid this drawback, managers were asked to confirm the acceptance and usage of different metrics in their business practices, not their views on the advantages and/or disadvantages of such metrics. Also, we asked the surveyed managers to be honest in their answers (since individual results regarding their companies would not be published). However, we were not in a position to see how honest they really were and

what the actual adoption of the various performance metrics in business practice was like. Because of that, in order to improve the reliability of the responses, we collected data on the registration number and used this information to collect additional information about the size of the companies, the leverage and their profitability. The publicly available data from The Serbian Business Registers Agency were used for such purposes.

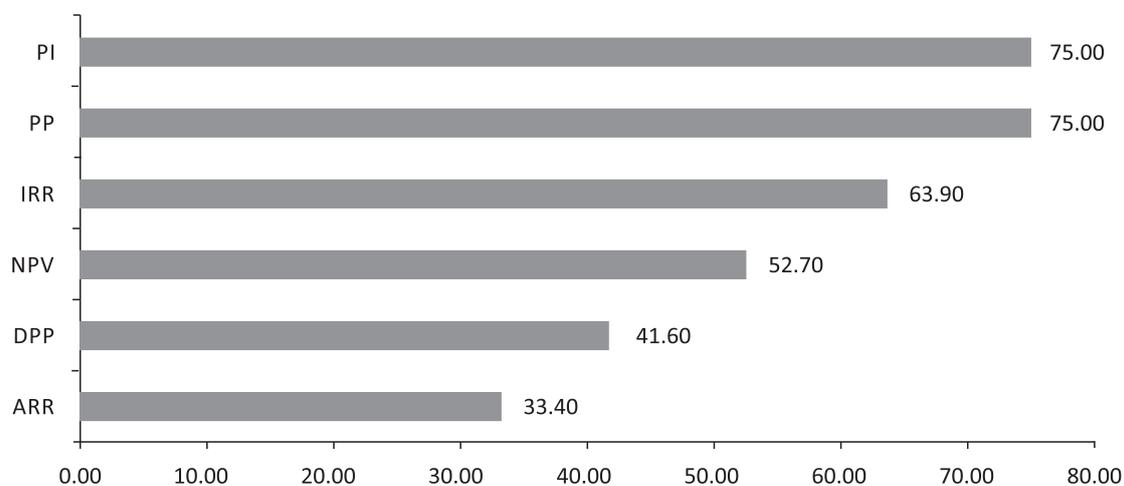
## RESULTS AND ANALYSIS

The results of the study are presented in two sections, each relating to one of the previously noticed metrics area - the CBM and the CPM. The percentage of the companies which used (always - 5 or almost always - 4 on the Likert scale) the given metrics are accounted in the tables. The tables also contain the descriptive statistics, precisely group the means and the p-value indicated as: \*\*\*, \*\*, \* significant difference at the 0.01, 0.05, and 0.10 level, respectively.

### Capital Budgeting Metrics

Our first focus was to find out the frequency of the use of different CBM. The survey results are shown in Figure 1.

A somewhat surprising finding is that exactly three-quarters of the companies always or almost always used the profitability index, as well as the payback period in the same percentage (75%). A potential explanation for the high ranking of the PI (more weakly ranked in the textbooks) may be the managers' desire to use the relative metric for which the textbooks emphasized that the same had fewer defects rather than the „relative” IRR. Some earlier studies (Graham & Harvey, 2001) also revealed managers' tendency to use „percentage” and relative metrics; in this case, however, it was the IRR<sup>6</sup>. According to the results of our study, the IRR was also highly used (63.9 %), but only in the third place, being preceded by the PI and the PP. The Payback Period was highly ranked, likely because of its simplicity and understandability. Because managers largely use the DCF metrics for the investment project evaluation, we believe that the



**Figure 1** The percentage of the respondents who always or almost always use the given CBM

Source: Authors

Payback Period is used as an additional metric, which certainly should not be seen as a big mistake. Although the textbooks devote far more space to the NPV, emphasizing its superiority, we have shown that this method was not the most widely used one in business practice. Only slightly more than half of the managers (52.7%) used this method always or almost always in the evaluation of investment projects. An encouraging result of our study was that the DCF metrics were considered to be more important than the non-DCF method, which is similar to the finding of Kester's *et al.* (1999). Only 8.3% of the surveyed managers did not use any of the DCF metrics - the NPV, the IRR or the PI - they rather used the traditional CBM instead. About 19% of the total number of the companies used only the DCF metrics. The remaining part of the sample, i.e. about 73% of the companies, used a combination of the traditional and the DCF metrics. Another encouraging result of our research was that the DPP and the ARR were the least present metrics. Since these metrics are not characterized by a kind of qualities, we can conclude that it is good that their adoption was low.

