

Evaluation of Factors Affecting the Financial Performance of Borsa İstanbul Cement Sector Companies

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Abstract

Introduction: Turkish cement industry, which sustains growth trend between the years 2015 and 2018, is the biggest cement producer of Europe besides the growth success. Production trend in cement industry reversed after the decrease in the value of Turkish Lira and increased inflation in 2018. The data of this industry, which contributes to Turkish economy directly and indirectly, have become one of the leading indicators.

Aim: From this point of view, 17 cement industry firms which are traded in Borsa İstanbul equity market continuously are examined in terms of their Earnings Before Interest, Taxes, Depreciation, and Amortization, Cash Conversion Cycle (CCC), Export Rate Ratio and Gross Sales. These variables are analyzed between the period 2013:Q1 and 2019:Q2.

Method: Independent variables in the models are Industry Production Index (IPI), CBRT Dollar/TL selling rate of exchange, Tangible Asset Ratio, Growth Rate, Financial Leverage Ratio, Current Ratio, Market-to-Book Ratio (MB), Price-to-Earnings Ratio (PE), and Return on Equity (ROE).

Findings: According to panel regression results, Dollar/TL exchange rate is the unique independent variable that affects four dependent variables. While Dollar/TL exchange rate negatively affects Earnings Before Interest and Taxes and Gross Sales, it positively affects CCC and Export Rate. MB ratio positively affects CCC. In contrast, IPI, Tangible Asset Ratio, and Financial Leverage Ratio negatively affect CCC. Export ratio is negatively affected both by IPI and PE ratio. While MB ratio negatively affects Gross Sales ratio, IPI, Tangible Asset Ratio and Growth Rate positively affect it.

Keywords: Financial performance; cement industry; panel data analysis; GMM; Borsa Istanbul; Turkey

JEL Codes: C33; L11; M21

1. Introduction

Firms use financial outputs that emerge as a result of their activities as indicators of financial performance. These indicators are used as decision-making units in terms of both internal and external stakeholders. While the performances of firms generally contribute to the sector in which they operate on a micro basis, the performances of some firms also become important indicators of the national economy on a macro basis. One of these important sectors is the construction and real-estate sector. The sector, which grew faster than the national growth rate during the 2003–2007 period when the macro indicators were positive in the Turkish economy, lost this momentum in 2008. It also had a negative impact on economic growth in 2008 and 2009 and grew more than the national economy again between 2010 and 2014. The construction and real-estate sector, which had a coordinated proceeding with the national economy as of 2015, started to contribute negatively to the national economy again with its performance in the second half of 2018. This contraction in the sector continued in 2019 and by the end of the year, the contraction in the sector was around 12.7% compared to the previous period (KPMG, 2020).

Cement and ready mixed concrete industries, which belong to the stone and earth-based sector, have important contributions to the direction of growth in Turkish economy. Having been the leader in Europe, Turkish cement industry has grown rapidly since 2015. The sector, which increased its production within the first six months of 2018, was affected negatively by the increase in the costs due to the exchange rate shock experienced in August 2018. As of November 2018, the production of the sector decreased by 7.6% compared to the same period of the previous year. The total contraction in 2018 was around 9% (Turkrating, 2019). The contraction in the sector continued in 2019, and production decreased by 25% in the first 10 months compared to the same period of the previous year. In this period, the depreciation of the Turkish lira especially against the US Dollar and Euro made a positive contribution to the exportation in the sector. Around 19.4% of the production was exported in the same period. This increase meant that export rate was increased by 46% in the same first 10 months period compared to the same period of the previous year, and this caused a 33% decrease in domestic sales due to inflation and exchange rate pressure (Türkiye Çimento Müstahsilleri Birliği (TCMA), 2020).

