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FINANCIAL PERFORMANCE – DETERMINANTS AND INTERDEPENDENCIES BETWEEN MEASUREMENT INDICATORS

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Abstract. *Purpose* – the study has a dual purpose. First, to assess the impact of the most important determinants of financial performance, which have been measured through four generations of indicators. In addition, the study provides the first quantification of interdependencies between different financial performance measures: profit margin (PM), profit growth rate (PGR), return on assets (ROA), return on equity (ROE), and economic value added (EVA).

Research methodology – the primary data was collected from the AMADEUS database. Empirical research was conducted on a relatively homogeneous sample from the automotive industry, using the panel data method for the period 2010–2019. Two models were tested. The first model highlights the relationships between performance measures and selected determinants. The second model highlights the relationship between the different performance measures and the determinants used in the first model.

Findings – the determinants analysed have different influences on the selected performance measures. For example, in the first model, the results statistically significant indicated the following. The current ratio has a positive influence on ROA, but a negative one on ROE and EVA. Gearing has a negative influence on PM and ROA, but a positive one on EVA. The growth rate of sales has a positive influence on PM, but a negative one on ROA and EVA. The size of the company has a positive influence on three performance measures (PM, ROA, and EVA). Regarding the relationships between the different performance measures (second model), the research indicates that EVA is negatively influenced by PGR and ROA. In this model, the determinants analysed maintain their meaning and intensity of influences.

Research limitations – the article has several limitations. The representativeness of the results is valuable only at the level of the researched industry. In addition, it should be noted that the analyses are focused only on financial performance, assessed by accounting measures. The authors are considering conducting comparative analyses at the level of fields/branches of activity to capture not only the impact of determinants on financial performance but also to assess organizational resilience.

Practical implications – The research provides clues to managers and financial decision-makers to increase the financial performance of the companies they lead.

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Originality/value – the originality of the study lies in the presented methodological approach. Unlike previous research, which usually evaluated performance on only one indicator, this paper aims to assess the impact of the most important determinants on five performance measures. In addition, the analysis of the interdependencies between the different performance measures is another novelty of this research.

Keywords: financial performance, determinants, economic value-added, automotive industry.

JEL Classification: C58, G30, G32, L25.

Introduction

The automotive industry is an important performer in both national and global economies (Adane & Nicolescu, 2018). The success of companies in this field attracts the attention of investors, who evaluate performance based on an indicator or a set of indicators considered relevant. At the same time, the success of companies in this field was a point of interest for researchers, who sought to assess financial performance (Herciu & Ogrean, 2013; Safaei Ghadikolaei et al., 2014; Pelloneova & Stichhauerova, 2019) or to identify its main determinant factors (Majtan et al., 2017; An & Kim, 2019; Sabbagh et al., 2019; Zainudin et al., 2021). In the research conducted, the performance profile was determined either based on information from the financial statements of the companies, based on information provided by the capital market, or based on perception measures (determined by survey).

The gap in the literature on defining and measuring performance is the first research issue that underpinned this article. Concerning the agreed financial performance indicators, the literature notes that stakeholder preferences have changed over time. We have thus witnessed a shift from the use of simpler, short-term relevant indicators to more complex, long-term relevant indicators. The importance of the research problem is supported by the fact that the correct measurement is a precondition for improving performance. Moreover, the selection of the most appropriate performance measures is of the utmost importance because there is evidence of the interdependence between the quality of management tools and techniques used and the recorded organizational performance (Afonina, 2015).

In terms of determinants of financial performance, a review of the existing literature has shown that research abounds in mixed results. The complexity of the performance, the diversity of the determinants, the samples, the processed data, the indicators used, and the applied analysis models make that the research results cannot be generalized. For this reason, this research focuses on the analysis of financial performance and its determinants for a sample of companies in the automotive industry. Therefore, empirical research was conducted on a sample from the automotive industry (89 companies), using the panel data method (for the period 2010–2019) and secondary data.

Motivated by the lack of convergence of the results of previous research, this paper aims to provide: a) an image of the progress made in terms of defining and measuring performance; b) a comprehensive analysis of the relationship between financial performance and its determinants, relevant to the automotive industry; c) an analysis of the interdependencies between the different performance measures. The ultimate goal is to facilitate the definition of some performance strategies which can ensure business sustainability. Unlike previous research,

which evaluated performance (and the impact of its determinants) on only one indicator, this paper aims to assess the impact of the most important determinants on five performance measures. In addition, another novelty of this research is the contribution to the advancement of knowledge on the line of interdependencies between different performance measures.

To meet the objectives assumed, the research was organized as follows: reviewing the literature and establishing research hypotheses, detailing the methodology, presenting the results and discussing them, respectively, concluding about the results obtained. The research has important theoretical and practical implications. It provides a scientific basis for integrative performance management and can also serve as a guide for decision-makers to increase the financial performance of the companies they lead, taking into account the interests of all stakeholders involved.

