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Firm Ownership and Performance: Evidence for Croatian Listed Firms

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***Abstract*—**Using data of listed Croatian firms from the Zagreb Stock Exchange we analyze the relationship between firm ownership (ownership concentration and type) and performance (ROA). Empirical research was conducted for the period 2003-2010, yielding with the total of 1,430 observations. Empirical findings based on dynamic panel analysis indicate that ownership concentration variable - CR4 is negatively related with performance, i.e. listed firms with dispersed ownership perform better than firms with concentrated ownership. Also, the research indicated that foreign controlled listed firms perform better than domestically controlled firms. Majority state owned firms perform worse than privately held firms but dummy variable for privately controlled firms was not statistically significant in the estimated panel model.

***Keywords*—**Croatia, firm, ownership, performance

I. Introduction

FOR many years ownership structure was in focus of scholars interests due to its expected relationship with the firm performance. Almost 90 years ago (1932) pioneers in this field of research, published a book dealing with the issue of modern firm [1]. In the light of the managers-owners conflict in the modern firm they conclude that firms with more dispersed ownership are expected to have lower performance. In other words, due to the fact that ownership and control are separated in modern firm owners' possibility for efficient control over firm activities is reduced.

On this theoretical basis, agency theory was later developed. According to the agency theory, managers are hired by owners to run a firm in order to maximize owners' wealth. But, in the real life managers do not always follow the goal of maximizing the owners' wealth, since they have their own goals [2]. Some authors suggest that agency problem can be solved by concentrated ownership, which can reduce agency costs. But, concentrated ownership will not resolve the issue of minority shareholders protection [3]. After the initial studies, many later papers analyzed the relationship between ownership concentration and performance, but empirical findings are mixed and there has still been no consensus regarding this issue.Generally speaking, these kinds of studies compare two broad models of corporate governance. The first one is characterized by dispersed ownership, ownership separated from management, market for corporate control and mainly short term oriented goals. When ownership is dispersed, owners' supervision over business is more difficult and there is possibility for managers to pursue their own goals, which might not be in the best interest of owners. But, at the same time, when a firm is run by professional managers, which are educated specialists, there is possibility that the mentioned disadvantages of dispersed ownership structure are offset by advantages that professional managers may bring.

The second model of corporate governance is characterized by more concentrated ownership, where large controlling stockholders exercise operative control. The main advantage of concentrated ownership might be efficient control over business activities and reduced agency costs. But concentrated ownership might also have some negative effects on firm performance. For example, the controlling shareholders might expropriate corporate funds on their behalf and on the cost of minority shareholders, by reducing firm performance and firm value. This can be achieved through excessive compensations, unfair transfer prices in deals with controlling shareholders private companies, etc.

It seems that both models of corporate governance have certain advantages and disadvantages and still we have the unresolved question: which model of ownership structure is better, the one with dispersed or the one with concentrated ownership?

In our study we analyze the relationship between ownership concentration and listed firms' performance in Croatia, an emerging market country that is currently in its final stage of EU accession. To the best of our knowledge, this study is the first one that brings empirical evidence of the above mentioned relationship for Croatian listed firms. Also, this study is among few that explore the question of ownership concentration in Croatia in general. Due to the fact that Croatia is a post-socialist, emerging country, it has some specific characteristics which might be important for the ownership-performance relationship.

An interesting feature of the sampled listed companies in this research is that approximately 20% of them are majority state controlled. Therefore, it would be interesting to see if privately controlled firms are more profitable in comparison with state controlled firms. In the case of Croatia such finding would not be very surprising due to the large number of corruption cases in state owned firms that are published in

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media. Also, a considerable number of listed Croatian firms were acquired by foreign firms and one would expect that foreign corporate ownership might bring restructuring and better performance in comparison with domestic ownership.

The paper is structured as follows. Previous research and hypotheses are presented in section II. Section III presents description of data and variables used in econometric modeling. In section IV empirical findings are presented and discussed, while concluding remarks are made in section V.