The main difference in our findings in relation to the previous research does not lie in the high rating of the PP (and the IRR) but in the excellent ranking of the PI. Our results support G. Truong *et al.* (2008), who concluded that, in Australia, projects were usually

evaluated using the NPV, the IRR and the PP, and S. Verma *et al.* (2009), with very similar results, but on the corporate practice in India. Our findings slightly differ from the finding of the study conducted by L. Dedi and S. Orsag (2007) in Croatian firms, who found out the following priority list of metrics: 1) the IRR (59%), 2) the PP (56%) and 3) the NPV (42%). There is also a slight difference in relation to Spain, where the most favored metric was the PP, which was followed by the IRR and the NPV (Andrés *et al.*, 2014). The PP was the most preferred metric in Cyprus as well (Lazaridis, 2004). Besides, our study cannot support the results of H. K. Baker *et al.* (2011), who found out that, in Canada, there was a strong preference for the NPV followed by the IRR and the PP. We found out that the IRR was preferred over the NPV, which is also contrary to the findings of P. A. Ryan and G.P. Ryan (2002), who found out in their survey of Fortune 1000 companies that the NPV was preferred over the IRR and other capital budgeting metrics. Finally, having in mind that less than 10% of the companies did not use the DCF metrics, we can point out that, in RS, the DCF metrics have become a norm, such as that shown by V. M. Jog and A. Srivastava (1995) in the case of Canadian firms.

We further explored whether the use of metrics differs across firms' sizes, industry, profitability, leverage etc. The survey results are shown in Table 2.

**Table 2** The frequency of the use of the different CBM

Metric	All		Mean													
	% use	Mean	Size		Industry		Internation.		Diversific.		Leverage		Public		Profitability	
			S	L	O	F	N-I	I	UnD	D	UnL	Lev	N-P	P	LP	HP
NPV	52.70	3.56	3.31	3.75	3.92	3.35	2.63	3.82**	3.36	4.00	3.25	3.94	3.34	4.43**	3.58	3.50
IRR	63.90	3.89	3.56	4.15*	3.77	3.96	3.38	4.04	3.72	4.27	3.80	4.00	3.83	4.14	3.92	3.83
PI	75.00	3.89	3.81	3.95	3.54	4.09	3.63	3.96	3.64	4.45*	3.70	4.13	3.79	4.29	4.04	3.58
PP	75.00	4.08	3.75	4.35	4.15	4.04	3.50	4.25*	4.00	4.27	4.05	4.13	4.00	4.43	4.00	4.25
DPP	41.60	3.17	2.81	3.45	2.85	3.35	2.50	3.36	3.08	3.36	3.10	3.25	3.00	3.86	3.21	3.08
ARR	33.40	2.97	2.94	3.00	2.62	3.17	2.75	3.04	2.92	3.09	2.90	3.06	3.00	2.86	3.04	2.83

Source: Authors

We found several statistically significant differences between different groups of companies. The managers of the large and listed companies were loyal to these metrics of the „old school” - the NPV and the IRR; the public (listed) companies used the NPV to a significantly greater extent than the private companies (4.43 vs. 3.34) and the large companies used the method of the IRR significantly more than the small ones (4.15 vs. 3.56). We could assume that, in the case of the listed companies, the managers' perception of the strong pressure of the financial market to earn a return above the WACC was the main reason for higher „loyalty” toward the metrics than the use of the WACC. Furthermore, large and listed companies usually have the greatest percentage of CFOs (and CEOs), with the highest degree in finance. We assume they are keen to apply what they learned at university and apply those metrics that they believe are the most credible ones. The diversified companies used the PI more in relation to the undiversified ones (4.45 vs. 3.64). The reason for this probably lies in the fact that diversification requires more „prudential” metrics in investment decision-making and the PI is a superior method for project ranking and for making a comparison between investment projects in different business units in a multi-businesses company. The internationalization clearly increased the tendency towards the NPV and the PP. Belonging to a particular industry and the company's profitability were irrelevant to the managers' tendency to use different metrics.