1. Theoretical background and hypothesis

1.1. Financial performance and its measures

Performance management and financial performance management, are intensely debated but still current topics. The proof is the multitude of studies published over the years. For example, in our search on the Web of Science platform (for the period March 1, 2021 – March 1, 2022), using the keywords financial performance management, it was found that in just twelve months about 2300 studies were published (in October 2021 there were over 22.5 thousands of papers, of which more than 17 thousand were assigned to relevant fields, such as management, business, and economics). Maintaining interest in these research topics is justified by the fact that common and convergent ideas on defining and measuring financial performance have not yet been reached. Summarizing the debates on performance, we identified the following:

- In the early stages of research, the concept of *performance*, considered a vital goal of any company, was defined from the perspective of achieving or not achieving organizational goals; subsequently, the pillars that explained performance were: efficiency, effectiveness, and value creation for stakeholders (Lupton, 1977);
- After several decades of performance research, *few studies use consistent definitions and measures* (Kirby, 2005);
- 10 years later, the literature shows a *lack of understanding or sufficient clarification in defining the concept of performance* (Jenatabadi, 2015), which makes the results of research remain inconclusive both in terms of measuring instruments and their determinants (Ayako et al., 2015);
- Current research (Golubeva, 2021) indicates that opinions on defining and measuring performance are weakly convergent, with the recommendation of taking a more comprehensive and creative approach.

The difficulty of defining the concept of *performance* derives from its multidimensional character (Prahalathan & Ranjany, 2011), integrating aspects related to management, finance, accounting, corporate governance, microeconomics, and more. For example, Hamann and Schiemann (2021) indicate that organisational performance has four dimensions: profitability, liquidity, growth, and stock market performance. Therefore, the internal architecture of the concept of financial performance is represented by various components that may (or may not)

be interdependent. To argue the tendency to abandon the concerns of defining the concept, it has been acknowledged that "performance is so important in management research that its structure and definition are rarely explicitly justified" (Richard et al., 2009).

Taking into account the opinions of predecessors, but also the difficulty of defining the concept, it was admitted that performance can be considered an artifact based on which the success of an organization is appreciated (Tudose & Avasilcai, 2020). The arguments in favour of this classification are explained below. First of all, performance is a result of human creation, managerial decisions being attributed exclusively to the human factor. Secondly, the achievement of performance (reaching a certain level of performance) involves specific actions (different from one organization to another, without the possibility of replication), the result of the actions being an original one (like a work of art). Third, past actions can be adapted to the present to achieve superior performance in the future.

Approached from a financial perspective, the performance was assessed based on the financial results obtained by a company in a given period. Therefore, to admit that a company is financially successful, its monetary outputs must be higher than the expenses related to its realization. The latest definitions of financial performance integrate aspects such as the efficiency and effectiveness of a company in the use of resources (Egbunike & Okerekeoti, 2018; Mahrani & Soewarno, 2018) and in achieving objectives (Suhadak et al., 2019). Therefore, financial performance reflects a company's ability to create economic value (Orozco et al., 2018) and to attract and generate returns for investors (Al-Saʼeed, 2018).

The dynamism of the economies, the changes at the level of the business environment or the level of the organizational strategy oblige to re-evaluate the usefulness of the performance measures. Concerns about the development of performance measurement systems/models have intensified in the last century. Analysing the research on the evaluation of financial performance, the authors opined that evaluation systems have developed in two stages (Rajnoha et al., 2016): in the first stage the focus was on profit, profitability, and productivity; in the second stage, as a result of changes in the world market, performance evaluation focused more on strategic priorities, the indicators of quality (of products/services) and business flexibility becoming important in gaining and maintaining competitive advantage.

Summarizing the research on financial indicators, other authors (Pavelková & Knapková, 2005) noted the substantiation and use overtime of four generations of financial performance indicators: 1. profit margin; 2. profit growth rate; 3. return on assets (ROA), return on equity (ROE), return on investment (ROI); 4. added value for the company and shareholders.

1. *The profit margin* reflects a company's ability to generate profit based on sales (Brigham & Huston, 2012; Nguyen et al., 2020). This indicator was considered important to follow because a significant decrease may generate the risk of bankruptcy (Husna & Desiyanti, 2016). Other authors point out that one of the challenges faced by financial managers is identifying the conditions under which profit growth does not significantly affect a firm's competitive advantage (Nguyen et al., 2021). It has been recognized that careful profit margin management can be a solution to avoid or anticipate declining profits, with a positive future effect on the company (by controlling competitiveness and minimizing the risk of bankruptcy). Imhanzenobe (2020) showed that the profit margin is an indicator of short-term performance appreciation (reflecting the company's net revenue per unit of sales), being different from the

indicators that report the profit to the elements recoverable over more than one year (such as ROA or ROE).

2. The evaluation of performance based on *the rate of increase of profit* marked the transition from static measurement to the dynamic measurement of financial performance. The profit growth rate was associated with the growth rate of the company (from the perspective of sales dynamics) to highlight sustainable development. Relatively recent research (Izquierdo, 2015) has been concerned with explaining why some companies grow faster than others, in a context that shows that the relationship between profitability and growth is neither universal nor generally reciprocal. Analysing the dynamics of the profit growth rate, some authors (Endri et al., 2020) have shown that an increase in the profits of listed companies can be obtained if they operate efficiently (with increasing revenues and profit margins) and carefully manage current liquidity, precisely to encourage higher sales growth.

