Darija Prša
VERN' University of Applied Sciences
Trg bana J. Jelačića 3,
10000 Zagreb, Croatia
prsa.darija@gmail.com
Phone: +38598229015

Original scientific article

Received: November 6, 2019
Accepted for publishing: January 31, 2020

THE IMPACT OF WORKING CAPITAL MANAGEMENT ON THE PROFITABILITY OF CROATIAN MANUFACTURING SMEs

Abstract

Working capital management is important because of its impact on the owner's wealth, shown as the economic value of the enterprise, which is the result of interdependence of profitability and risk. Enterprises that invest more in working capital can expect lower levels of business risk, but unfavorable influences on profitability levels, and vice versa. Considering the importance of efficient working capital management, the main objective of this paper is to examine the relationship between working capital management and the profitability of Croatian small and medium-sized manufacturing enterprises (SMEs) and to provide empirical evidence on the effects of working capital management on the level of profitability of such enterprises. The panel analysis was used to examine the impact of accounts receivable, inventories, accounts payable, company size, sales growth, GDP growth and inflation rate on the profitability of Croatian manufacturing SMEs over a six-year period (2010-2015). The model confirmed the impact of inventories, accounts payable, and sales growth on the firm's profitability level, while the effect of accounts receivable and company size on the company's profitability was not confirmed, partially confirming the underlying working hypothesis. The control variables GDP and inflation were not statistically significant. It was found that manufacturing companies can increase their profitability by avoiding late payments to suppliers and by increasing inventory turnover, i.e., by holding inventory for as little time as possible. Moreover, businesses can increase their profitability by boosting sales growth.

Keywords: Working capital management, net working capital, company's profitability, return on assets, Croatian manufacturing companies

1. *Introduction*

Due to its direct impact on the owner's wealth, working capital management is for many enterprises one of the most important components of their finance and investment management. Working capital management is concerned with how businesses use and manage their working capital. The working capital management method, on the one hand, has an impact on the liquidity and security of the company and, on the other hand, on the profitability and risk of the company (Shin, Soenen, 1998). An enterprise may implement a conservative or aggressive working capital management strategy. A conservative working capital management strategy favors business security, while an aggressive working capital management strategy puts profitability before security (Orsag, 2003). Companies

that maintain a high level of liquidity, that is, invest large funds in working capital, can, consequently, expect lower profitability, which reduces the value of the company, but also reduces the risk. Conversely, companies that have a low level of liquidity, that is, invest less in working capital can expect higher profitability, on the one hand, and a higher risk of realizing it, on the other. Profitability and liquidity are important goals for every business and abandoning one goal for the benefit of another can create serious problems. In contrast, efficient working capital management implies a balance between profitability and liquidity.

Efficient working capital management is of great importance to companies whose major part of the assets consists of current assets and which are mainly financed from short-term sources. The paper examines the influence of key working capital management factors at the enterprise level on the profitability of manufacturing SMEs, whose assets consist mostly of current assets and which are mostly financed from short-term sources.

Even though SMEs are the drivers of economic growth in a country, most researchers have focused their analysis on large enterprises. This can be attributed to the increased availability of financial statements that have been made public thus facilitating the access to information required for such an analysis. Moreover, there is a greater concern and interest of the state in large enterprises because their business instability could lead to greater financial implications, unemployment and arrears on the state level.

The main goal of this paper is to examine the relationship between working capital management and the profitability of Croatian SMEs and to provide empirical evidence on the effects of working capital management on their profitability. To reach the main goal, the following specific objectives are defined: develop a model for analyzing the impact of working capital management on the profitability of Croatian manufacturing SMEs; analyze and evaluate the key factors of working capital management that affect the level of profitability in Croatian manufacturing SMEs; analyze the impact of accounts receivable on companies' profitability level; analyze the impact of inventory on companies' profitability level; analyze the impact of accounts payable on companies' profitability level; analyze the impact of company size on companies' profitability level; analyze the impact of corporate sales growth on companies' profitability level; analyze the impact of inflation on companies' profitability level; and analyze the impact of GDP on companies' profitability level. In line with the above, the main working hypothesis was set: **Accounts receivable, inventories, accounts payable, company size and sales growth at the company level affect the profitability of Croatian manufacturing SMEs**. Panel data analysis was carried out to test the proposed hypothesis.

2. Literature review

Various studies have analyzed the relationship between working capital management and the profitability of companies of different sizes in different markets and from different sectors. Most studies found a negative correlation, concluding that increasing the level of working capital investment results in a lower profitability of the company. However, there are studies that have produced conflicting findings, as well as studies that have not found any evidence of the effect of working capital levels on the level of profitability of a business. The results obtained are influenced by market development, macroeconomic conditions, industry, size of enterprises and other factors at the enterprise and non-enterprise levels.