Although not at the level of statistical significance, the careful examination of the results in Table 2 can

easily reveal a very interesting finding - the tendency towards the use of all the metrics was higher for the large, public<sup>7</sup>, internationalized and diversified companies. Those types of companies (typically well-known in a small national economy like the Serbian one) usually engage CFOs with sound financial education; they usually have good procedures and staff with better knowledge in financial departments and usually evaluate their investment projects together with specialized consultants in the areas of finance and accounting. In that context, not using the CBM would be surprising. The tendency towards the use of all the metrics was also higher for the leveraged companies. One possible explanation can be found in the disciplining role of a debt that leads to the rigorous investment process. Additionally, it is expected that, in their applications for financial support of banks, those companies must carry out an investment analysis of a higher quality.

In some way, there was a similarity in our results with D. Brounen *et al* (2004), who stated that managers in large U.S. companies generally preferred the DCF metrics. The same comparison could be made with G. Sandahl and S. Sjögren (2003), who found out that the large companies were the ones to more frequently use the DCF method than the small ones. Again, there is a partial congruence with C. Correia (2012), who found out that those larger companies preferred the DCF metrics, and that the small firms used the PP and the ARR to a greater extent. Our finding, as well as M. G. Danielson and J. A. Scott's finding (2006), that small businesses usually use the DCF metrics more

rarely than large companies could be explained by the limited education background of the managers in small companies and the small staff size. Interestingly, we can compare the results of our study that showed that the domestic public companies preferred the NPV in relation to H. W. George and T. K. Chong (1998), who found out that the executives of the public companies in Singapore considered the IRR and the PP to be equally important. It is hard to explain the greater tendency of the internationalized companies in Serbia to be using the PP metrics, just as much as it is difficult to explain the greater adoption of this metric in this case of the large companies in Cyprus (Andrés *et al*, 2014).

Furthermore, we wanted to assess the presence of a scenario and/or sensitivity analysis (SA) in capital budgeting. The results are shown in Table 3.

The evaluation of investment projects was usually done using one set of data and assumptions. However, there are companies (44.4%) that sought to take multiple scenarios into consideration. We found that the managers of the large, diversified, leveraged, public and profitable companies had a greater tendency towards the scenario analysis; however, the difference towards the use of the scenario analysis was only statistically significant between the internationalized and the non-internationalized companies (3.32 vs. 2.38). The difference could be explained by different types of risks as a consequence of the internationalization of business operations. There are usually several unknowns about political and legal, economic, socio-cultural, technological and ecological factors in a foreign country, as well as unknowns regarding the same industry but in a foreign country. A company can hardly know well all competitive forces as it can do in

its domestic market. It is more difficult to predict all important competitors' movements and the dynamics of rivalry, buyers' plans regarding purchasing and the price they might be willing to pay, suppliers' intentions regarding their switching to other partners and the vertical integration and their pricing strategy, the future pressure of substitutes that could come from other industries as well as a threat of new entrants. That is the reason why, in evaluating an investment decision, internationalized firms usually include changes in single or several assumptions about the costs (rising), the selling price (lowering), the project starting date (delaying) and so forth.