3. *Profitability rates* describe the extent to which the use of a company's resources and funds generates profit. The most used rates of return are: return on assets (ROA) and return on equity (ROE). A high level of the two performance measures indicates the efficiency of a company in the use of its resources and funds. Also included in this category is the return on investment (ROI), which balances net profit and total investment value, being used to assess the level of efficiency of the company as a whole (Siahaan et al., 2021).

Due to the easy way of determining (but also due to the ease of interpretation), financial rates were considered useful tools to assess and monitor financial position (Demmer, 2015), as also trend analysis, cross-sectional analysis, and comparative analysis (Sebastian & Siauwijaya, 2021). The main criticisms of these performance measures were: the use of historical information, the evaluation of performance at a given time, and the priority treatment of the consequences and not of the causes that determined a certain performance (Kiseľáková et al., 2016).

4. The limitations of profit margin measurement systems, profit growth, and profitability rates have led researchers to focus on increasing the *value of the company*, i.e. increasing value for shareholders. Thus, there is a fourth generation of indicators that measure *the economic added value*, both for the company (through economic value added – EVA – or market value added) and for shareholders, investors, or other interested parties (by shareholder's value-added, free cash flow or cash flow return on investment). By balancing the net operating profit and the opportunity cost of the invested capital, the EVA analysis makes it possible to interrelate two areas often approached separately: operational management and financing management (focusing on the cost of these financing). Due to the complexity of the determination, EVA was considered one of the most appreciated performance evaluation indicators, as it involves all the resources used (and implicitly all the costs of running a business) and allows decentralization of decision making (Morard & Balu, 2010).

1.2. Financial performance determinants. Review of the literature and hypothesis

In general, the determinants of performance are grouped into two levels – micro and macroeconomic, respectively, internal and external. To find out the current state of knowledge on the determinants of financial performance, Tudose and Avasilcăi (2020) identified two groups of determinants: financial and non-financial. The results of the bibliographic research

conducted on this topic are summarized in Table 1. The methodological framework for assessing the interdependencies between financial performance and its determinants is shown in Figure 1.

The researchers noted that few studies are addressing the organization's problems, and they stated that more attention was needed for this category of determinants. This is why, in this paper, we focus on the most representative internal factors that impact financial performance. In their research, the authors opt for a set of indicators, associated with one or more categories of determinants (detailed in Table 1). Regardless of whether they are company/industry/country-level analyses, there is a preference of researchers for certain internal determinants. Relevant indicators from the literature are used for these determinants, such as

Table 1. Determinants of financial performance (source: elaborated by the authors)

Internal determinants (specific to the company, its activities, and products/services)	Financial determinants: business liquidity (Khidmat & Rehman, 2014; Husna & Desiyanti, 2016; Durrah et al., 2016; Egbunike & Okerekeoti, 2018; Kanakriyah, 2020; Imhanzenobe, 2020; Endri et al., 2020; Batrancea, 2021); capital structure (Dinu & Vintilă, 2017; Nenu et al., 2018; Muthoni, 2019; Mehmood et al., 2019; Dinh & Pham, 2020); sales volume and dynamics (Humera et al., 2011; Burja, 2011; Margaretha & Supartika, 2016; Husna & Desiyanti, 2016; Dinh & Pham, 2020; Endri et al., 2020; Le Thi Kim et al., 2021); company size, assessed by a number of employees or volume of assets, (Al-Jafari & Al Samman, 2015; Margaretha & Supartika, 2016; Ichev & Marinc, 2018; Fuertes-Callén & Cuellar-Fernández, 2019; Dinh & Pham, 2020; Golubeva, 2021), nature of assets, capital investment intensity, working capital (Bolek, 2014; Al-Jafari & Al Samman, 2015), market share (Capon et al., 1990; Izquierdo, 2015), financial sustainability (Imhanzenobe, 2020; Orazalin et al., 2019).
	Nonfinancial determinants: TQM practices (Sabbagh et al., 2019); shareholder and structure or size of the board (Al-Saʿeed, 2018; Ayako et al., 2015; Orozco et al., 2018); the number of employees (An & Kim, 2019); dividend policy (Kanakriyah, 2020; Sebastian & Siauwijaya, 2021); corporate lobby (Lin, 2019); leadership practices (Suriyankietkaew & Avery, 2016); research and development, diversification (An & Kim, 2019; Zainudin et al., 2021); competitive advantage (Nguyen et al., 2021); product/service quality, corporate social responsibility (Mahrani & Soewarno, 2018; García-Sánchez & Martínez-Ferrero, 2019); business sustainability (Imhanzenobe, 2020); management practices, innovation capacity (Fuertes-Callén & Cuellar-Fernández, 2019; Nguyen et al., 2020); corporate governance (Humera et al., 2011).
External determinants	Specific to the economic environment: industry size, concentration, or industry affiliation (Izquierdo, 2015; Margaretha & Supartika, 2016; Nguyen & Nguyen, 2020; Golubeva, 2021); capital investment, advertising, business ecosystems (Micheli & Muctor, 2021); legal framework, market specificity, barriers to entry, consumer/user behaviour (Capon et al., 1990); competitiveness (Herciu & Ogrean, 2013).
	Specific to the economic context: economic growth (Dinu & Vintilă, 2017; Golubeva, 2021; Asimakopoulos et al., 2009); economic cycle (Vu et al., 2019), crisis (Batrancea, 2021); interest rate, inflation rate, exchange rate and the gross domestic product growth rate (Egbunike & Okerekeoti, 2018); stock market performance (Hamann & Schiemann, 2021); internationalisation (Zainudin et al., 2021), consumer price index, cost of financing (money and financial market); the degree of development of financial markets, the degree of openness of national economies, the balance of trade, exchange rate volatility.
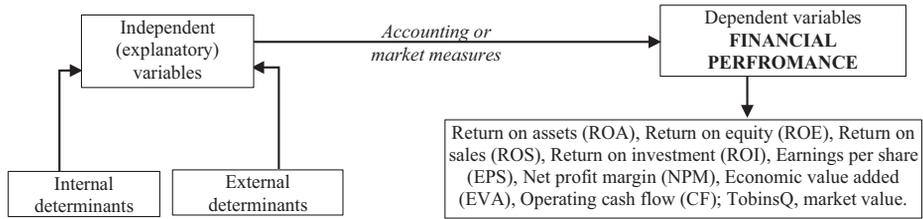
Figure 1. The causal model between financial performance and its determinants
(source: elaborated by the authors)