For these reasons, it has become very important to monitor the direction of the cement industry, which has significant contributions to the macro indicators in Turkish economy and operates as one of the essential components of the construction sector. Therefore, the factors affecting Earnings Before Interest,

Taxes, Depreciation, and Amortization (EBITDA), Cash Conversion Cycle (CCC), Export Rates, and Gross Sales of 17 companies operating in the Cement Sector, which had continuously been traded in the Borsa Istanbul during the 2013:Q1–2019:Q2 period, were examined in this study. Industrial Production Index, CBRT US Dollar/TL Exchange Rate, Tangible Asset Ratio, Investment Growth Rate, Financial Leverage Ratio, Current Ratio (CR), Market-to-Book Ratio (MB), Price-to-Earnings Ratio (PE), and Return on Equity (ROE) ratios were included in the model as the independent variables. Although there are many studies in the finance literature that examined the financial performances of firms with different variables, the fact that there is not any study measuring performance with micro and macro variables in the cement sector constitutes the original aspect of the study. It is believed that determining the financial performance indicators in the sector, which has a significant weight in the Turkish economy, would contribute to the literature.

2. Literature Review

There are many studies in the finance literature that measure the financial performances of companies with different micro and macro variables. In this part of our study, we try to summarize the studies which represent the financial performances of the firms in the cement sector and the studies which examine the variables that are the focus of our study.

When the literature is reviewed, it is observed that while the number of studies analyzing EBITDA, Gross Sales Profit and Export Rate variables as dependent variables is limited, there are more studies linking CCC with the performance of the firm. [Ersoy et al. \(2016\)](#) and [Üstün et al. \(2018\)](#) include the EBITDA/Total Asset variable as one of the financial performance indicators in their studies. [Işık et al. \(2016\)](#), in their study investigating the effect of R&D expenditures on profitability and sales, establish six different models in which operating profit and sales are dependent variables. [Erdil and Özdemir \(2016\)](#) investigate the export performances of the firms in the Turkish textile sector; and [Eren \(2014\)](#) measures the effects of generic competitive strategies on export performance using the data obtained through surveys from 386 administrators in the automotive side industry firms operating in Turkey. Similarly, [Çubukçu and İmamoğlu \(2019\)](#) investigate whether logistics performances affect the performance implementations and export performances of the firms through the surveys administered to the directors of 55 export firms operating in Bayburt, Erzincan and Erzurum in Turkey. As a result, they find a positive relation between logistics performance and firm performance as well as the export performance.

CCC is one of the important variables that represent the working capital management skills of the firms. This variable, which may differ depending on whether the firm operates in the production or service sector, is also an indicator of the effectiveness of the management of the working capital in the firms. Particularly, in the manufacturing industry firms cash turns into raw materials, semi-finished products and finished products. In the end, products turn into cash or forward receivables depending on the type of sales. Therefore, the activity cycle starts with

cash and is completed by returning of the cash to the company again (Okka, 2018). In general, the firms do not desire the CCC to extend. Because the need for working capital would increase with the extended CCC. In the opposite case, firms may have to meet their working capital needs with commercial debts.

