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Firm-Specific and Macroeconomic Determinants of Fixed Asset Investment Decisions in Türkiye*

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ABSTRACT

In this paper, we investigated firm-specific and macroeconomic determinants of fixed-asset investments in Türkiye. We conducted our research in terms of four different business scales; micro, small, medium, and large scales. By obtaining financial data from real sector firms the from Central Bank of Türkiye, we applied four-panel data regressions. We used industrial averages from 17 industries, separated by four business scales, over 12 years period (2009-2019) carrying the characteristics of 1.3 million companies. The findings imply that profitability and liquidity have an adverse impact on long-run asset investments at all business scales. We found no significant relationship between capital structures and fixed asset investments of micro and small businesses whereas, having a negative effect on investments, it is a significant determinant of medium and large scales. On macroeconomic variables, we found that inflation has performed positive and significant impact on large-scale firms, however, it had a negative coefficient for micro-scale businesses.

Keywords: Capital Expenditure, Fixed Asset Investments, Strategic Investments, Capital Structure, SMEs
JEL Classification: *M40, M41, E22, D25*

Türkiye'de Duran Varlık Yatırımlarının Firmaya Özgü ve Makroekonomik Belirleyicileri

ÖZET

Bu çalışmada, Türkiye'deki duran varlık yatırımlarının firmaya özgü ve makroekonomik belirleyicileri araştırılmıştır. Bu bağlamda araştırma dört farklı işletme ölçeği temelinde; mikro, küçük, orta ve büyük işletmeler olarak gerçekleştirilmiştir. Araştırmada Türkiye Cumhuriyet Merkez Bankası tarafından raporlanan reel sektör bilançoları kullanılmış ve dört farklı işletme ölçeği için dört farklı panel veri regresyon analizi gerçekleştirilmiştir. Bu çalışmanın bulguları duran varlık yatırımlarının, tüm işletme ölçeklerinde, likidite ve karlılık ile anlamlı ve ters yönlü ilişkisi olduğunu göstermektedir. Sermaye yapısı değişkeninde ise mikro ve küçük ölçekli işletmelerde anlamlı bir ilişki görülemezken orta ve görülmüştür. Makroekonomik değişkenlerde ise enflasyondaki artışın büyük ölçekli firmaların uzun dönem varlıklara yatırımını artırdığı, fakat mikro ölçekli firmalarda tam tersi bir etkiye neden olduğu görülmüştür.

Anahtar Kelimeler: *Sermaye Harcamaları, Duran Varlık Yatırımları, Stratejik Yatırımlar, Sermaye Yapısı, KOBİ*
Jel Sınıflandırması*: M40, M41, E22, D25*

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1. INTRODUCTION

In the modern world, businesses are the heart of the matter for national economies. From a macroeconomic point of view, corporate investments keep the country's economy dynamic and are one of the most important tools in the turning of the wheels in the liberal capitalist economic model. Besides corporate investments being essential for macroeconomic stability and sustainability, there is a bilateral relationship between corporate investments and macroeconomics such that corporate investments sustain the macroeconomic system in a nation's economy but it is also affected by macroeconomic dynamics. There are two main determinants of corporate investment decisions; micro and macro perspectives (Farooq et al., 2021: 790). To be able to make capital investments, firstly firms need to evaluate their conditions through a managerial decision-making process. However, an enterprise cannot be considered independent of the macroeconomic conditions of the country in which it is located. Thus, that macroeconomic variables have some effects on the corporate decision-making process (Farooq et al., 2021; Onwe and Olarenwaju, 2014; Karim and Azman-Saini, 2013). In addition to the managerial decision-making process on corporate investments, firms also assess the macroeconomic conditions and shape their investment decisions. Thus, we believe that the corporate investment decision process has two dimensions; firm-specific determinants and macroeconomic determinants. Therefore, this study investigates corporate fixed-assets investments and their firm-specific and macroeconomic determinants. But we also recognize that in terms of investment decisions, companies differ from each other in terms of their structures and sizes. A business' sensitivity to these variables varies according to the scale of the business. In this context, we will mainly examine the factors that affect the investment decisions of Turkish companies based on firm scales such that micro, small, medium, and large-scale firms.