the current ratio as an expression of business liquidity; gearing ratio or levier, which reflects the influence of financial structure on performance; the growth rate of sales, as an expression of business growth; company size, admitting that the larger ones have a higher competitive power compared to the smaller ones; this is because they have higher market shares, have easier access to the capital market and demonstrate operational experience and efficiency (Ichev & Marinc, 2018; Golubeva, 2021). The results obtained are not convergent due to the diversity of samples, the periods for which the analysis is performed, and the indicators used (for dependent/independent/control variables). For example, some studies (focused on financial performance) report a positive impact on liquidity (Khidmat & Rehman, 2014; Durrah et al., 2016; Dinu & Vintilă, 2017; Nenu et al., 2018; Egbunike & Okerekeoti, 2018; Imhanzenobe, 2020), financial structure (Al-Jafari & Al Samman, 2015; Muthoni, 2019; Dinh & Pham, 2020), sales growth (Endri et al., 2020; Dinh & Pham, 2020; Humera et al., 2011; Le Thi Kim et al., 2021) and size company (Egbunike & Okerekeoti, 2018; Fuertes-Callén & Cuellar-Fernández, 2019; Kanakriyah, 2020; Dinh & Pham, 2020; Golubeva, 2021). Other studies find negative influences on performance, when they introduce in the analysis the current ratio (Fuertes-Callén & Cuellar-Fernández, 2019; Endri et al., 2020), the gearing ratio, or the levier (Khidmat & Rehman, 2014; Dinu & Vintilă, 2017; Nenu et al., 2018; Mehmood et al., 2019; Le Thi Kim et al., 2021), the sales growth rate (Khidmat & Rehman, 2014; Margaretha & Supartika, 2016) and the company size (Khidmat & Rehman, 2014; Margaretha & Supartika, 2016; Nenu et al., 2018).

In the light of those presented, two hypotheses are assumed in this study:

H1: Current ratio, gearing, turnover growth rate and size of the company from the automotive industry have a direct influence on the financial performance assessed by the profit margin, profit growth rate, returns on assets, return on equity and economic value-added.

H2: There are relationships of direct determination between different measures of financial performance.

According to research predecessors (Leończuk, 2016), performance measurement should be done in a particular context. This is why, in the present study, the analysis is limited to one field of activity (automotive industry) and covers the pre-pandemic period. The formulation of the hypotheses was based on the three benchmarks that underlie the performance assessment: effectiveness (which highlights the relationship between the results obtained and the objectives pursued), efficiency (which highlights the relationship between resource consumption and added value), and satisfaction of stakeholders.

2. Methodology

This study is based on hypothetical-deductive reasoning. The aim is to predict an explanatory theoretical model which will further be the subject of empirical research. The choice for this research strategy was justified by the fact that the literature provides evidence that the relationships between determinants and business performance are not always clear. The methodological framework of the research is presented in Figure 2.
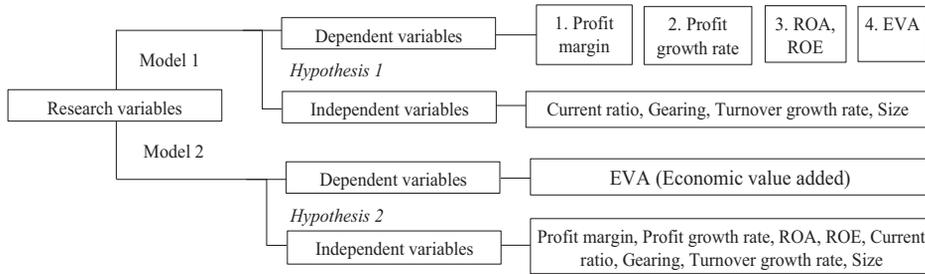
Figure 2. The framework of methodology (source: elaborated by the authors)