CCC is obtained by subtracting the days payables outstanding (DPO) from the sum of the days sales outstanding (DSO) and the days of inventory outstanding (DIO). Therefore, long DSO and the DIO extend CCC, while long DPO shortens CCC. Since CCC also represents the working capital effectiveness of the firms, it is often associated with the corporate profitability. In one of these studies, Deloof (2003) investigates the relation between working capital management and profitability of 1,009 large-scale firms operating in the non-financial sector in Belgium during the 5-year period from 1992 to 1996. He states that firms could increase their profitability by reducing their DSO and the DIO, while less profitable firms should extend their DPO. Similarly, Teruel-Garcia and Martinez-Solana (2007) investigate the impact of working capital management of 8,872 SMEs operating in Spain on their profitability between 1996 and 2002. As a result, they determine that the firms could create value by reducing their DSO and DIO and thus increase their profitability by shortening the CCC. As it can be derived from here, among the CCC variables, there is a negative relation between firm performance and DSO as well as DIO. In their studies revealing this relation, Raheman and Nasr (2007) examine the CCC and components of the 94 enterprises traded in the Pakistan Karachi Stock Exchange during the 1999–2004 period. As a result, they prove that there is a strong negative relation between the working capital management and profitability variables of the firms; and that as the CCC extends, the profitability of these firms decline. Again Gill et al. (2010) examine the relation between working capital management and profitability of 88 firms traded in the New York Stock Exchange during the 2005–2007 period. As a result, they determine that there is a statistically significant relation between the profitability of the firm and the CCC and that the firms could increase their profitability with optimal CCC and DSO. Similar results are also obtained in other studies conducted with public joint stock firms data. In their study, Lazaridis and Tryfonidis (2005) measure the relation between CCC and profitability using data from 131 firms traded in the Athens Stock Exchange during the 2001–2004 period. As a result, they prove that there is a statistically significant relation between gross sales profit and CCC as well as profitability, and that the firms could gain profit by keeping CCC components at the optimum level. In another study, Garanina and Petrova (2015) find a negative relation between the CCC and firm performance for 720 Russian firms engaged in various economic activities (telecommunications, transportation, electricity industry, trade, metallurgy, mechanical engineering, chemistry and petrochemicals, oil and gas) between 2001 and 2012. In their study that associated CCC with the stock price performance, Azam and Haider (2011) investigate the effects of working capital management on their performances using the data obtained from 21 non-financial sector firms traded in the Pakistan Karachi Stock Exchange KSE-30 index for a period of 10 years between 2001 and 2010. As a result, they prove that they could increase the value of stocks by decreasing the stock amount, CCC and net trading cycle periods, and that they could affect the overall performances of the firms with the help of increased liquidity

accordingly. [Majeed et al. \(2012\)](#), find similar results in manufacturing industry firms with investigating the effects of the Return on Assets (ROA), ROE and Earnings Before Interest and Taxes (EBIT) variables on the CCC using the 5-year data belonging to the 2006–2010 period of 32 firms that are randomly selected among the firms operating in the chemistry, automotive and construction sectors in Pakistan. As a result, they determine that there is a negative relation between the firm performance and average DSO as well as average DIO among the CCC variables. In another study on manufacturing firms, [Padachi \(2006\)](#) measures the relation between working capital management and profitability of 58 small-scale production enterprises operating in Mauritius during the 1998–2003 period. As a result, it is stated that the investment in stocks and excessive amount of receivables reduce the profitability. [Muscettola \(2014\)](#), on the other hand, reveal that the shortness of CCC increase the EBITDA, which referred to the profitability, in their study conducted on 4,226 SMEs operating in Italy between 2007 and 2010. [Yildirim \(2018\)](#) also investigates the relation between components of working capital and firm profitability. Accounts receivable turnover, inventory turnover, accounts payable turnover and CCC are used as independent variables. Low level of correlation is found between independent variables and firm profitability. It is also found that accounts payable turnover affects ROA.

Looking at the literature in general, it is observed that there is a strong interest in the studies on CCC as a performance indicator.

3. Data and Methodology

In this study, determinants of earnings before interest and tax, CCC, Export Rate and Gross Sales are investigated for cement industry firms. Cement industry firms listed in Borsa Istanbul between 2013:Q1 and 2019:Q2 are included in the analyses. Quarterly data is used in the analyses. Finnet database is used to collect accounting variables and Bloomberg database is used to obtain macro variables. These firms are listed in [Table 1](#). In all, 494 observations are used in the panel regressions.

Table 1. Cement Industry Companies.

Code	Name	Code	Name
ADANA	Adana Cement (A)	BUCIM	Bursa Cement
ADBGR	Adana Cement (B)	CMBTN	Çimbeton
ADNAC	Adana Cement (C)	CMENIT	Çimentaş
AFYON	Afyon Cement	CIMSA	Çimsa
AKCNS	Akçansa	GOLTS	Göltaş Cement
ASLAN	Aslan Cement	KONYA	Konya Cement
BTCIM	Batı Cement	MRDIN	Mardin Cement
BSOKE	Batisöke Cement	NIBAS	Niğbaş Cement
BOLUC	Bolu Cement	NUHCM	Nuh Cement
UNYEC	Ünye Cement		