The following part of this study consists of four sections. In section two, we discussed the theoretical background and current literature on fixed asset investment decisions of companies. Section three introduces the dataset, research models of the study as well as sample statistics. In the fourth section, we present our findings with a theoretical discussion on the results, and lastly, section five concludes the whole discussion on the study.

2. FIXED ASSETS INVESTMENT DECISIONS AND REVIEW OF THE LITERATURE

2.1. Investment Decisions on Long-Term Assets

Long-term investment decisions are one of the most important decisions for businesses to continue their existence (Frezatti et al., 2013: 298). According to Frezatti et al., (2013), businesses tend to look for new business opportunities during periods when macroeconomic conditions seem favorable. This situation generally has two dimensions; investing in new long-term assets and changing the structure of working capital. However, according to the aforementioned researchers, changes in the macroeconomic environment may have negative impacts on firms such as decreasing profitability, unstable cash flows, increasing business risks, etc. This perspective is not unjustified when considering the cost of financing such long-term assets.

In our study, fixed asset investments generally refer to tangible assets such as buildings, land, machinery, facilities, and intangible assets such as patents, rights, privileges and licenses, technical knowledge, and scientific knowledge (Akgül, 2005; Aşıkoğlu et al., 2011; Ceylan and Korkmaz, 2017; Yardımcıoğlu et al., 2015; Necef Yereli et al., 2019).

Besides the managerial economics point of view, investments in long-term assets are required for sustainable business growth (Temiz and İpci, 2018: 410-411). Firm decisions to invest in long-term assets are generally made in line with their long-term strategic goals (Papadakis, 1995; Horngren et al., 1996). Although fund allocation and its negative effects (i.e. cost of capital and operational risks) may occur in the short term due to fixed asset investments, these investment decisions are essential for the strategic goals of businesses and sustainable growth in the long run (Slagmulder, 1997; Alkaraan and Northcott, 2007). Also, asset structure and its financing strategy are highly related to capital structure decisions (Harc, 2015), which is one of the most important and fascinating topics in corporate finance decisions. Thus, long-term investment planning has to be constituted carefully by managers for the sake of financing decisions and maximizing firm value. There is an important difference between small and large-scale firms in terms of fixed asset investment financing. According to Degryse et al. (2012), large-scale corporates have access to better financing resources compared to small and medium-sized businesses as they embody a higher number of finance and administrative employees with more quality human resources. While these firms have access to lower-cost financing models that are compatible with their business strategies, micro, small and medium-sized businesses do not have access to many of these advantages. Therefore, for a better understanding of the factors affecting the capital expenditure of firms, it is better to construct a research model that considers scale differences between them.

Long-term investments have a crucial role and impact on expected free cash flows, therefore, enterprise value. Investments in fixed assets, which bear high long-term returns on invested capital, increase the profitability of future periods and have a positive effect on cash flows from operating activities. Thence, long-term asset investment decisions are seen among the most important decisions of business management (Lal and Sharma, 2012; Soylu et al., 2018).

Fixed assets constitute the production capacity of an enterprise and have taken place in the literature as capacity-generating investments. So, investments in these capacity-increasing assets have an important role in economic growth and job growth (Güven, 2013). The increase in these assets also makes significant contributions to macroeconomic development and sustainable development. In this context, it is important to examine the subject.

Fixed asset investments are also important in terms of the risk management of enterprises. Fixed asset investments require a high level of initial investment. Due to their nature, these assets have low liquidity characteristics and require high financing amounts. Thus, noncurrent asset investments have a significant impact on the liquidity and risk level of enterprises (Akgüç, 2010). Due to their long economic life, the expected return of fixed capital investments can take a long time and macroeconomic instability and financial problems can be seen during this long period (Soylu et al., 2018). On the other hand, although these investments increase operating cash flows and thus increase firm value in long run, they also require a high amount of long-term financing and increase the operational and financial

risk. In this context, fixed asset investment decisions should be carefully monitored in terms of business ongoing concerns at the microscale and for the sustainable development and economic growth of the country at the macro scale.