II. Previous Research

While the initial papers that analyzed the relationship between ownership structure and performance were primarily theoretical and descriptive, the later papers are mostly empirically oriented [1], [2]. Empirically oriented researches were conducted in different countries and they resulted in mixed findings: some studies confirmed the initial hypothesis that performance is positively associated with concentrated ownership, while some other studies rejected it because empirical evidence showed that performance was positively related with dispersed ownership. There were also studies that found no statistically significant relationship (positive or negative) between ownership structure and performance. Finally, some studies confirmed the relationship between ownership concentration and performance, but discovered that the relationship was not linear since quadratic and/or cubic forms were best fitting.

Among the first one who challenged the hypothesis about the relationship between ownership structure and firm performance was Demsetz [4]. He argues that ownership structure is endogenous variable, which simply reflects a decision of shareholders to sell or buy stocks. In his later study he did not find a statistically significant relationship between ownership structure and firm performance [5]. Similar finding was reported by the study that investigated Fortune 500 firms [6]. However, when piecewise regression was used, a positive relationship was found when the management held between 0% and 5% of shares, a negative relationship was detected when the management held between 5% and 25% of shares and again a positive relationship was found when the management held more than 25% of shares. Here it must be pointed out that the authors did not use ROE but Tobin's q as a measure of performance.

Empirical rejection of the relationship between ownership structure and performance can also be found in literature [7]. The authors used both measures of performance, ROE and Tobin’s q. Similarly, some other authors treated ownership as endogenous variable and found no statistically significant relationship between ownership concentration and performance [8]. A negative relationship between ownership concentration and firm performance (profit margin) was discovered for Austrian firms in the 1998 research [9]. The author also points out that domestic ownership (banks, state and individuals) reduces profitability in comparison with foreign ownership [9].

Research on the sample of Slovene listed companies in the 1998-2002 period found that the ownership percentage of the largest stockholder (CR1) was not related to firm performance. The study also found that firms controlled by domestic non-financial owners and insider owners performed better than firms controlled by state controlled funds [10]. Comparative analysis of ownership concentration and firm performance for UK, Czech Republic and Poland indicated that concentration is insignificant in explaining the firm performance [11].

Study on ownership structure and firm performance of 50 largest Iranian listed companies from the Teheran Stock Exchange indicated that there was a positive relationship between institutional ownership and performance (measured by ROE, ROA and Tobin's q). Furthermore, it was found that firms with dispersed ownership were performing better than firms with concentrated ownership [12]. Recent research from 2010 for the largest Russian listed firms with OLS regression found no significant relationship between ownership dispersion and firm performance [13].

Positive influence of concentrated ownership on firm performance (measured by ROE) was discovered in a 1968 paper [14]. The study incorporated data for 72 US firms and found that ownership controlled firms were more profitable than management controlled firms. Some authors tested the relationship between ownership concentration and performance on the sample of Fortune 500 [15]. Their empirical findings suggested that Fortune 500 firms with higher ownership concentration performed better than firms with lower ownership concentration.

Research on the sample of listed firms from China in 1997 revealed that ownership concentration positively influenced firm profitability [16]. The relationship between firm performance and ownership structure were also tested on the data for 435 largest European companies. Ownership concentration was measured with CR1, while five types of ownership were used (bank, non-financial corporate, family, government and institutional). Empirical findings revealed that firm performance was related with ownership concentration, but the relationship was not linear. Instead, firm performance was bell shaped related with ownership concentration [17].

Research for medium and large firms from Czech Republic indicated that concentrated foreign ownership improved economic performance (change of ROA), but domestic private ownership did not in comparison with state ownership [18]. Some other research was conducted on the data of listed Spanish firms (1.233 observations) in the period 1990-1999. Models confirmed S shaped relationship between performance and ownership concentration. The authors conclude that insider ownership at low and high levels increases firm performance, while insider ownership at intermediate level reduces firm performance due to entrenchment effect [19].

Influence of ownership structure on firm performance was analyzed for listed Turkish companies. However, the findings were mixed since in ROE specification ownership variable (largest shareholder) was insignificant, while in M/B

specification ownership concentration was positively related to performance [20]. On the sample of listed Greek companies the authors found that ownership concentration (CR4) was positively related with firm performance -Tobin's q [21].

III. Data Sample and Variables

Our analysis covers the period from 2003 to 2010 and comprises all listed firms from the Zagreb Stock Exchange during the mentioned period. For the period 2003-2008 data were obtained from the database of Hanfa (www.hanfa.hr), regulator of capital markets in Croatia, while the data for 2009 and 2010 are collected from the web site of the Zagreb Stock Exchange (www.zse.hr). Financial institutions (banks and insurance companies) and all investment funds were eliminated from the initial sample. The final data set consists of 1,430 observations.