Following models are used in the analyses:

$$Ebitda_{f,t} = a_0 + a_1 IPI_t + a_2 USD_t + a_3 Tang_{f,t} + a_4 Growth_{f,t} + a_5 Lev_{f,t} + a_6 CR_{f,t} + a_7 MB_{f,t} + a_8 PE_{f,t} + a_8 ROE_{f,t} \quad (1)$$

$$CCC_{f,t} = a_0 + a_1 IPI_t + a_2 USD_t + a_3 Tang_{f,t} + a_4 Growth_{f,t} + a_5 Lev_{f,t} + a_6 CR_{f,t} + a_7 MB_{f,t} + a_8 PE_{f,t} + a_8 ROE_{f,t} \quad (2)$$

$$Export_{f,t} = a_0 + a_1 IPI_t + a_2 USD_t + a_3 Tang_{f,t} + a_4 Growth_{f,t} + a_5 Lev_{f,t} + a_6 CR_{f,t} + a_7 MB_{f,t} + a_8 PE_{f,t} + a_8 ROE_{f,t} \quad (3)$$

$$Sales_{f,t} = a_0 + a_1 IPI_t + a_2 USD_t + a_3 Tang_{f,t} + a_4 Growth_{f,t} + a_5 Lev_{f,t} + a_6 CR_{f,t} + a_7 MB_{f,t} + a_8 PE_{f,t} + a_8 ROE_{f,t} \quad (4)$$

EBITDA, CCC, Export Rate (Export), and Sales Growth (Sales) are used as dependent variables in this study. Furthermore, nine independent variables are used in each model. Among these variables, two of them are macro variables and the rests are firm-specific accounting variables. The definitions of these dependent and independent variables are shown in Table 2.

Random-effect panel regressions are used for models 1, 2, and 4, and fixed-effect panel regression is used for model 3. The result of Breusch–Pagan Lagrange Multiplier (LM) test is taken into account to decide between random-effect model and ordinary least squares model (Sarıkovalık, et al., 2019). Furthermore, Hausman

Table 2. Definition of Variables.

	Variable	Definition
Dependent Variables	EBITDA	Growth Rate of Earnings Before Interest and Tax
	CCC	CCC = DIO + DSO – DPO
	Export	Export Ratio=Exports/Gross Sales
	Sales	Gross Sales (<i>t</i>)
Independent Variables	IPI	Industry Production Index
	USD	Dollar/ TL Exchange Rate
	Tang	Tangibility Ratio= Tangible Assets/ Total Assets
	Growth	Growth Rate of Liquid Assets/ Total Assets
	Lev	Leverage Ratio= Total Liabilities/ Total Assets
	CR	CR = Current Assets/ Current Liabilities
	MB	MB = Market Value/ Book Value
	PE	Price/Earnings
	ROE	ROE = Net Profits/Total Equity

test is used to decide between random-effect model and fixed-effect model. Hausman test is not rejected for model 1, 2 and 4 and it is rejected for Model 3.

In addition, [Arellano and Bond's \(1991\)](#) generalized methods of moments (GMM) is used as a dynamic panel estimation method. It is assumed that dependent variables in each model are affected by their values in the previous time period. Endogeneity issue is tried to be solved by removing fixed effects in GMM ([Baum et al., 2013](#)). Thus, lagged values of the dependent variables are used as endogenous variables. The independent variables at time $t-2$ are used as instrumental variables in each regression. Furthermore, according to Arellano–Bond test result there is not a second order serial correlation in the regressions. This shows that the instruments are valid in the regressions. Moreover, the null of Hansen test is rejected and this shows the validity of the instruments.

4. Empirical Results

[Table 3](#) shows the summary statistics of the variables used in this study. Average firm in the sample has an EBITDA growth rate of 21.14%. This shows that the cement industry firms increased their EBITDA values by 21.14% compared to their previous year EBITDA values. CCC's mean value is 104.47 days. The average Export Ratio is 12.43% and Gross Sales Growth is 13.48%. IPI and USD are used as macro variables. Average IPI is 105.73 and average USD/TL exchange rate is 3.32 between 2013:Q3 and 2019:Q4. Tangibility Ratio is 0.42 and Growth Rate of Liquid Assets is 7.16. Leverage ratio is 0.36, CR is 1.96, market to book MB value is 1.87, PE is 13.96, and ROE is 14.22.