Since the 1980s, the impact of working capital levels on corporate profitability has been empirically examined. Smith (1980) points to the importance of working capital management because of its effects on the profitability and risk of the enterprise, and thus its value. However, most of the research on working capital management originates from the most developed countries characterized by highly developed financial markets. Croatian companies operate in a bank-centric financial system where the capital markets are less developed and thus companies have fewer alternatives for funding from external sources, so they are mostly financed through bank loans and are dependent on short-term financing in general (Garcia-Teruel, Martinez-Solano, 2007), especially on trade credit. Therefore, the country in which the company operates is an extremely important factor that should be considered when drawing conclusions about the working capital management.

Working capital management is under-explored in transition and post-transition countries. Most of the research has been conducted in the US, UK, Western European countries and other developed

countries, while much less research has been undertaken in developing countries. In the context of developing countries, research into this topic is mainly focused on India, Malaysia and other Asian countries. Of the transition countries, research is present mainly for the Baltic countries.

Regardless of whether a company is operating in a developed or a developing country, common factors of working capital management that affect its level of profitability have been identified as follows: *accounts receivable* (according to Deelof, 2003; Garcia-Teruel, Martinez-Solano, 2007; Raheman, Nasr, 2007; Sen, Oruc, 2009; Gill et al., 2010; Mathuva, 2010; Raheman et al., 2010; Sharma, Kumar 2011; Baveld, 2012; Akoto et al., 2013; Gul et al., 2013; Makori, Jagongo, 2013; Tauringana, Afrifa, 2013; Wesley et al., 2013; Almazari, 2014; Enqvist et al., 2014; Nigatu, 2015; Seyoum et al., 2016 and others), *inventories* (according to Deelof, 2003; Garcia-Teruel, Martinez-Solano, 2007 and others), *accounts payable* (according to Deelof, 2003; Garcia-Teruel, Martinez-Solano, 2007 and others), *company size* (according to Deelof, 2003; Raheman, Nasr, 2007 and others), *sales growth* (according to Deelof, 2003; Garcia-Teruel, Martinez-Solano, 2007 and others) and *sector* (according to Deelof, 2003; Filbeck, Krueger, 2005; Garcia-Teruel, Martinez-Solano, 2007; Banos-Caballero et al., 2010 and others).

Most of the previous studies focused their analysis on large enterprises, while small enterprises were overlooked - unjustifiably so given their large role in a country's economic development. The biggest problem is collecting data, since in most cases SMEs are not required to make their financial statements public. Research to date, considering only the aspect of enterprise size, shows that there is no universal procedure for successful working capital management, since different direction and intensity of relationships are found between different factors of working capital management at the company level and the level of profitability of the company.

3. Methodology

For the purpose of testing the hypothesis, a panel analysis of data was used to examine the impact of accounts receivable, inventories, accounts payable, company size, sales growth, GDP growth and inflation rate on the profitability of manufacturing SMEs.[1] The focus of this paper is on SMEs in the manufacturing sector, which is the most important sector by the workforce number, accounting for 23.69% of total employed persons. In addition to wholesale and retail trade, it is the most important sector in terms of the added value (21.43%). According to the National Classification of Activities, the analyzed companies are classified in section C – Manufacturing, Manufacture of food products and beverages.

3.1 Sample

The subject of the research are Croatian manufacturing SMEs, whose assets consist mostly of current assets and which are mostly financed from short-term sources. For the purpose of this paper, an appropriate panel analysis was conducted on a sample of 67 SMEs for the period between 2011 and 2015.[2] Secondary data were used, collected from the financial statements of each enterprise. The data were collected from the web pages of FINA (Croatian Financial Agency), from the Register of Annual Financial Reports and from the Commercial Court's Register, except the data on GDP growth and inflation rate, which were collected from the web page of the Croatian Bureau of Statistics. The sample was selected based on the availability of data, so only enterprises with all the above data available were included in the analysis, for the whole observation period. The analysis is based on accounting data available on an annual basis only. In principle, data for periods shorter than one year can be obtained only from the company, so such analysis was not performed. The data were analyzed in the STATA 14 software package.

Since the sample was selected based on FINA's database, the definition of SMEs from the Accounting Act[3] (NN 120/16, Art. 5) was used. The Act defines small and medium-sized enterprises as all enterprises that do not exceed the thresholds in the following two of the three conditions: total assets HRK 150,000,000.00, income of HRK 300,000,000.00 and average number of workers during the business year – 250.