All variables used in this analysis along with their expected sign, i.e. manner of their expected influence on Croatian listed firms' performance, are presented in Table I.

TABLE I
List of Variables Used in the Model

Variable	Symbol	Expected sign
return on assets	ROA	
ownership concentration	CR4	+
private ownership	POW	+
domestic ownership	DOW	-
firm age	AGE	+
firm size	SIZE	+
firm activity	TUR	+
firm liquidity	LIQ	+

Measurement of ownership concentration was done by usage of concentration ratio of the four largest shareholders – CR4.

TABLE II
Pearson Correlation Coefficient Matrix

		CR1	CR4	CR10	HHI
CR1	Pearson Correlation Sig. (2-tailed)	1			
CR4	Pearson Correlation Sig. (2-tailed)	0,823** 0,001	1		
CR10	Pearson Correlation Sig. (2-tailed)	0,701** 0,001	0,948** 0,001	1	
HHI	Pearson Correlation Sig. (2-tailed)	0,979** 0,001	0,802** 0,001	0,689** 0,001	1

** Significant at 0,001

Besides CR4, the initial analysis included other measures of ownership concentration, like CR1, CR10 and HHI, but there was no major difference (in sign or statistical significance) among results obtained when alternative variables of concentration were used. Thus, only the results of the model using CR4 variable are presented in the segment of empirical findings. Table II brings the Pearson correlation coefficient among different measures of ownership concentration.

The change of CR4 during the 2003-2010 period is shown in Table III. Data from the Table III indicate that concentration of ownership of Croatian listed companies was very high and stabile during the 2003-2010 period. This finding was not surprising since previous (scarce) research on ownership concentration variation also indicated quite concentrated ownership of listed firms in Croatia [22]. For example, CR1 of Croatian listed firm is high and equals 51.5%, while CR1 at the New York Stock Exchange and UK is 5.4% and 14.4% respectively [22]. According to the data on ownership concentration, Croatia is similar to other continental European countries.

TABLE III
Change of Ownership Concentration

Year	CR4 - average
2003	73.09
2004	74.98
2005	75.03
2006	75.38
2007	74.25
2008	74.78
2009	75.10
2010	75.06

Firm performance can be measured in different ways, thus for example *researcher can use:*

- Accounting based measures of performance (ROA, ROE, Profit margin)
- Tobin's q
- Market based measured of performance (M/B, stock return).

All the previously mentioned measures of performance have certain advantages and disadvantages. For example, accounting measures of performance can be subject to earnings management. Also, they are history oriented, i.e. they show effects of managerial efforts from the past period. Market based measures of performance are more future oriented and capture much more information than published accounting earnings. However, usage of market based measures of performance can be very problematic in an emerging market, where stock market prices are very volatile and many stocks are illiquid. After analyzing all pros and cons for different types of measures of firm performance we have decided to use ROA (return on equity). ROA is calculated as the ratio of operating earnings to total assets.

$$ROA = \frac{Operating\ earnings}{Total\ assets} \quad (1)$$

Operating earnings (EBIT - Earnings Before Interest and Tax) represent net earnings plus income tax and interest expenses. This measure of performance is oriented towards all investors (in equity and debt), because it shows performance measure - operating earnings that can be used for interest and dividends payments.

As mentioned in the introduction, besides ownership concentration, firm profitability may also be influenced by the *type of ownership*. Due to the data availability and structure of Hanfa's data base we were able to separate the following *types of ownership:*

- Majority private vs. majority state ownership
- Majority domestic vs. majority foreign ownership.

Studies conducted in other post-socialist countries (Slovenia, Czech Republic, etc.) suggest that these variables are significant for the explanation of firm performance. In emerging economies where privatization process started in the 1990s, many companies are still majority state owned. These kinds of companies are oriented towards profits, but they also may have some other goals imposed by politics and government (e.g. economic efficiency, tax revenues, or social goals such as employment).