Although considered first-generation indicators, profit margin and profit growth rate are often used in research over the last decade (Al-Jafari & Al Samman, 2015; Durrah et al., 2016; Husna & Desiyanti, 2016; Mahdi & Khaddafi, 2020; Endri et al., 2020). More intensely, ROA and ROE (considered third-generation indicators) are used in research focused on assessing the financial performance of companies (Khidmat & Rehman, 2014; Al-Jafari & Al Samman, 2015; Durrah et al., 2016; Kanakriyah, 2020). Considering that financial rates are not sufficient to assess performance in today's competitive economy (Safaei Ghadikolaei et al., 2014), the literature has focused on measures based on economic added value. EVA, considered a fourth-generation indicator, has come to the attention of researchers by allowing managers to perform four types of interventions (Kijewska, 2016; Tudose et al., 2021): a) increase the net profit margin (expression of increased efficiency activity); b) increase in sales; c) diminution of the value of the invested capital when it is not fully capitalized; d) optimization of the capital structure.

As shown in Figure 2 for realizing the empirical analysis we focused on two models. The first model considers five variables in turn that define the financial performance of companies, and four determining factors. The equations tested for Model 1 are presented below:

1. performance analysis, evaluated based on the first generation indicator – PM:

$$PM_{it} = CR_{it}\ \beta1 + G_{it}\ \beta2 + GRS_{it}\ \beta3 + S_{it}\ \beta4 + U_{it}. \tag{1}$$

2. performance analysis, evaluated based on the second generation indicator – PGR:

$$PGR_{it} = CR_{it}\ \beta1 + G_{it}\ \beta2 + GRS_{it}\ \beta3 + S_{it}\ \beta4 + U_{it}. \tag{2}$$

3. performance analysis, evaluated based on third-generation indicators – ROA & ROE:

$$ROA_{it} = CR_{it}\ \beta1 + G_{it}\ \beta2 + GRS_{it}\ \beta3 + S_{it}\ \beta4 + U_{it}, \tag{3}$$

$$ROE_{it} = CR_{it}\ \beta1 + G_{it}\ \beta2 + GRS_{it}\ \beta3 + S_{it}\ \beta4 + U_{it}. \tag{4}$$

4. performance analysis, evaluated based on the fourth-generation indicator – EVA:

$$EVA_{it} = CR_{it}\ \beta 1 + G_{it}\ \beta 2 + GRS_{it}\ \beta 3 + S_{it}\ \beta 4 + U_{it}\ .$$ (5)

The variables included in the models described above are defined in Table 2.

Table 2. Independent and dependent variables (source: elaborated by the authors)

Variables	Symbol	Formulas
Profit margin	PM	Net profit / Sales
Profit growth rate	PGR	Net profit $_n$ / Net profit$_{200x}$ (200x is the base year)
Return on assets	ROA	Gross profit / Total assets
Return on equity	ROE	Net profit / Shareholder's equity
Economic value added	EVA	Net operating profit after taxes –Invested capital x Cost of capital
Current ratio	CR	Current assets / current liabilities
Gearing	G	Total debt / total financing
The growth rate of sales	GRS	Turnover $_n$ / Turnover$_{200x}$ (200x is the base year)
Size of the company	S	Total assets

For the second model, we proposed to test the interdependencies between the performance indicators considered in the first model. Thus, the equation we intend to test is:

$$EVA_{it} = PM_{it}\ \beta 1 + PGR_{it}\ \beta 2 + ROA_{it}\ \beta 3 + ROE_{it}\ \beta 4 + CR_{it}\ \beta 5 + G_{it}\ \beta 6 +$$

$$GRS_{it}\ \beta 7 + S_{it}\ \beta 8 + U_{it}\ ,$$ (6)

where i represents the firm, t is the time; $\beta 1$, $\beta 2$… $\beta 8$ represent the coefficients; U_{it} is the error term.

From the perspective of the objective assumed and transposed in this second model, it is necessary to specify that no similar research strategy has been found in the literature, to assess the interdependencies between the measures of financial performance assigned to different generations. The searches in this direction of research indicated that research was limited to analysing the interdependencies between two performance indicators, namely: net profit margin and firm value (Mulyadi et al., 2020); profit growth rate and net profit margin (Endri et al., 2020); ROA and net profit margin (Imhanzenobe, 2020); EVA and ROA (Sliman, 2017; Agustina et al., 2020; Tudose et al., 2020). As an exception to the above, the research of Safaei Ghadikolaei et al. (2014) proposed a hybrid approach to assessing the financial performance of companies in the automotive industry, in which context they ranked (companies) according to financial performance, introducing accounting measures and economic values in a process of Fuzzy analysis.