3.2 Data and variables

After reviewing a broad range of sources and scientific studies, the most relevant variables were selected to measure the impact of working capital on the level of profitability of SMEs. In the corresponding panel model, the dependent variable is profitability, and the independent variables are

accounts receivable, inventories and accounts payable, while the control variables are company size, sales growth, inflation and GDP. Table 1 describes the dependent, independent, and control variables used in the model.

Table 1 Variables with full term, abbreviation and explanation

Variable	Abbreviation	Explanation
Return on assets	ROA	ratio of earnings before interest and taxes to the average total assets, expressed in decimal
Days of collecting receivables	DCR	ratio of number of days in a year and receivables turnover
Days of inventory on hand	DIS	ratio of number of days in a year and inventories turnover
Days of payment to suppliers	DPS	ratio of number of days and payables turnover
Size of the enterprise	SIZ	logarithm of sales
Sales growth	SGR	percentage change in sales compared to the previous year, expressed in decimal
Inflation rate	INF	percentage of inflation in the current year compared to the previous year, expressed in decimal
GDP growth	GDP	percentage of GDP growth in the current year compared to the previous year, expressed in decimal

Source: Author

To measure the dependent variable of profitability, *return on assets* (ROA) is used (according to Garcia-Teruel, Martinez-Solano, 2007; Sen, Oruc, 2009; Sharma, Kumar, 2011; Baveld, 2012; Gul et al., 2013; Makori, Jagongo, 2013; Tauringana, Afrifa, 2013; Enqvist et al., 2014; Nigatu, 2015; Seyoum et al., 2016 and others). To measure the independent variable of *accounts receivable*, ratio of days of collecting receivables is used (according to Deelof, 2003; Garcia-Teruel, Martinez-Solano, 2007; Raheman, Nasr, 2007; Sen, Oruc, 2009; Gill et al., 2010; Mathuva, 2010; Raheman et al., 2010; Sharma, Kumar 2011; Baveld, 2012; Akoto et al., 2013; Gul et al., 2013; Makori, Jagongo, 2013; Tauringana, Afrifa, 2013; Wesley et al., 2013; Almazari, 2014; Enqvist et al., 2014; Nigatu, 2015; Seyoum et al., 2016 and others). To measure the independent variable of *inventories*, the ratio of inventories turnover is used (according to Deelof, 2003; Garcia-Teruel, Martinez-Solano, 2007; Raheman, Nasr, 2007 and others). To measure the independent variable of *accounts payable*, the variable days of payment to suppliers is used (according to Deelof, 2003; Garcia-Teruel, Martinez-Solano, 2007; Raheman, Nasr, 2007 and others). For the control variable of *company size*, the measure of sales logarithm is used (according to Deelof, 2003; Raheman, Nasr, 2007 and others). For the control variable of *sales growth*, the measure is a percentage change in sales compared to the previous year (according to Deelof, 2003; Garcia-Teruel, Martinez-Solano, 2007 and others). For the variable of *inflation* (according to Nigatu, 2015), the inflation rate in a current year compared to the previous year is used, expressed in decimal. Fourth control variable is *GDP* (according to Garcia-Teruel, Martinez-Solano, 2007; Mathuva, 2010 and others). GDP growth is measured as a percentage of GDP growth in a current year, compared to the previous year, and expressed in decimal.

4. Results

A descriptive statistical analysis of the data was conducted first. For all the variables, the arithmetic mean, standard deviation, minimum and maximum values, and the number of observations of each variable are listed. Three basic panel models were then set up, namely the pooled model, the fixed effects model and the random effects model.

4.1 Descriptive statistics

The research included 67 companies from the manufacturing sector over a period of 5 years. The data is balanced, so a total of 335 observations are included. Table 2 (in Appendix) shows the arithmetic means, the associated standard deviations, the min-

imum and maximum values of all variables in the model, as well as the total number of observations, the number of units observed, and the number of periods. Values are displayed for the entire data set (overall), between the observed units (between) and at the level of one observed unit (within).

The average value of the dependent variable *ROA* is 0.0874 with a standard deviation of 0.1872 at the whole set level, 0.1334 between the observed units and 0.1321 within the observed unit. The result indicates approximately equal variations in ROA between the observed enterprises and within the enterprise. The average value of the variable *Days of collecting receivables* is 66.90 days, with a standard deviation of 41.93 days and a range of 0.33 days to 211.97 days. The standard deviation is greater between enterprises (σ = 39.34) than within (σ = 15.15). The variable *Days of inventories stocked* had an average value of 97.82 days, with an average deviation from the average of 146.36 days and a range of 2.30 days to 930.97 days. Higher standard deviation was observed between enterprises (σ = 140.139) than within enterprises (σ = 44.9248). The average value of the variable *Days of payment to suppliers* is 69.00 days with a standard deviation of 51.97 days and a range of 4.20 days to 305.78 days. The standard deviation is greater between enterprises (σ = 45.66) than within enterprises (σ = 25.32). The average value of the *Size of the company* was 7.75 with a standard deviation of 0.32 and a range of 6.38 to 8.46. A greater average deviation from the average value was observed between enterprises (0.31) than within enterprises (0.08). The average annual *Sales growth* in the manufacturing sector is 0.0766, or 7.66%, with a large standard deviation of 0.2168, i.e. 21.68%. Such a large variation is common in the Croatian market. Higher standard deviation of *sales growth* is recorded within the enterprise (0.1856) than between enterprises (0.1127).