### Corporate Performance Metrics

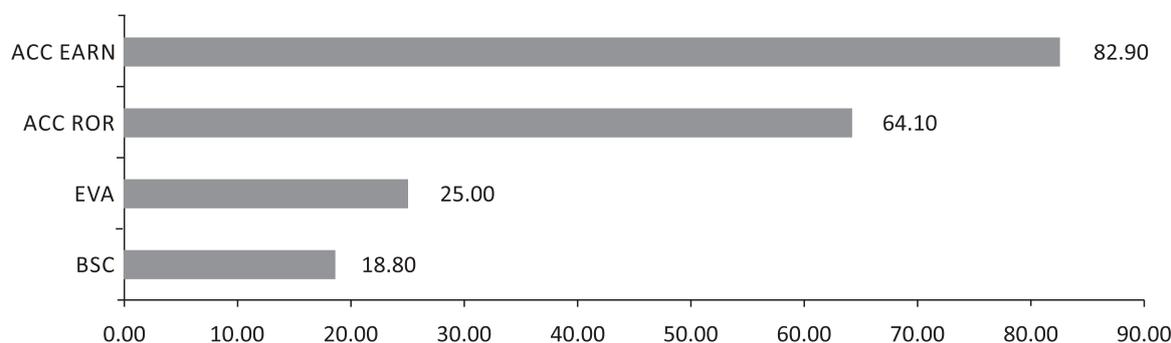
Our second focus was to find out the frequency of the use of different *corporate performance* metrics - the CPM. More specifically, expecting a predominant reliance on the accounting metrics, we were interested in the presence of EVA (or the economic profit) and the BSC in the companies in Serbia. We obtained the answers shown in Figure 2.

It is not surprising that the absolute measures of the accounting profit were still the most common in the business practice in RS. Over 4/5 of the managers (82.9%) relied on them when observing/assessing the company's performance. There was also a relatively high presence of the relative accounting indicators such as ROA, ROE, ROIC etc.; they were in use in about 2/3 of the companies. Comparing to the accounting metrics, there was a sharp difference in the adoption of modern metrics (or the PMS), namely EVA and the BSC. EVA was being used more frequently than the BSC. Seemingly the relatively poorly used EVA was

**Table 3** The frequency of the use of a scenario/sensitivity analysis

	All		All													
	% use	Mean	Size		Industry		Internation.		Diversific.		Leverage		Public		Profitability	
			S	L	O	F	N-I	I	UnD	D	UnL	Lev	N-P	P	LP	HP
SA	44.40	3.11	2.75	3.40	3.15	3.09	2.38	3.32*	3.04	3.27	2.95	3.31	2.97	3.71	2.96	3.42

Source: Authors



**Figure 2** Percentage of respondents who always or almost always used the given CPM

Source: Authors

still present in constant or nearly constant use in  $\frac{1}{4}$  of the companies. In relation to what had been recorded in the earlier studies conducted in RS (Stančić, Todorović & Čupić, 2012; Domanovic, 2013), this was an obvious forward. The conclusion that the VBM starts to be not only rhetoric but also supported by a sound methodology can be drawn. Besides, another very encouraging result was the presence of the BSC in a little less than  $\frac{1}{5}$  of the companies (18.8%). There were different forms of the BSC implementation. The simplest only implies a combination of the financial and the non-financial measures; the second type involves the strategy maps and the third one implies linking incentives to the BSC. Due to the design of our study, it was impossible to test which form of the BSC the companies in RS used: at least, however, they used some meaningful mixture of the financial and the non-financial metrics. EVA and the BSC are assumed to have been less present because they are less-known, much more complex to use and, as opposed to the accounting metrics, they are not the direct result of the statutory accounting records. Besides, there are still researches into the effectiveness of those metrics. Theoretically, they are almost perfect, but on the other hand, there are many limitations and problems in their practical use. Probably, that imperfection makes many domestic managers unready to try them without demur. Additionally, modern metrics are often promoted by global consulting companies. In RS, excluding auditing, the consulting industry did not attract so many big global players that would promote

these metrics. Perhaps there are not enough companies which can financially afford to use them. Namely, the application of those metrics is very often facilitated by a piece of software usually too expensive for domestic companies. Finally, managers are pretty aware of possible fee obligations for patented metrics. All these factors seriously limit its use and make managers more loyal to the accounting metrics.

We continued our analysis by trying to see if there was any difference between the practices in the corporate performance metrics of different groups of companies. The results are shown in Table 4.

The survey results reported in the previous table indicate that the adoption of different metrics varied significantly across the company's size, its level of internationalization and profitability.