Besides the theoretical aspect of the study, we focused also on quantitatively testing a set of hypotheses. Thus, the main purpose of the empirical part is to find out which are the determinant factors of the financial performance of firms and also to identify the interdependencies between them. For reaching this purpose we have selected the data for the firms from the AMADEUS database. The data were selected only for Romanian companies, for companies in the automotive industry (CAEN codes related to group 29 Manufacturing of

motor, trailers, and semitrailers). On the first search, the platform indicated the existence of 607 companies, of which only 571 companies are active. In order to ensure representativeness, out of the 571 companies, only large and very large companies were selected, therefore remained only 118 companies. Out of the 118 companies, realizing the cleaning of the database we gave up to 5 companies that did not have data transmitted for the last year (2019); 4 companies that did not have operational income/employees in the first years (2010–2011); 20 companies for which data were not available for more than 4 consecutive years. Thus, the resulting final sample consists of 89 companies. The study is mainly based on secondary financial data for a period of ten years, 2010–2019.

As empirical methods of analysis we used correlation and regression analysis. Because our analysis focuses on a set of 9 indicators, for 89 companies, over ten years, we use panel data models. Eviews programme was used for performing econometric analysis. Thus, the first step in the analysis was to test the variables for the existence of a unit root. Also, because EVA appears in absolute size, we calculated the natural logarithm for this variable. The next step is to analyse the descriptive statistics, followed by testing the correlation and regression models with panel data. We run three different models: OLS adapted to panel data, fixed effects, and random effects. And then tested to see which of these models fit best. The tests performed (Hausman test and Redundant fixed effects test) showed that the model with fixed effects is the most suitable for our data. Therefore, the regression analysis consisted in applying the fixed effects.

3. Results and discussions

The results obtained after running the descriptive statistics are described in Table 3. Thus, they point out that the companies considered in the sample are very varied, so we have companies that have high performance but also companies at the other extreme with poor performance, with negative results for the indicators measuring performance. The highest standard deviation is obtained for return on equity followed by profit growth rate and return on assets.

Table 3. Descriptive statistics of the variables (source: authors' own calculations)

Variables	Mean	Max.	Min.	Std. Dev.	Obs.
Profit margin	6.109	54.910	−5.828	10.364	854
Profit growth rate	0.006	37.547	−6.136	22.613	852
Return on assets	9.511	99.915	−4.239	15.351	870
Return on equity	16.925	434.210	−6.130	55.755	833
Economic value added	7.073	11.930	−1.397	1.798	809
Current ratio	1.825	14.286	0.039	1.703	872
Gearing	73.265	926.180	0.000	110.805	708
The growth rate of sales	2.128	714.348	0.000	24.764	843
Size of the company	9.843	14.591	2.314	1.531	872

For independent variables, the largest variation is recorded for gearing rate and growth rate of sales. Also, the average value for gearing of 73% shows the high degree of indebtedness of the companies included in the study. For the growth rate of sales, although the maximum value is high, the average is relatively low, showing that many of the companies considered have low sales growth rates. The values obtained for the size of the company show that our sample consists of an increased proportion of very large companies. The different values obtained for the number of observations for each variable show us that some variables lack data for certain years.

In Table 4 we have centralized the results obtained after running the regression analyses for the two proposed models. Thus, the results obtained for Model 1, point out that a part of the variables considered have a significant influence on the financial performance of the firms from the automotive industry. Therefore, the *current ratio* resulted in positively determining ROA and negatively determining ROE and Economic value-added. When a company has higher liquidity, and greater capacity to cover the short-term liabilities will determine an increase in ROA. This result is in line with the findings of Crespo and Clark (2012), Khidmat

Table 4. Regression analysis results (source: authors' own elaborations)

Dependent variable	Model 1					Model 2
	Profit margin	Profit growth rate	ROA	ROE	Economic value added	Economic value added
Current ratio	0.604 (0.640)	0.109 (0.180)	0.749** (0.245)	−1.522* (0.910)	−0.140*** (0.032)	−0.139*** (0.322)
Gearing	−0.014*** (0.003)	−0.007 (0.005)	−0.021*** (0.002)	0.004 (0.047)	0.001** (0.001)	0.001*** (0.001)
Growth rate of sales	1.673* (0.842)	0.001 (0.001)	−4.214*** (1.062)	2.426 (6.593)	−0.195*** (0.051)	−0.247*** (0.065)
Size of the company	1.950*** (0.576)	0.009 (0.407)	1.390* (0.802)	−4.363 (4.509)	0.788*** (0.090)	1.039*** (0.087)
Intercept	−13.912 (6.650)	1.073 (4.597)	−4.199 (8.040)	6.756 (4.561)	−0.410 (0.936)	−2.663*** (0.204)
Profit margin	–	–	–	–	–	0.004 (0.005)
Profit growth rate	–	–	–	–	–	−0.006*** (0.001)
Return on assets	–	–	–	–	–	−0.007*** (0.002)
Return on equity	–	–	–	–	–	0.001 (0.003)
Obs.	695	697	696	696	683	681
R-squared	0.667	0.131	0.724	0.434	0.931	0.861
R-squared adjusted	0.615	0.005	0.680	0.345	0.920	0.859
F-statistic	12.722***	0.961	16.616***	4.858***	84.104***	86.146***

Note: *, ** and *** represent that the values are significant at 1%, 5%, respectively 10%. Standard errors in parenthesis.

and Rehman (2014), and Durrah et al. (2016). Contrary to these findings, Bolek (2014) – analysing the issue of return on current assets and return on working capital, correlated with the cost of equity – showed that in a conservative working capital management strategy the influence on ROE can be negative. Regarding the link between the current ratio and EVA, previous research confirms the negative relationship (Agustina et al., 2020) or signals a lack of statistical representativeness for this link (Tudose et al., 2020).