4.2 Correlation analysis

To determine the connection between the *ROA* and the variables *days of collecting receivables*, *days of inventories stocked* and *days of payment to suppliers*, the Spearman correlation coefficient was calculated. The results are shown in Table 3 (in Appendix).

From the table it can be determined that all variables have a weak or negative connection to the ROA, which means that the enterprises with smaller value of *days of collecting receivables* ($r = -0.128$, $p < 0.05$), *days of inventories stocked* ($r = -0.219$, $p < 0.01$) and *days of payment to suppliers* ($r = -0.257$, $p < 0.01$) have a slightly higher value of ROA.

4.3 Panel analysis

Three models were set up for the manufacturing sector data: a pooled model, a fixed effects model and a random effects model. The results are shown in Table 4 (in Appendix). After the analysis, the most appropriate model was selected. The F test value ($p < 0.01$) justified the use of the fixed effects model rather than the pooled model. According to the results of the LM test ($p < 0.01$), the use of a random effects model rather than the pooled model is justified. According to the Hausman test ($p > 0.05$), a random effects model was found to be the most appropriate. This result is expected due to the large variation among the observed data. The result of the Wooldridge test ($p > 0.05$) indicates that the null hypothesis, suggesting that there is no autocorrelation of relation errors, cannot be rejected.

Variables *days of inventories stocked* ($p<0.05$), *days of payment to suppliers* ($p<0.05$) and *sales growth* ($p<0.01$) proved to be statistically significant. *Days of inventories stocked* have a negative effect on the dependent variable *ROA,* which means that a larger days-of-inventory-on-hand value decreases the company's profitability. *Days of payment to suppliers* have a negative effect on the dependent variable *ROA,* which means that a longer delay in payment of accounts payable reduces the profitability of the company. In control variables, *sales growth* has a positive effect on the dependent variable *ROA*. The higher the *sales growth*, the higher the company's profitability.

The correlation between the variables in the model was examined and the results are shown in Table 5 (in Appendix). Table 5 shows the correlation coefficients and the associated significance levels. All correlation coefficients are in the range of -0.6 to 0.6, which means that the assumption of a multicollinearity problem can be rejected.

5. Discussion

The results partially confirm the following basic working hypothesis:

H: Accounts receivable, inventories, accounts payable, company size and sales growth at the

company level affect the profitability of Croatian manufacturing SMEs.

The model confirmed the impact of *inventories*, *accounts payable* and *sales growth* on the level of profitability of manufacturing SMEs, while the impact of *accounts receivable* and *size of enterprises* on the level of profitability of manufacturing SMEs was not confirmed. The control variables *GDP* and *inflation* were not statistically significant.

The model confirmed the negative impact of the variable *days of inventories stocked* on the profitability of manufacturing SMEs. The results show that a decrease in days of inventory on hand leads to an increase in the profitability of the company, and conversely, a higher value of days of inventory on hand will reduce the profitability of the company. This can be explained by an increase in the total cost of inventories (storage, handling, insurance and others) and a decline in the market value of inventories due to their obsolescence. The creation of surplus inventories and the assumption of higher total inventory costs can be particularly justified in the manufacturing sector, since this reduces the risks of potential interruptions in the production process, risks of price changes and opportunity costs. Otherwise, a shortage of raw materials and supplies can lead to interruptions in the production process, which can result in high fixed costs per unit of product. Discontinuation of production and inability to deliver finished products will result in the loss of business, i.e. customer churn and consequently the loss of future sales. The results are in line with the results obtained by other researchers (Deelof, 2003; Garcia-Teruel, Martinez-Solano, 2007; Raheman, Nasr, 2007; Sen, Oruc, 2009; Raheman et al., 2010; Sharma, Kumar, 2011; Gul et al., 2013; Almazari, 2014; Enqvist et al., 2014; Nigatu, 2015; Seyoum et al., 2016 and others).