Pearson Correlation coefficients among the variables used in this study are shown in [Table 4](#). According to [Table 4](#), EBITDA has positive relation with sales,

Table 3. Descriptive Statistics.

Variable	N	Mean	sd	p25	p50	p75
EBITDA	494	21.14	78.57	−18.23	0.00	38.40
CCS	494	104.47	49.06	71.71	97.11	144.49
Export	494	12.43	11.38	0.20	10.47	22.99
Sales	494	13.48	29.17	−2.40	10.34	28.33
IPI	494	105.73	10.37	96.90	105.76	114.80
USD	494	3.32	1.23	2.28	2.96	3.82
Tang	494	0.42	0.13	0.33	0.40	0.48
Growth	494	7.16	47.18	−7.25	4.15	14.65
Lev	494	0.36	0.15	0.24	0.34	0.45
CR	494	1.96	1.13	1.16	1.70	2.41
MB	494	1.87	1.02	1.04	1.70	2.38
PE	494	13.96	12.84	6.75	9.08	17.08
ROE	494	14.22	16.54	4.54	14.41	22.52

Table 4. Pearson Correlation Matrix.

	EBITDA	CCC	Export	Sales	IPI	USD	Tang	Growth	Lev	CR	MB	PE	ROE
EBITDA	1												
CCC	-0.10	1											
Export	-0.03	0.18*	1										
Sales	0.39*	-0.18*	0.02	1									
IPI	-0.04	-0.04	-0.03	0.10	1								
USD	-0.19*	0.007	0.09	0.01	0.53*	1							
Tang	0.08	-0.24*	-0.14*	0.17*	0.06	0.10	1						
Growth	0.04	0.04	0.05	0.32*	0.05	-0.01	-0.06	1					
Lev	0.001	-0.38*	-0.08	0.15*	0.27*	0.41*	0.50*	-0.01	1				
CR	-0.02	0.24*	-0.02	-0.16*	-0.16*	-0.27*	-0.39*	0.02	-0.66*	1			
MB	-0.005	0.11	-0.29*	-0.07	-0.04	-0.11*	0.11	0.07	-0.08	0.13*	1		
PE	0.01	0.11	-0.31*	-0.06	-0.07	-0.13*	0.10	-0.03	0.07	0.06	0.50*	1	
ROE	-0.04	0.13*	0.26*	-0.004	-0.003	-0.06	-0.22*	0.22*	-0.30*	0.17*	0.30*	-0.04	1

and it has negative relation with USD. CCC has positive relation with Export, CR, and ROE, and it has negative relation with Sales, Tang, and Lev. Export is positively related with ROE, and it is negatively related with Tang, MB, and PE. Sales has negative relation with CR, and it has positive relation with Tang, Growth, and Lev.

Table 5 shows the fixed and random-effect regression results. Column 1 of Table 5 uses EBITDA as a dependent variable. According to random-effect regression results, only USD/TL exchange rate affects EBITDA. As Turkish Lira loses value, the value of earnings decreases and therefore EBITDA of the cement industry firms decreases. CCC is used as a dependent variable in column 2 of Table 5. According to random-effect regression results, IPI, USD, Tang, and Lev negatively affect CCC, and MB positively affects CCC.

Table 5. Fixed-Effect and Random-Effect Regression Results.