The gearing ratio resulted in negatively determining *profit margin* and ROA and positively determining the *economic value-added*. These results can be explained by the fact that when a firm has higher debt it will need more resources for paying this debt, with negative effects on its performance measured by *profit margin* and/or ROA. Similar results were obtained by Asimakopoulos et al. (2009), Al-Jafari and Al Samman (2015), and Kanakriyah (2020). At the same time, supplementary debt can be translated into a good investment, which will then increase performance (Burja, 2011; Humera et al., 2011). Al-Saʾeed (2018) showed that the gearing ratio has a significant positive impact on performance measured by ROA and a significant negative impact on performance measured by ROE and net profit margin. Regarding the gearing ratio and EVA, studies confirm the positive relationship (Agustina et al., 2020).

The variable *growth rate of sales* positively influences *profit margin* and negatively *ROA* and *EVA*. The positive link between sales growth and profit margin is supported by the fact that both indicators use sales volume as the main variable. Increasing sales from one period to another (highlighted by an increasing growth rate) will generate higher profits.

When the profit growth rate is higher than the sales growth rate, the profit margin will increase. Previous studies (Rice, 2016) confirm the positive relationship, arguing that sales revenues materialize into actual or potential cash inflows (when they take the form of credit receivables/sales). According to other researchers (Endri et al., 2020), the increase in sales from one period to another reflects the success of the business and the foundation for predicting future profit growth.

When the growth rate of gross profits will be lower than the growth rate of assets, the increase in sales revenue will result in a deterioration of the ROA. This situation is specific to companies that are expanding their production capacity (marking an increase in the volume of assets held). To better capture this situation, some authors have proposed the use of a composite indicator – *asset turnover*. Based on this composite indicator, determined as the ratio between total revenue and total assets, the literature provides evidence of the positive and consistent impact on financial sustainability (Imhanzenobe, 2020).

Other research (Agustina et al., 2020) provides evidence on the lack of statistical significance of the link between asset turnover ratio and EVA. To understand the interdependencies between the growth rate of sales and EVA, it is important to identify the relationship between two indicators:

$$EVA = NOPat - IC \; x \; WACC, \qquad\qquad (7)$$

and

$$NOPat = Sales - Operational \; expenses - Adjustments - Corporate \; income \; tax, \qquad (8)$$

where, *NOPat* – Net operation profit after tax; *IC* – Invested capital; *WACC* – Weighted average cost of capital.

According to the relationship presented, the increase in sales is a precondition for the increase in EVA. Still, when the growth rate of NOAPt is lower than the growth rate of invested capital, the tendency is to decrease EVA. Evidence of this is provided by Pramanik and Sahoo (2016), who showed that an increase in investment in fixed assets can have a negative impact on the performance assessed by EVA.

The *size of the company* resulted to be positively related to the financial performance of firms measured by profit margin, ROA and economic value-added. This shows that larger firms have higher effects on their potential investors, creditors, stakeholders, and even consumers. Our results are in line with the findings of other studies in the literature (Stierwald, 2009; Vijayakumar, 2011; Ayele, 2012; Erasmus, 2013; Al-Jafari & Al Samman, 2015; Kanakriyah, 2020; Nguyen & Nguyen, 2020). Contrary to these findings, other authors have provided evidence of the negative relationship between firm size and ROE (Dinh & Pam, 2020) respectively ROA (Margaretha & Supartika, 2016; Imhanzenobe, 2020). Other authors have confirmed that the size of the company does not influence the rate of profit growth (Endri et al., 2020; Vu et al., 2019).

The value of R-squared adjusted is different according to the variable considered for measuring the performance of the companies. Therefore, looking at the values from Table 4 we can affirm that 61% of the variation of the profit margin of the considered companies can be explained by the variation of the variables included in the analysis. Also, 68% from the variation of ROA, 34% from the variation of ROE, and 92% from the variation of EVA can be explained by the variation of the independent variables considered.

For Model 2 we observe that EVA is negatively related to current ratio, growth rate of sales, profit growth rate, and ROA, and positively related to gearing ratio and the size of the company.

The negative relationship between the current ratio and the growth rate of sales, on the one hand, and EVA, on the other hand, have been detailed in the context of the Model 1 debates. The arguments presented can be considered valid to explain the negative relationship between *profit growth rate* and *ROA*. The interpretation from the perspective of the research sample can be attributed to the fact that during the 11 years (2010–2019), companies made investments in fixed assets (Figure 3), which had a negative impact on the performance assessed by EVA (Pramanik & Sahoo, 2016).