The model confirmed the negative impact of the variable *days of payment to suppliers* on the profitability of manufacturing SMEs. The results show that a decrease in accounts payable leads to an increase in the profitability of the company, and conversely, a longer delay in payment of accounts payable will reduce the profitability of the company. The negative correlation between the two variables indicates that, first, companies did not take advantage of early payment discounts, and secondly, they incurred high costs in the form of high penalties for late payment or default interest. The enterprises are most likely forced to postpone their payments because they are in financial difficulties, so they do not invest the money from deferred payments to improve sales, but to settle their debts, or close one debt by incurring new debt. Given that these are SMEs, it is not uncommon for a creditor to be dependent on the debtor. Although most researchers expected a positive relationship in their studies, as in this paper, most found a negative correlation between the obligations towards suppliers and corporate profitability (Deelof, 2003; Raheman, Nasr, 2007; Sen, Oruc, 2009; Sharma, Kumar, 2011; Tauringana, Afrifa, 2013; Almazari, 2014; Enqvist et al., 2014; Seyoum et al., 2016 and others).

The model confirmed the positive impact of the variable *sales growth* on the profitability of manufacturing SMEs. The results show that an increase in the growth of a company's sales leads to an increase in the company's profitability. The results are consistent with the results obtained by most researchers who found a positive relationship (Garcia-Teruel, Martinez-Solano, 2007; Raheman et al., 2010; Gul et al., 2013; Makori, Jagongo, 2013 and others).

The effect of the variable *days of collecting receivables* on the level of profitability of manufacturing SMEs was not statistically significant. The results are in line with those of other researchers who also expected a negative correlation between accounts receivable and company profitability but failed to find significance in the stated correlation (Sen, Oruc 2009; Raheman et al., 2010; Makori, Jagongo, 2013; Enqvist et al., 2014; Seyoum et al., 2016 and others). It was expected that the longer days of collection of receivables would reduce the profitability of the company. On the one hand, one can assume the negative impact of late payments on the level of profitability of the company, because money is tied up in receivables and is not used to create new opportunities and profits, and there are high costs of maintaining receivables. On the other hand, one can assume the cancellation of this negative impact by increased sales due to better credit conditions, raising prices (especially in post-transition countries), not using cash discounts from customers, charging regular and default interest due to late payment. Many researchers in their studies have found a negative correlation between accounts receivable and company profitability.

The effect of variable *size of the company* on the profitability of manufacturing SMEs did not prove to be statistically significant. The results are in line

with those obtained by Gill et al. (2010) and Wesley et al. (2013), who did not find a significant correlation between profitability and size of the company, whereas many others have found a positive correlation between these two variables.

The impact of the control variable *inflation* on the profitability of manufacturing SMEs was not statistically significant. The inflation rate in the observed period ranged from -0.50 to 3.40%, i.e., not large enough to affect the level of profitability of the company. Furthermore, the impact of the control variable *GDP* on the level of profitability of manufacturing SMEs was not statistically significant.

6. Conclusion

Panel analysis was used to examine the impact of accounts receivable, inventories, accounts payable, company size, sales growth, GDP growth and inflation rate on the profitability of Croatian manufacturing SMEs.

The enterprises in the manufacturing sector can increase the profitability of their business by not delaying the payment of their obligations to suppliers in order to, on the one hand, avoid the additional costs of late payment and, on the other, to take advantage of the offered discount from suppliers. In addition, companies can increase their profitability by increasing inventory turnover, that is, by holding inventory in stock for as little time as possible to avoid the additional costs of storage and spoilage costs of perishable raw materials. In line with expectations, the growth of company sales will increase the profitability of the company.

The research conducted here has improved the understanding of working capital management. This area is still under-explored. The research conducted up until now mainly concerned large economies and public corporations. The focus of this paper is on SMEs in the context of a small post-transition economy. Thus, an analysis of working capital management in one of the most important sectors of the economy has made a noteworthy contribution to the scientific literature in this field.

The main scientific contribution of this paper lies in the research findings that have identified and systematized key factors of working capital management at the enterprise level, which significantly affect the profitability of manufacturing SMEs. The analyses have shown that inventories, accounts payable and sales growth will have a significant impact on the profitability of manufacturing SMEs, while accounts receivable, company size, inflation and GDP will not have a significant impact on the profitability of such companies.

Scientific contribution is evident in the development of a model for analyzing the impact of working capital management on the profitability of manufacturing SMEs, in an environment characteristic of post-transition countries:

$$\widehat{ROA_{it}} = -\underset{(0.00006)}{0.00013} \cdot DVZ_{it} - \underset{(0.00016)}{0.00032} \cdot DPOD_{it} - \underset{(0.02707)}{0.09336} \cdot RPR_{it}$$

Although the model has been tested on Croatian manufacturing SMEs, it is also applicable to similar transition and post-transition countries, especially those in the region with a similar development path.