EVA was significantly more used in the large companies than in the small ones (the mean of 2.96 vs. 1.78) and in the companies that generated revenues from foreign markets rather than in those that only sold on the domestic market (2.60 vs. 1.58). We found that there was a similar situation when the usage of the BSC was concerned in the large (2.61 for the large ones, 1.92 for the small ones) and internationalized companies (2.40 for the internationalized ones vs. 1.79 for the non-internationalized ones). EVA was least prevalent in the companies that generated revenues solely on the domestic market (the mean of 1.58) and the most common in the large companies (2.96). The

**Table 4** The frequency of the use of different CPM

Metric	All		Mean													
	% use	Mean	Size		Industry		Internation.		Diversific.		Leverage		Public		Profitability	
			S	L	O	F	N-I	I	UnD	D	UnL	Lev	N-P	P	LP	HP
ACC EARN	82.90	4.31	4.00	4.71***	4.29	4.33	4.11	4.40	4.30	4.33	4.22	4.48	4.28	4.45	4.38	4.22
ACC ROR	64.10	3.61	3.11	4.25***	3.68	3.65	2.63	4.02***	3.54	3.78	3.46	3.87	3.58	3.73	3.95	3.15**
EVA	25.00	2.30	1.78	2.96***	2.26	2.33	1.58	2.60***	2.30	2.28	2.32	2.26	2.36	2.00	2.49	2.04
BSC	18.80	2.22	1.92	2.61**	2.1	2.33	1.79	2.40*	2.28	2.06	2.17	2.30	2.13	2.64	2.24	2.19

Source: Authors

BSC was mostly used by the listed companies (2.64) and it was also present the least in the companies that earned their income solely on the domestic market (1.79). The somewhat wider acceptance of the BSC by the listed companies could originate from their awareness of the essence of the BSC.

On the basis of the previous results, we could conclude that the sophistication of companies in their orientation towards modern performance metrics increased with the size and the level of the internationalization of the firms. Additionally, we found that the large and internationalized companies were also using more relative accounting metrics than the small and non-internationalized ones. Finally, the large firms were also more prone to using absolute accounting numbers comparing than the small companies. Therefore, the large companies used all the metrics to a significantly greater extent than the small companies. The wider acceptance of all the metrics in the large companies in comparison to the small companies could be explained by the development of the processes and the quality of the staff at the finance controlling and planning departments in the large companies. The PMS were usually developed at those departments. They represented the central units communicating with many other departments regarding the PMS and its parts and components. A somewhat unusual finding is that the firms with a higher profitability had a tendency to use less relative accounting metrics (3.15 vs. 3.95). The other characteristics of the companies

had no influence on the choice of the performance measures.

There are a few studies that were conducted in several countries on the topic of the acceptance of different metrics. The results are variegated and should be taken with a large grain of salt. A research conducted in the USA in 1998 into the EVA acceptance of the Fortune 500 companies revealed that only 9.4% of the companies specifically stated that they used EVA as a performance measure, as a „trendy“ tool (Abdeen & Haight, 2002). Referring to the research conducted by the Institute of Management Accountants, M. W. Meyer (2004) argues that, in 1995, 18% of the largest US companies used EVA and in 1996, „34% of the companies actually used EVA“! According to a survey conducted by the Business Finance Magazine in 2004<sup>8</sup>, 33% of the companies used the BSC, whereas 18% of the companies used EVA. However, the large companies (with revenues of more than \$1 billion) used the BSC in even 59% of the cases, and 33% of them used EVA. G. Speckbacher *et al* (2003) found that about a quarter of the most important publicly traded firms (26%) in the German-speaking countries (Germany, Austria and Switzerland) used the BSC, while the majority of them used it in the simplest way. They also noticed that the larger companies (measured as the number of employees) were more likely to use the BSC while the retail industry used this metric significantly less. M. Marc, D. Peljhan, N. Ponikvar, A. Sobota i M. Tekavcic (2010). found that even 68% of the large Slovenian companies used the BSC or some other

integrated PMS. However, comparing the results of the two studies conducted in 2003 and 2008, they noticed that the Slovenian companies still preferred financial measures to non-financial ones. Another investigation about the use of the BSC within small companies conducted in the UK and Cyprus (Giannopoulos, Holt, Khansalar & Cleanthous, 2013) showed that awareness was significantly higher in Cyprus (45%) than in the UK (20%). However, the percentage of the „aware“ companies that really used the BSC was the same in both countries (25%).

Ultimately, we asked ourselves whether there was a meaningful relationship in the use of the CBM and the use of the CPM. We expected that the companies increasingly using EVA or the BSC also used the DCF metrics more in the area of capital budgeting. The results are presented in Table 5.