	EBITDA (RE)	CCC (RE)	Export (FE)	Sales (RE)
IPI	0.634 [0.110]	-0.251** [0.012]	-0.134*** [0.000]	0.280** [0.044]
USD	-17.842*** [0.000]	5.198*** [0.000]	1.043*** [0.000]	-2.273* [0.071]
Tang	42.536 [0.229]	-61.732*** [0.000]	5.4 [0.115]	38.869*** [0.001]
Growth	0.082 [0.279]	0.03 [0.118]	0.005 [0.353]	0.209*** [0.000]
Lev	7.122 [0.851]	-61.715*** [0.000]	4.457 [0.174]	3.679 [0.769]
CR	-3.997 [0.359]	-2.439* [0.084]	-0.061 [0.867]	-2.328 [0.110]
MB	-1.091 [0.815]	5.450*** [0.007]	-0.618 [0.240]	-3.199** [0.037]
PE	-0.109 [0.746]	0.016 [0.873]	-0.046* [0.064]	-0.021 [0.853]
ROE	-0.213 [0.405]	-0.101 [0.219]	0.025 [0.240]	0.007 [0.935]
Constant	6.724 [0.874]	157.749*** [0.000]	20.747*** [0.000]	-16.996 [0.245]
R^2	0.13	0.18	0.07	0.38
N	494	494	494	494

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

When the variables affecting Export Rate is examined, a negative relation between IPI and Export Rate is found. The existing exchange rate shocks in Turkey can be shown as one of the reasons of this negative relation. As a result of these shocks, the trade of cement sector companies decreased. In line with this reduction, cement industry firms looked for new markets abroad and they increased their export ratios. Although the export rate of these companies increased, the industry production index (IPI) of Turkey decreased as a result of economic conditions. That's why a negative relation between IPI and Export Rate is found.

Moreover, USD variable has positive relation with export rate. Therefore, as value of Turkish Lira decreases, export rate increases. Exchange rate depreciation results in higher export ratios in line with [Arslan and Wijnbergen \(1993\)](#). Moreover, it is consistent with Mundell–Fleming model which states that the appreciation in exchange rate reduces export rate ([Abeyasinghe & Yeok, 1998](#)).

In the last column of [Table 5](#), determinants of gross sales are investigated. IPI, tangibility, and growth rate of liquid assets positively affect Sales. Moreover, USD/TL exchange rate and MB value negatively affect Sales. Firstly, it is found that increased industry production increase sales level. Secondly, the negative relation between USD and Sales shows that as Turkish Lira loses value, sales level of the cement industry companies decreases. Decreased currency value affects the purchasing power in the country and as results sales level is expected to decrease. The positive relation between Tangibility and Sales is a result of higher production capacity of firms with higher Tangibility. Moreover, it is found that firms with more liquid assets have higher level of sales. Since it is easy to convert these assets into cash, it is expected to found higher sales level in these companies. Lastly, a negative relation between Market-to-Book value and Sales level is found for cement industry firms.

USD variable is the common variable that affects dependent variable in each model. However, it negatively affects EBITDA and Sales. Furthermore, it positively affects CCC and Export Rate.

[Table 6](#) shows the GMM regression results by considering endogeneity issue. Previous period value of each dependent variable is added into the models. Column 1 of [Table 6](#) shows the factors affecting EBITDA of cement industry firms. Previous value of EBITDA (L. EBITDA) and IPI positively affect EBITDA. However, USD/TL exchange rate and current asset ratio negatively affect EBITDA. In column 2 of [Table 6](#), it is seen that lagged value of CCC, USD/TL exchange rate, and MB have positive relations with CCC. As shown in column 3 of [Table 6](#), as IPI increases export rate decreases. In addition, as value of Turkish Lira decreases export rate increases. Finally, the determinants of gross sales are examined in the last column of [Table 6](#). L.sales, Growth, and Lev positively affect Sales. USD and ROE negatively affect Sales.

5. Conclusions

Turkish cement industry is the leader of Europe in terms of its production level and it makes important contribution to the country's growth. The exchange rate shock occurred in 2018 in Turkey caused a reduction in the production level of cement industry in 2018 and 2019. However, the decreased value of Turkish lira

Table 6. Dynamic Panel Regression Results.