The research was conducted on Croatian companies; however, its findings may be transferrable to other countries in the region. The survey is transparent enough so that it can be applied, or generalized, to other transition and post-transition countries. The results can be of interest to all working capital management actors in post-transition countries.

The results of the research presented in this paper make a scientific contribution to the economic sciences in both theoretical and applied terms. The scientific results and findings of this research are of value to the management of SMEs operating in the Republic of Croatia, as well as in the countries of the region, as they will help them to better understand and improve working capital management. Furthermore, it is expected that the findings of this paper will raise awareness of existing issues relating to working capital management.

Limitations of this work arise from the data collection method. The data were taken from the financial statements of companies. However, for many companies only condensed financial statements were available, which do not contain all the data required for the analysis. Given that SMEs are not required to publicly disclose their financial statements, many of them were not included in the analysis.

The paper provides the basis for further research that could cover a larger number of sectors and examine the differences between SMEs and large enterprises in similar economies.

References

1. Akoto, R. K., Awunyo-Vitor, D., Angmor, P. L. (2013), "Working capital management and profitability: Evidence from Ghanaian listed manufacturing firms", Journal of Economics and International Finance, Vol. 5, No. 9, pp. 373-379.
2. Almazari, A. A. (2014), "The Relationship between Working Capital Management and Profitability: Evidence from Saudi Cement Companies", British Journal of Economics, Management & Trade, Vol. 4, No. 1, pp. 146-157.
3. Banos-Caballero, S., Garcia-Teruel, P. J., Martinez-Solano, P. (2010), "Working capital management in SMEs", Accounting & Finance, Vol. 50, No. 3, pp. 511-527.
4. Baveld, M. B. (2012). Impact of Working Capital Management on the Profitability of Public Listed Firms in the Netherlands during the Financial Crisis. Master's thesis. Twente: University of Twente.
5. Deloof, M. (2003), "Does working capital management affect profitability of Belgian firms?", Journal of Business Finance & Accounting, Vol. 30, No. 3-4, pp. 573-587.
6. Enqvist, J., Graham, M., Nikkinen, J. (2014), "The impact of working capital management on firm profitability in different business cycles: Evidence from Finland", Research in International Business and Finance, Vol. 32, No. C, pp. 36-49.
7. Filbeck, G., Krueger, T. M. (2005), "An Analysis of Working Capital Management Results Across Industries", American Journal of Business, Vol. 20, No. 2, pp. 11-20.
8. Garcia-Teruel, P. J., Martinez-Solano, P. (2007), "Effects of working capital management on SME profitability", International Journal of Managerial Finance, Vol. 3, No. 2, pp. 164-177.
9. Gill, A., Biger, N., Mathur, N. (2010), "The Relationship Between Working Capital Management And Profitability: Evidence From The United States", Business and Economics Journal, Vol. 10, No. 1, pp. 1-9.
10. Gul, S., Khan, M. B., Rehman, S. U., Kahn, M. T., Khan, M., Khan, W. (2013), "Working Capital Management and Performance of SME Sector", European Journal of Business and Management, Vol. 5, No. 1, pp. 60-68.
11. Makori, D. M., Jagongo, A. (2013), "Working Capital Management and Firm Profitability: Empirical Evidence from Manufacturing and Construction Firms Listed on Nairobi Securities Exchange, Kenya", International Journal of Accounting and Taxation, Vol. 1, No. 1, pp. 1-14.
12. Mathuva, D. M. (2010), "The Influence of Working Capital Management Components on Corporate Profitability: A Survey on Kenyan Listed Firms", Research Journal of Business Management, Vol. 4, No. 1, pp. 1-11.
13. Nigatu, H. Y. (2015). Working Capital Management and Firms' profitability: Evidence from Manufacturing SC in Addis Ababa, Ethiopia. Master's thesis. Addis Ababa: Addis Ababa University.
14. Orsag, S. (2003). Vrijednosni papiri. Sarajevo: Revicon.
15. Prša, D. (2019). Utjecaj upravljanja obrtnim kapitalom na profitabilnost malih i srednjih poduzeća u post-tranzicijskom gospodarstvu. Doctoral dissertation. Rijeka: Faculty of Economics and Business in Rijeka.
16. Raheman, A., Nasr, M. (2007), "Working capital management and profitability – Case of Pakistani firms", International Review of Business Research Papers, Vol. 3, No. 1, pp. 279-300.
17. Raheman, A., Afza, T., Qayyum, A., Bodla, M. A. (2010), "Working Capital Management and Corporate Performance of Manufacturing Sector in Pakistan", International Research Journal of Finance and Economics, Vol. 47, No. 1, pp. 151-163.
18. Sen, M., Oruc, E. (2009), "Relationship between Efficiency Level of Working Capital Management and Return on Total Assets in Ise", International Journal of Business and Management, Vol. 4, No. 10, pp. 109-114.
19. Seyoum, A., Tesfay, T., Kassahun, T. (2016), "Working Capital Management and Its Impact on Profitability Evidence from Food Complex Manufacturing Firms in Addis Ababa", International Journal of Scientific and Research Publications, Vol. 6, No. 6, pp. 815-833.
20. Sharma, A. K., Kumar, S. (2011), "Effect of Working Capital Management on Firm Profitability: Empirical Evidence from India", Global Business Review, Vol. 12, No. 1, pp. 159-173.