In the literature of modern finance science, the purpose of a firm is defined as the maximization of value for its shareholders. For this purpose, the three main functions of financial management which are investing, financing, and dividend decisions should be defined and managed in an optimal way (Santoso et al., 2020). Investment decisions are concerned with the optimal selection of real and financial assets that businesses use to manage their activities in line with the goals and strategies of the business (Martono and Hardjito, 2003; Santoso et al., 2020). In this context, the determination of investment decisions constitutes one of the most important decision areas of the management in terms of realizing the purpose of a business.

Requiring a high amount of initial capital and completion time besides their low liquidity, fixed asset investments have almost no tolerance for misjudgments and mistakes in the decision process. It is difficult or even impossible to compensate for any mistakes made in fixed asset investments, and this situation jeopardizes the ongoing concern of the business (Necef Yereli et al., 2018).

2.2. Studies on Factors of Fixed Assets Investment

In the related literature, the quantity of studies that examines the determinants of corporate fixed asset investments has been quite limited (Dalbor ve Jiang, 2013). There are important gaps in the literature related to this field, which is of great importance. In the following parts, the limited number of related studies on this topic are summarized as much as possible.

In the research conducted by Dalbor and Jiang (2013), the determinants of fixed asset investments of U.S. firms were investigated. In the research conducted on US restaurant businesses, a positive and significant relationship was found between growth opportunities, operating cash flows, and firm size on capital expenditures. Besides, in the studies of Dalbor and Jiang (2013), it was also found that periods of macroeconomic instability affect capital expenditures negatively. Subrahmanyam and Brown (2013) also reached similar results in their research on Indian companies.

The study of Hamidi (2015) investigated firm-specific determinants of corporate fixed asset investments and evaluated results concerning Managerial Hypothesis and Pecking Order Hypothesis. In the research, which was carried out using 545 firm-year observation data, it was seen that the internal cash flows have a positive and significant effect on the corporate investment decisions of Malaysian firms. On the other hand, it has been found that the conflict of interest between corporate managers-shareholders hurts noncurrent asset investments.

Hisham et al. (2019) examined the factors affecting fixed capital investment decisions in publicly traded palm oil sector companies in Malaysia. The dynamic panel data analysis method was used in the research, which was conducted using a data set consisting of 40 palm oil companies covering the years 2000-2016. The findings of the study show that the

investment decisions of palm oil companies are significantly affected by cash flows, firm size, and world palm oil prices in the short and long term. Therefore, it was emphasized that some global economic situations specific to the sector should be followed when making investment decisions.

In their research, Nguyen and Nguyen (2019) analyzed the factors that influence Vietnamese firms' fixed asset investments. As a result of the analysis, it has been observed that free cash flows have a positive effect on fixed asset investments, while the investments decrease in the years of dividend payments realized. The findings point out that an increase in interest payments negatively affects fixed asset investments. In addition, the study of Nguyen and Nguyen (2019) showed that the liquidity of companies decreased in periods of fixed asset investments increased and there was an inverse relationship between working capital and fixed asset investments.

An important study in the literature is conducted by Welch and Wessels (2000). They examined the effect of stock returns on fixed capital investments of firms in developed countries. In this study, the authors utilized 18.436 firm-year observation data from the USA, Canada, England, Europe, and Japan stock exchanges. The findings of the research show that companies that invest in fixed assets have experienced significant increases in their stock returns over 2 years. The findings of this study show that profitability has a positive and significant effect on fixed asset investments of US and Japanese firms. However, this effect was not found in Canadian, British and European companies.

Akron et al. (2020) investigated the impact of economic policy uncertainty on fixed asset investments of US hospitality firms. In the study, in which the panel GMM method was used, it was seen that the economic uncertainty had a negative effect on the investment decisions of the firms. On the other hand, it has been found that the increase in profitability and economic growth positively affects the investment decisions of companies. On the other hand, it has been concluded that the increase in firm size and financial leverage adversely affects fixed asset investments.