Croatian experience shows that managerial and supervisory boards are often structured by political ties and negotiations, rather than managerial knowledge. In such corporate governance environment, corruption and affairs are frequent phenomena and consequently firm performance is negatively affected. On the other hand, privately controlled firms do not have such problems and their performance therefore should be higher. Separation of privately from state controlled firms is done by dummy variable POW,

which takes the following values:

- 1 if 50% plus 1 share is held by private investors
- 0 if 50% plus 1 share is held by state, state funds, or other state owned companies/institutions.

On the basis of previous discussion, it is expected that POW dummy should have positive value of its coefficient. Table IV confirms the previously presented view regarding the profitability differences among majority private and majority state ownership.

TABLE IV
AVERAGE PROFITABILITY OF PRIVATE AND STATE OWNED COMPANIES

Year	state owned	private owned	average total
2003	-6,48	0,70	-0,84
2004	-8,00	-0,25	-1,89
2005	-5,59	-0,46	-1,36
2006	-6,04	-1,10	-2,04
2007	-2,33	1,77	1,02
2008	-7,28	0,70	-0,91
2009	-7,11	-2,87	-3,67
2010	-6,24	-1,79	-2,69
average total	-6,18	-0,30	-1,45

Since the process of privatization started in 1990's, many foreign companies (mainly from Austria, Germany, Italy, Sweden…) acquired stocks of Croatian listed firms. In majority of cases foreign investors acquired controlling share blocks (more than 50% of voting shares), which enabled them to effectively pursue their business strategy. One could expect that foreign owners have profit as the main goal. Since foreign owners come from countries with better developed corporate governance systems, bringing superior technological and marketing knowledge, performance of foreign owned firms should achieve higher value than those of domestic owned. Here we separate domestic from foreign controlled firms by dummy variable DOW,

which takes the following values:

- 1 if 50% plus 1 share is held by domestic investors
- 0 if 50% plus 1 share is held by foreign investors.

On the basis of previous discussion it is expected that foreign controlled firms should have better performance than domestically controlled firms and DOW dummy is anticipated to have negative value of regression coefficient. This statement can be supported by Table V.

TABLE V
AVERAGE PROFITABILITY OF DOMESTIC AND FOREIGN OWNED COMPANIES

Year	foreign owned	domestically owned	average total
2003	-0,50	-0,89	-0,84
2004	0,12	-2,22	-1,89
2005	1,69	-1,85	-1,36
2006	1,42	-2,60	-2,04
2007	4,11	0,44	1,02
2008	2,66	-1,57	-0,91
2009	-0,29	-4,22	-3,67
2010	1,97	-3,41	-2,69
average total	1,46	-1,94	-1,45

The central point of this research is the relationship between ownership structure (concentration and type) and firm performance. But firm performance, besides ownership, can be affected by other factors, which should be used in the econometric model as control variables. Therefore, the following four variables are introduced in the profitability *models:*

- Size
- Age
- Activity
- Liquidity.

Firm size variable is included into the model for several reasons. Firstly, economic literature suggests that higher profitability is inherent to large companies (primary due to economies of scale), meaning that parallel with the growth of company's size grows the company's profit. Secondly, total assets size may act as an entry barrier to smaller firms. Taking into account earlier statements, it is predicted that the influence of this variable on the companies' profitability will

be positive, i.e. the expected sign on regression coefficient will be positive. Size variable (SIZE) is measured as log of total assets.

The relationship between firms' age and its profitability is ambiguous. One stream of research suggests that older firms have more experience, abilities and skills, have enjoyed the benefits of learning, and consequently can enjoy superior performance [23], [24]. Another stream of research argues that due to bureaucratic ossification older firms are inert, without any flexibility to adapt to new situations and therefore are likely to be outperformed by younger, more flexible firms. Age variable (AGE) is measured by the number of years that firm operates. Here we predict a positive influence of AGE variable on the companies' profitability.