**Table 5** The simultaneous use of the CBM and the CPM

Metric	EVA/BSC	
	Do not use	Use
NPV	3.36	4.00
IRR	3.76	4.18
PI	3.88	3.91
PP	4.82	3.76***
DPP	3.91	2.84**
ARR	2.96	3.00
	...	
SA	2.84	3.73*

Source: Authors

The companies that used modern corporate performance metrics also used the DCF metrics (the NPV, the IRR and the PI) to a greater extent, but the difference was not statistically significant. However, these companies used the traditional CBM, namely the PP and the DPP, less to a statistically significant extent. Finally, we also found that the managers of these

companies had greater propensity towards a scenario analysis.

## CONCLUSION

Corporate performance metrics and capital budgeting metrics are to be viewed as the complementary subsystems of the performance measurement system. Their development enables comprehensive efforts for directing a company to maximizing its shareholders' (owners') value. We conducted a field study with the two main goals: to see which metrics were used by the managers in the companies in RS and also to see how a company's characteristics influenced such a choice. The main limitation of the field study is that we must assume that the managers are honest in their answers and that they „do what they say they do“. Due to a social desirability bias, survey studies generally tend to overstate the adoption of more sophisticated metrics.

Several conclusions can be pointed out. Regarding the first hypothesis, we noticed that the DCF capital budgeting metrics were dominant in the companies in RS. Also, we found out that the managers of the companies in Serbia used the PI and the PP to the greatest extent while the IRR method was preferred over the NPV (which only was not the case with the listed companies). The managers' orientation towards the PI was commendable since the PI takes the most part of the advantages of the NPV and is a relative measure at the same time. Because of their lacking good knowledge of the foreign market, the companies selling abroad tend to use a sensitivity analysis more than the non-internationalized ones. Accounting earning and the accounting rates of return were still more than dominant compared to modern metrics. However, the presence of the modern metric was not negligible, which speaks in favor of the second hypothesis. The large companies were keen to use EVA and the BSC more than the small ones. The small companies used each of all corporate performance metrics significantly less than the large companies. There was an obviously greater adoption of EVA and the BSC across the internationalized companies. Finally, the companies that did not use modern corporate performance metrics and systems

were also inclined to use significantly more the traditional, non-DCF capital budgeting metrics. The previously described differences in the presence of different metrics across the companies with different characteristics clearly confirmed our third hypothesis.

This study opened possibilities for several future researches. Longitudinal studies are quite a logical (and usual) extension to this kind of research subjects because of the possibility of changing the mentioned practices. Another very interesting thing could be a simultaneous research across the countries in the region because many of the surveyed companies have their subsidiaries in those countries with some autonomy in investment decision making. In the end, a special study can be conducted with the purpose of finding out whether using sophisticated metrics leads to a better financial performance.

## ENDNOTES

- 1 The term methods of capital budgeting is usually used in the literature; nevertheless, the term capital budgeting metrics can also be found to be in use (Brigham & Houston, 2012, 400).
- 2 All quantitative data refer to the day of 31st Dec. 2013 and were collected from the website of The Serbian Business Registers Agency ([www.apr.rs](http://www.apr.rs)).
- 3 The same threshold was used by J. R. Graham and C. R. Harvey (2001).
- 4 The profitability index is also referred to as the benefit-cost ratio.
- 5 We were guided by J. C. F. de Winter and D. Dodou's (2010) conclusion, revealing that the t-test could be used instead of the Mann-Whitney-Wilcoxon test since the two tests had an equivalent power.
- 6 Besides, this attitude was usually characterized as a wrong orientation because the NPV is described in textbooks as a superior method. Nevertheless, the objection is not apposite since managers do not necessarily remember all the lessons learnt during their studies.
- 7 Except for the ARR.
- 8 [http://businessfinancemag.com/planning-budgeting-amp-](http://businessfinancemag.com/planning-budgeting-amp-reporting-performance-managements-growing-pains)

[reporting/performance-managements-growing-pains](http://businessfinancemag.com/planning-budgeting-amp-reporting-performance-managements-growing-pains), accessed on the day of 28th Feb. 2015

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