	EBITDA	CCC	Export	Sales
L. EBITDA	0.294*** [0.000]			
L.CCC		0.367** [0.046]		
L.Export			0.711*** [0.000]	
L.Sales				0.649*** [0.000]
IPI	0.624*** [0.004]	-0.247*** [0.003]	-0.024* [0.071]	0.421*** [0.000]
USD	-16.340*** [0.000]	4.103** [0.020]	0.794** [0.014]	-6.049*** [0.000]
Tang	-27.382 [0.536]	-6.126 [0.861]	2.735 [0.321]	14.65 [0.480]
Growth	-0.107 [0.440]	0.01 [0.604]	0.009 [0.358]	0.089*** [0.000]
Lev	28.509 [0.705]	-17.22 [0.543]	-1.999 [0.572]	44.312* [0.083]
CR	-9.413** [0.046]	0.749 [0.609]	-0.26 [0.419]	-1.185 [0.324]
MB	4.346 [0.755]	5.468* [0.085]	-0.037 [0.945]	-0.854 [0.766]
PE	-0.074 [0.779]	-0.065 [0.464]	-0.018 [0.468]	0.115 [0.411]
ROE	-0.564 [0.234]	-0.03 [0.798]	-0.015 [0.515]	-0.208** [0.032]
N	456	456	456	456

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

resulted in higher level of export in this industry. Although inflation and exchange rate shock reduced the level of production inside the country, they increased the export levels of the industry. Since the cement industry makes important contribution to the macro indicators of the country, we suppose it is remarkable

to investigate the developments in the industry. Following this idea, we examine the factors affecting financial performance, Sales, CCC, and Export Rates of the cement industry firms in Turkey.

We find that USD/TL exchange rate variable has significant relations with all of the dependent variables. While it affects EBITDA and Sales negatively, it has positive impacts on CCC and Exports. Decreased value of Turkish Lira is supposed to decrease the earnings and sales of the companies. However, it increases the export level and CCC. When dynamic panel regressions are taken into account, it is seen that IPI is the another variable which affects each dependent variable significantly. It is found that IPI affects the dependent variable as in the reverse direction of USD variable. Leverage, CR and Market-to-Book Value are found to affect CCC variable. However, when the endogeneity issue is considered, only MB variable affects CCC among those variables. Furthermore, when the factors affecting Sales variable is taken into account, it is found that random-effect regression results and GMM regression results show different conclusions. IPI, USD and Growth are the common variables that affect Sales. However, GMM regression results show that leverage and ROE affect on Sales.

This study shows that only IPI and USD/TL exchange rate can be shown as the variables that are effective on Sales, Export ratio, CCC and performance of cement industry firms in Turkey. We are not able to show another common variable that is effective on these four dependent variables. In order to strengthen the cement industry firms in the country, more valuable Turkish Lira and much more production levels are needed in the country.

This study can be repeated with different variables according to the development trend of the cement industry for future research. Thus, the factors which affect the financial performance of cement sector firms can be determined more accurately.

REFERENCES

- Abeysinghe, T., & Yeok, T. L. (1998). Exchange rate appreciation and export competitiveness: The case of Singapore. *Applied Economics*, 30(1), 51–55.
- Arellano, M., & Bond, S. (1991). Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations. *Review of Economic Studies*, 58(2), 277–297.
- Arslan, I., & Wijnbergen, S. van. (1993). Export incentives, exchange rate policy and export growth in Turkey. *The Review Economics and Statistics*, 75(1), 128–133.
- Azam, D. M., & Haider, S. I. (2011). Impact of working capital management on firms' performance: Evidence from non-financial institutions of KSE-30 index. *Interdisciplinary Journal of Contemporary Research in Business*, 3(5), 481–492.
- Baum, C. F., Lewbel, A., Schaffer, M. E., & Talavera, O. (2013). Instrumental variables estimation using heteroskedasticity-based instruments. German Stata Users Group Meeting, Potsdam, Retrieved from https://www.stata.com/meeting/germany13/abstracts/materials/del13_baum.pdf
- Çubukçu, M. İ., & İmamoğlu, N. (2019). The effect of logistics performance on company performance and export performance. *The Journal of International Social Research*, 12(62), 1221–1234.