An important factor for firm profitability can be firm activity, which is often measured by total asset turnover. Total assets turnover (TUR) is measured as the ratio of sales to total assets. The asset turnover ratio is used to measure the effectiveness of firm operations. This ratio helps to measure the effectiveness with which the management uses firm assets to generate sales. Starting from these premises, it is desirable that firms have higher asset turnover, which should result in higher profits. Therefore, it is expected that firm activity will positively influence firm profitability.

$$TUR = \frac{Sales}{Total\ assets} \tag{2}$$

Working capital management can also influence firm profitability and one of the major goals in every firm is to maintain an optimal level of liquidity. If a firm has too high current assets due to its holding costs, this might result in lower profitability. On the other hand, if current liquidity is too low, this might result in difficulty in keeping operations smooth. Measure of firm liquidity is current liquidity ratio (LIQ), which is calculated as the ratio of current assets to current liabilities. Here we expect that firm liquidity will positively affect firm profitability.

$$LIQ = \frac{Current\ assets}{Current\ liabilities} \tag{3}$$

Table VI presents a summary of descriptive statistics of all the variables used in our analysis, while Table VII provides a pair wise correlation matrix with correlation coefficients between variables. As a result of a weak correlation between independent variables one can assume that the model will not hide the problem of multicollinearity.

TABLE VI
DESCRIPTIVE STATISTICS

Variable	Mean	Median	St. Dev.	Min.	Max.
ROA	-1,45	0,36	13,43	-233,30	79,16
CR4	74,67	82,58	22,14	0,01	100,00
SIZE	12,65	12,46	1,28	5,48	20,14
AGE	25,08	14,00	22,34	1,00	110,00
TUR	0,62	0,50	0,52	0,01	4,29
LIQ	1,62	1,19	1,80	0,01	19,08

TABLE VII
PAIR WISE CORRELATIONS MATRIX

Var.	ROA	CR4	POW	DOW	AGE	SIZE	TUR	LIQ
ROA	1							
CR4	-1,05	1						
POW	0,17	-0,19	1					
DOW	-0,08	-0,21	-0,20	1				
AGE	0,01	-0,08	0,14	-0,18	1			
SIZE	0,19	-0,04	-0,04	-0,01	0,02	1		
TUR	0,08	-0,15	0,10	0,02	0,05	0,12	1	
LIQ	0,19	-0,05	0,15	-0,17	-0,02	-0,01	-0,01	1

IV. MODEL SPECIFICATION AND EMPIRICAL FINDINGS

When describing economic relations one must have in mind that many of them are dynamic in their nature. As stated by some authors, past firm performance may affect future output decision, so in order to insert dynamics into the profitability function of listed companies in Croatia, a lagged dependent variable is introduced as an explanatory factor [25]. However, with this dynamic specification, the estimators usually used in static panel data models (OLS, GLS…) produce biased estimates. One way to solve this problem is to estimate dynamic panel data models based on the Generalized Method of Moment estimation i.e. GMM estimation [26].

By including a lagged dependent variable among the regressors, the general model to be estimated in our analysis can be presented as:

$$\pi_{it} = \alpha + \delta\pi_{i,t-1} + x_{it}'\beta + \varepsilon_{it} \qquad \varepsilon_{it} = \nu_i + u_{it} \tag{4}$$

where π_{it} is the profitability of firm i at time t, with i=1, . . .,N, t=1, . . ., T; α is a constant term, $\pi_{i,t-1}$ is the one-period lagged profitability, δ is the speed of adjustment to equilibrium, x_{it}' is $K\times1$ matrix of explanatory variables (K - total number of explanatory variables) $\beta = [\beta_1, \beta_2, ..., \beta_K]^\tau$ is vector $K\times1$ of all coefficients of independent variables, ε_{it} is the disturbance, with ν_i the unobserved firm-specific effect and u_{it} the idiosyncratic error.

For consistent estimation, GMM estimators require that the errors be serially uncorrelated [27]. First-order and second-order serial correlation in the first-differenced residuals is tested using m_1 and m_2 Arellano and Bond test statistics. The GMM system estimator is consistent if there is no second-order serial correlation in residuals (m_2 statistic). This means that the presence of a first-order autocorrelation in the differenced residuals does not imply that the estimates are inconsistent [28].

A second specification test is a Sargan test for over-identifying restrictions. This test checks for overall validity of instruments. If a null hypothesis is accepted, meaning that over-identifying restrictions (all chosen instruments) are valid, the dynamic panel model is adequately specified.

Table VIII reports empirical results of the estimation of the model (4). Sargan test shows no evidence of over-identifying

restrictions. Even though the model indicates that first-order autocorrelation is present (significant p-value of m_1 test), this does not imply that the estimates are inconsistent. As pointed out previously, inconsistency would be implied if second-order autocorrelation was present, however, this is not the case in our model since null hypothesis of no second-order autocorrelation is accepted (insignificant p-value of m_2 test).