21. Shin, H. H., Soenen, L. (1998), "Efficiency of working capital and corporate profitability", Financial Practice and Education, Vol. 8, No. 2, pp. 37-45.
22. Smith, K. V. (1980), "Profitability versus Liquidity Tradeoffs in Working Capital Management", in Smith, K. V. (Ed.), Readings on the Management of Working Capital, West Publishing Company, St. Paul, MN, pp. 549-562.
23. Tauringana, V., Afrifa, G. A. (2013), "The relative importance of working capital management and its components to SMEs profitability", Journal of Small Business and Enterprise Development, Vol. 20, No. 3, pp. 453-469.
24. Wesley, O. N., Musiega, M. G., Douglas, M., Atika, M. G. (2013), "Working Capital Management And Corporate Performance. Special Reference To Manufacturing Firms On Nairobi Securities Exchange", International Journal of Innovative Research and Development, Vol. 2, No. 9, pp. 177-183.

Endnotes

1 The methodology was used in the doctoral thesis Prša, D. (2019). Utjecaj upravljanja obrtnim kapitalom na profitabilnost malih i srednjih poduzeća u post-tranzicijskom gospodarstvu / Impact of working capital management on profitability of small and medium-sized enterprises in post-transition economies.

2 This research is part of the research in the doctoral thesis Prša, D. (2019). Utjecaj upravljanja obrtnim kapitalom na profitabilnost malih i srednjih poduzeća u post-tranzicijskom gospodarstvu / Impact of working capital management on profitability of small and medium-sized enterprises in post-transition economies.

3 Accounting Act, Official Gazette No. 78/15, 134/15, 120/16.

Darija Prša

Utjecaj upravljanja obrtnim kapitalom na profitabilnost hrvatskih malih i srednjih prerađivačkih poduzeća

Sažetak

Upravljanje obrtnim kapitalom važno je zbog njegova utjecaja na bogatstvo vlasnika, promatrano kao ekonomska vrijednost poduzeća koja je rezultat međuovisnosti profitabilnosti i rizika. Poduzeća koja ulažu velika sredstva u obrtni kapital mogu za posljedicu očekivati nižu razinu poslovnog rizika, ali i nepovoljniji utjecaj na visinu profitabilnosti, i obrnuto. Sukladno tomu, sa stajališta učinkovitog upravljanja obrtnim kapitalom, glavni je cilj ovoga rada ispitati odnos između upravljanja obrtnim kapitalom i profitabilnosti hrvatskih malih i srednjih prerađivačkih poduzeća te pružiti empirijske dokaze o učincima upravljanja obrtnim kapitalom na visinu profitabilnosti poduzeća. Panel analizom ispitao se utjecaj potraživanja od kupaca, zaliha, obveza prema dobavljačima, veličine poduzeća, rasta prodaje, rasta BDP-a i stope inflacije na profitabilnost hrvatskih malih i srednjih prerađivačkih poduzeća za šestogodišnje razdoblje (2010 - 2015). Model je potvrdio utjecaj zaliha, obveza prema dobavljačima i rasta prodaje na visinu profitabilnosti poduzeća dok se utjecaj potraživanja od kupaca i veličine poduzeća na visinu profitabilnosti poduzeća nije potvrdio čime je djelomično potvrđena temeljna radna hipoteza. Kontrolne varijable BDP-a i inflacija nisu se pokazale statistički značajnima. Poduzeća iz prerađivačkog sektora mogu utjecati na povećanje profitabilnosti svoga poduzeća tako da ne odugovlače s plaćanjem svojih obveza prema dobavljačima te većim obrtajem zaliha, odnosno da se zalihe što kraće vrijeme zadržavaju na skladištu. Također, poduzeća mogu povećati svoju profitabilnost povećanjem rasta prodaje.