- Deloof, M. (2003). Does working capital management affect profitability of Belgian firms? *Journal of Business Finance and Accounting*, 30(3&4), 573–587.
- Erdil, T. S., & Özdemir, O. (2016). The determinants of relationship between marketing mix strategy and drivers of export performance in foreign markets: An application on Turkish clothing industry. *Procedia – Social and Behavioral Sciences*, 235, 546–556.
- Eren, M. Ş. (2014). The effect of generic competitive strategies on firms' export performance. *Journal of Yasar University*, 9(34), 5998–6022.
- Ersoy, E., Üstün, F., & Ünlü, U. (2016). The impact of professional management on firm performance: Evidence from Turkey. Turkish economy in a new era: Selected articles. In W. Sayers (Ed.), *AGP Research is an Imprint of Mayaa Education* (pp. 150–155). London.
- Garanina, T., & Petrova, O. (2015). Liquidity, cash conversion cycle and financial performance: Case of Russian companies. *Investment Management and Financial Innovations*, 12(1), 90–100.
- Gill, A., Biger, N., & Mathur, N. (2010). The relationship between working capital management and profitability: Evidence from the United States. *Business and Economics Journal*, 10, 1–9.
- Işık, N., Engeloğlu, Ö., & Kılınc, E. C. (2016). The effect of research and development expenditures on the profitability and sales: An application on BIST companies. *Erciyes University Journal of Economics and Administrative Sciences*, 47, 27–46.
- KPMG. (2020). İnşaat sektörel bakış. Retrieved from <https://assets.kpmg/content/dam/kpmg/tr/pdf/2020/01/sektorel-bakis-2020-insaat.pdf>
- Lazaridis, I., & Tryfonidis, D. (2005). The relationship between working capital management and profitability of listed companies in the Athens Stock Exchange. *Journal of Financial Management and Analysis*, 19, 26–25.
- Majeed, S., Majidmakki, M. A., Saleem, S., & Aziz, T. (2012). The relationship of cash conversion cycle and firm's profitability: An empirical investigation of Pakistani firms. *International Journal of Financial Management*, 1(1), 80–96.
- Muscettola, M. (2014). Cash conversion cycle and firm's profitability: An empirical analysis on a sample of 4,226 manufacturing SMEs of Italy. *International Journal of Business and Management*, 9(5), 25–35.
- Okka, O. (2018). *Finansal Yönetim*. Ankara: Nobel Akademik Yayıncılık.
- Padachi, K. (2006). Trends in working capital management and its impact on firms' performance: An analysis of Mauritian small manufacturing firms. *International Review of Business Research Papers*, 2(2), 45–58.
- Raheman, A., & Nasr, M. (2007). Working capital management and profitability – Case of Pakistani firms. *International Review of Business Research Papers*, 3(1), 279–300.
- Sarıkovanlık, V., Koy, A., Akkaya, M., Yıldırım, H. H., & Kantar, L. (2019). *Finans Biliminde Ekonometri Uygulamaları*. Ankara: Seçkin Yayıncılık.
- Teruel-Garcia, P. J., & Martinez-Solano, P. M. (2007). Effects of working capital management on SME profitability. *International Journal of Managerial Finance*, 3, 164–177.
- Türkiye Çimento Müstahsilileri Birliği (TCMA). (2020, May). Çimento ve klinker istatistikleri. Retrieved from https://www.tcma.org.tr/tr/haber_detay/cimento-ve-klinker-istatistikleri
- Turkrating. (2019, March). Sektör raporları, çimento sektörü. Retrieved from <http://turkrating.com/cimento-sektoru-mart-2019-08621.html>
- Üstün, F., Ersoy, E., & Ünlü, U. (2018). The impact of competitive aggressiveness on financial performance: A research on the leading industrial firms in Turkey. *Afyon Kocatepe University Journal of Economics and Administrative Sciences*, 20(2), 67–76.
- Yıldırım, H. H. (2018). *Firmaların çalışma sermayeleri bileşenleri ile aktif karlılığı ve özsermaye karlılığı arasındaki ilişki: Borsa İstanbul'da bir uygulama. Sosyal Bilimlere Multidisipliner Bakış*. Güven Plus Grup A.Ş. Yayınları.