TABLE VIII
DYNAMIC PANEL ROA MODEL

Variables	Coef.	P
ROA_{t-1}	0,216	0,000
CR4	-0,074	0,030
POW	3,086	0,313
DOW	-5,352	0,066
AGE	0,473	0,000
SIZE	2,608	0,004
TUR	2,443	0,159
LIQ	0,744	0,004
CONSTANT	-0,524	0,006
No. of observations	906	
Sargan test (p-value)	0,2244	
Arellano -Bond (m_1) (p-value)	0,0003	
Arellano -Bond (m_2) (p-value)	0,5924	

The significant value of the lagged profitability variable (ROA_{t-1}) confirms the dynamic character of the model specification. Variable that captures the level of ownership concentration (CR4) has a negative and statistically significant influence on firm profitability. Therefore, in the case of Croatian listed firms we must reject the hypothesis that more concentrated ownership results in higher performance. It seems that the benefits of concentrated ownership are less significant than disadvantages in this model of corporate governance.

Empirical findings for Croatian listed firms show that more concentrated ownership results in lower firm performance. In the case of Croatia, empirical findings confirm entrenchment hypothesis by which the management of internally controlled firms can expropriate corporate funds on the cost of small stockholders. We can relate this kind of finding to relatively low level of investors' protection in Croatia, since the value of index of strength of investor protection reaches only 4 on the scale 0-10, according to Doing Business 2011 [29]. It is important to point out that the value of this indicator did not improve in the 2006-2011 period.

In accordance with our expectation, a positive sign of dummy variable presenting private owned companies (POW) is achieved. Although a positive sign of this variable suggests that private owned companies achieve higher level of profitability than state owned companies, this variable is not statistically significant in empirically estimated model.

As expected, dummy variable presenting domestic owned companies (DOW) has a negative and significant influence on firm profitability. This means that foreign controlled Croatian companies on average generate superior performance than domestically controlled companies. One of the reasons for that may be found in the fact that foreign companies usually have superior access to technical and financial resources, they have know-how, they bring expertise in management and higher culture of corporate governance, rendering firm more efficient. It is worth noting that similar finding were observed for Slovene listed firms [10].

Positive and statistically significant coefficient of variable AGE suggests that older Croatian listed firms generate better performance in comparison with younger firms. Older firms have more experience, abilities and skills, have enjoyed the benefits of learning, and consequently can enjoy superior performance.

The results also reveal a positive and significant relationship between firms' size and performance. This would mean that based on economies of scale and scope, and resulted cost advantage, large firms can hire more skilled managers, adopt new production procedure and/or reform the current one, employ new technology, have more capital (internally generated or easily accessed from external sources) and be more innovative than their smaller competitors. Larger firms may also use their reputation as an advantage, or/and may have products of better quality which enable them to charge higher prices than their smaller counterparts and therefore earn higher profits.

Although a positive sign of variable firm activity, presented by total asset turnover (TUR), suggest its positive impact on profitability, the influence of this variable is not statistically significant. Coefficient of firm liquidity (LIQ) is statistically significant and this variable has a positive influence on firm profitability. Efficient liquidity management involves planning and controlling current assets and current liabilities in such a manner that it eliminates the risk of the inability to meet due short-term obligations, on the one hand, and avoids excessive investment in these assets, on the other [30]. Therefore, we can state that managers in Croatian listed firms probably find good "model" for optimal liquidity, i.e. their model in a good way weights the benefits and costs of holding cash (liquidity) and therefore positively influences firms' performance.

V. CONCLUDING REMARKS

The main objective of this paper was to explore the relationship between firm ownership (ownership concentration and type) and firm performance (ROA) on a sample of Croatian listed firms during the period from 2003 to 2010. Empirical findings for Croatian listed firms show that more concentrated ownership results in lower firm performance. Furthermore, the results indicate that foreign controlled Croatian companies on average generate performance that is superior to that of domestically controlled companies. Furthermore, even though we found that private owned companies achieved higher level of profitability than state owned companies; this variable was not statistically

significant. Regarding the control variables included in the model, it can be stated that the age of the firm, size and liquidity have a positive and statistically significant influence on profitability, while the influence of the asset turnover is insignificant.

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