Ključne riječi: upravljanje obrtnim kapitalom, neto operativni obrtni kapital, profitabilnost poduzeća, stopa prinosa imovine, hrvatska prerađivačka poduzeća

APPENDIX

Table 2 Descriptive statistics

Variable		Arithmetic mean	Standard deviation	Minimum value	Maximum value	Number of observations
ROA	Overall	0.08740	0.187155	-0.47677	2.19322	N = 335
	Between		0.13335	-0.21185	0.88261	n = 67
	Within		0.13213	-0.53076	1.73864	T = 5
DCR	Overall	66.90332	41.93054	0.32519	211.9695	N = 335
	Between		39.33519	0.58947	173.9544	n = 67
	Within		15.14737	6.04203	135.6181	T = 5
DIS	Overall	97.8164	146.3625	2.30316	930.9683	N = 335
	Between		140.139	3.03467	788.1379	n = 67
	Within		44.9248	-138.8425	455.8667	T = 5
DPS	Overall	68.99944	51.97049	4.19969	305.7783	N = 335
	Between		45.65897	11.74589	219.2422	n = 67
	Within		25.3211	-87.16476	241.7911	T = 5
SIZ	Overall	7.74656	0.31880	6.38129	8.46065	N = 335
	Between		0.31007	6.45096	8.36157	n = 67
	Within		0.08152	7.41495	8.14551	T = 5
SGR	Overall	0.0766337	0.21679	-0.44712	1.24237	N = 335
	Between		0.11269	-0.12398	0.47859	n = 67
	Within		0.18561	-0.51483	1.17122	T = 5
INF		0.01398	0.01504	-0.00500	0.03400	T = 5
GDP		0.00608	0.01085	-0.00720	0.02327	T = 5

Source: Author, according to STATA calculations

Table 3 Spearman correlation coefficient

			Y_ROA_index
Spearman's rho	X1_Days_Of_Collecting_Receivables	Correlation Coefficient	-0.128*
		Sig. (2-tailed)	0.019
		N	335
	X2_Days_Of_Inventories_Stocked	Correlation Coefficient	-0.219**
		Sig. (2-tailed)	0.000
		N	335
	X3_Days_Of_Payment_To_Suppliers	Correlation Coefficient	-0.257**
		Sig. (2-tailed)	0.000
		N	335

* correlation is significant at the level 0.05 ($p<0.05$);
** correlation is significant at the level 0.01 ($p<0.01$)
Source: Author, according to STATA calculations

Table 4 Coefficients and associated standard errors in panel regression models

	Pooled	Fixed	Random
DCR	0.00018	0.00070	0.00029
	(0.00031)	(0.00044)	(0.00029)
DIS	-0.00015**	-0.000035	-0.00013**
	(0.00007)	(0.0000426)	(0.00006)
DPS	-0.00039*	-0.00030*	-0.00032**
	(0.00021)	(0.00015)	(0.00016)
SIZ	-0.09889	-0.10088	-0.02022
	(0.06096)	(0.10111)	(0.58762)
SGR	0.11121**	0.10613***	0.09336***
	(0.04720)	(0.02448)	(0.02707)
INF	0.00190	0.00141	0.00209
	(0.0055)	(0.00524)	(0.00552)
GDP	0.00286	0.00295	0.00292
	(0.00864)	(0.00924)	(0.00910)
CONSTANT	0.18304	0.83412	0.24849
	(0.44484)	(0.76126)	(0.43155)
R2	0.0516	0.0229	0.0167
ρ(rho)		0.4614	0.3717
Ftest		0.0000	
LM test			0.0000
Hausman test		0.8587	
Wald test		0.0000	
Wooldridge test		0.3960	
corr (u_i, Xb)		-0.2077	
Number of observations	335	335	1380
Number of units	67	67	67

* p < 0.1, ** p < 0.05, *** p < 0.01, values in parentheses are corrected (clustered robust) standard errors
Source: Author, according to STATA calculations

Table 5 Correlation matrix of pairs of independent variables

	DCR	DIS	DPS	SIZ	SGR	INF	GDP
DNR	1.0000						
DIS	0.1827* (0.0008)	1.0000					
DPS	0.1757* (0.0012)	0.2399* (0.0000)	1.0000				
SIZ	-0.1345* (0.0137)	-0.1304* (0.0170)	-0.2549* (0.0000)	1.0000			
SGR	-0.2305* (0.0000)	-0.0936 (0.0870)	-0.1710* (0.0017)	0.1851* (0.0007)	1.0000		
INF	0.0165 (0.7632)	-0.0573 (0.2957)	0.0438 (0.4238)	-0.0553 (0.3126)	0.0508	1.0000	
GDP	-0.0256 (0.6405)	0.0198 (0.7179)	-0.0368 (0.5018)	0.0229 (0.6763)	0.0549 (0.3164)	-0.5851* (0.0000)	1.0000

* $p < 0.5$
Source: Author, according to STATA calculations