Regarding the positive relationship between the *gearing ratio* and the *size of the company*, on the one hand, and EVA, on the other hand, our research provides evidence that EVA increases if: a) the rate of increase of remuneration claimed by financiers is lower than the growth rate of net operating profit; b) there is a consensus of financiers on the reduction of
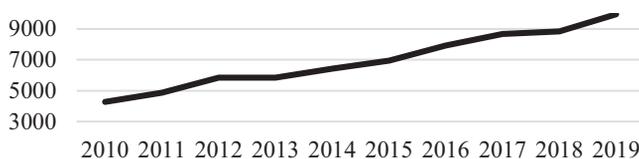
Figure 3. Dynamic of assets (thousand euros) (source: elaborated by the authors)

the current level of remuneration in favour of future higher financial remuneration (Tudose et al., 2020). This is also the reason why the literature (Safaei Ghadikolaei et al., 2014) considers that measures based on economic added value are more important compared to measures based on financial rates.

Subsequently, taking into account the situation identified in the primary analysis data (for one of the sampled companies the ROA was negative during the analysed period while EVA was positive) it is confirmed that EVA reflects the true economic profit of a business (Orazalin et al., 2019).

Model 2 resulted to be statistically significant and the value of R-squared adjusted shows that 85% of the variation of the Economic value-added can be explained by the variation of the independent variables.

Conclusions

Due to the multidimensional nature of performance, the diversity of its determinants, as well as the diversity of methods, techniques, and tools used for evaluation, performance research has been and remains a topic of interest. The central idea around which the studies on this topic revolved was to identify the most appropriate performance measures, which provide a true picture of reality and allow for resilience and business sustainability.

This study aimed to comply with one of the rigors of scientific research, according to which research must provide both theoretical and practical knowledge to facilitate the overcoming of organizational problems. For this, both rational thinking and creative thinking were used (to ensure originality in research). At the same time, it was intended that the paradigm questions (which facilitated the understanding of the brilliant scientific achievements and the construction of a cognitive transcript) take precedence over the method questions.

The objectives assumed in this study are subsequent. Highlighting the advancement of knowledge on the definition and measurement of performance is followed by two analyses: one focused on the relationship between financial performance and its determinants and one focused on the interdependencies between different performance measures.

The bibliographic research carried out allowed the formulation of the following conclusions: the difficulty of defining the concept of performance is maintained; progress has been made in substantiating and implementing performance measures (the option for a specific set of measures depends on the preferences of stakeholders); evidence was provided on the interdependence between the quality of the management tools and techniques used and the organizational performance; analyses at the level of performance determinants implement causal models between a dependent variable (financial performance) and one or more explanatory variables (financial or non-financial).

The success of companies in the automotive industry has been a point of interest for researchers, who have sought to assess financial performance or identify its main determinants. However, the literature review provided evidence that the relationships between determinants and firm performance are not always clear. To shed more light, two causality models are defined and tested in this study: the first model evaluates the interdependencies between different performance measures and a set of determinants; the second model evaluates the

links between the different performance measures. As signals were identified that performance analysis differed by period, country, and industry, interdependencies were tested on a relatively homogeneous sample of 89 large and very large companies in the automotive industry; the construction of a representative database for 9 indicators, for 11 years allowed the cross-sectional analysis, based on the panel data methods.

The results of the analyses at the level of the first causality model proved to be statistically significant and indicated that the *current ratio* has a positive influence on ROA, but a negative one on ROE and EVA; *gearing* has a negative influence on PM and ROA, but positive on EVA; the *growth rate of sales* appears as a significant determinant in the models that evaluate the financial performance through ROA and EVA; company size has a positive influence on PM and EVA. As shown in the results and discussion section, the vast majority of them confirm the results of previous research.

The results of the analyses at the level of the second causality model proved to be statistically significant and scientifically important. The output of this research increases in value because (from the perspective of those consulted so far) previous research has limited themselves to analysing only the interdependencies between two performance measures. The results of the interdependence analysis of the 4 performance measures, calibrated according to four control variables (current ratio, gearing, growth rate of sales, size of the company), confirm the results of the first model tested, in the sense that EVA is negatively related to current ratio, the growth rate of sales, PGR and ROA and positively correlated with gearing ratio and the size of the company. The situation was explained by the fact that in the period 2010–2019 the companies in the automotive industry intensely financed the investments in assets, which diminished the performance related to the analysed period, but created a foundation for the expansion/growth/development of the business.

From the perspective of the results obtained, this study contributes to the advancement of knowledge (because it assesses the current state of research and proposes an original methodology that better captures the multidimensional nature of performance) and has important practical implications. Knowing the impact of different variables on financial performance (evaluated through the prism of several indicators), managers have a wider range of activities to achieve the objectives assumed by the company.

Although much of the results of the existing literature have been valued in the elaboration of this paper, the study is not intended to be exhaustive. In future research, we consider overcoming the limitations of this research (related to the representativeness of the data only at the level of the researched sample) and identifying and including in the empirical analysis some new determinants relevant to the selected samples. At the same time, we are considering conducting comparative analyses at the level of fields/branches of activity to capture not only the impact of determinants on financial performance but also to assess organizational resilience.

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