Jiang and Dalbor (2017) investigated the factors affecting the fixed asset investments of restaurant businesses in their research. In this paper, financial statement data of 64 restaurant businesses were used for the 10 years covering the years 2006-2016. As a result of the panel data analysis, it has been seen that firm profitability, size, and cash flows have a positive effect on the fixed asset investment decisions of restaurant businesses. On the other hand, when the effect of macroeconomic conditions on investment decisions is examined, it has been found that companies tend to increase their investments in times of crisis. The study conducted by Elsas et al. (2006) also confirms these results. Similar to Jiang and Dalbor (2017), Jiang et al. (2006) found a positive and significant relationship between profitability and fixed asset investments in their research on 357 publicly traded manufacturing sectors in Taiwan.

Abedin et al. (2017) studied fixed asset investment decisions in the pharmaceutical industry with a panel data approach. Their study also showed that firm age and firm size significantly and positively impact long-term asset investments whereas an increase in financial leverage negatively affects fixed asset investments in the industry.

In the study conducted by Can et al. (2021), the effects of firm size on capital investment decisions on companies traded in Borsa Istanbul were investigated. In addition, they also investigated the impact of the economic crisis on this relation. Can et al. (2021)'s study exhibits that firm size has a significant and positive impact on fixed asset investments. On the other hand, dividend payments and profitability have a negative impact on non-current asset investments in Türkiye. Lastly, they found no relationship between corporate capital structure and fixed asset investments.

As summarized in the above section, there exist various studies in the literature on fixed asset investment decisions of companies. This study differentiates from the current literature in two ways. Firstly, we exhibit how fixed asset investment decision factors influence at different business scales. As modern business and finance literature shows, SMEs and large-size companies have different characteristics and decision-making processes. Therefore, they are influenced by firm-specific and macroeconomic variables differently. Our second contribution is that this topic has not been investigated on Turkish companies yet. This paper enlightens fixed asset investment decisions of Turkish companies as well.

3. RESEARCH METHODOLOGY

3.1. Data Set

As this study aims to investigate firm-specific and macroeconomic determinants of fixed asset investment decisions at different firm scales, we utilize data from four different company scales such as micro-scale, small-scale, medium-scale, and large-scale. We used the database of the Central Bank of Turkish Republic (CBTR) and collected financial accounting data from 17 industries with four different company scales (from the year 2009 to 2020). These industry averages consist of enormous information on the characteristics and structure of Turkish real sector companies. Carrying the main characteristics of 17 industries with over 1.3 million companies (CBTR, 2022), these industrial averages from 17 industries over 12 years periods constitute the panel data of this paper.

3.2. Econometric Models and Variables

The determinants of fixed asset investment in Türkiye are investigated with two dimensions; firm-specific factors and macroeconomic factors. The mathematical model of fixed asset investments is given in equation 1.

$$Fixed\ Assets_{i_{si},t} = f\left(CR_{i_{si},t}, ROS_{i_{si},t}, D\_TA_{i_{si},t}, CPI_{i_{si},t}, Market\_Vol_{i_{si},t}, ECI_{i_{si},t}\right) \quad (1)$$

In equation 1, fixed assets (FA_TA from now on) represent the fixed assets to total assets ratio. As firm-specific factors, we choose liquidity (CR- Current Ratio), the profitability of sales (ROS- Return on Sales), and capital structure (D_TA- Debt to Total Assets). As macroeconomic determinants, we used three variables; consumer inflation rate (CPI- Consumer Price Index), financial instability (Market_Vol- Stock Market Volatility, we use BIST 100 Index volatility), and lastly economic confidence and future expectations on macroeconomic stability (ECI- Economic Confidence Index). In line with the theoretical background given in the previous parts, we believe and will test the expectation that fixed asset investments are a function of these six variables.

Parallel with the mathematical model in equation 1, the econometric model to test the research hypothesis is given in equation 2. In the model, variables have already been explained and ε is the error term of the model which is independently and identically distributed with zero mean and sigma variance ε~(0,σ). The indices in the model are as follows: *i* stands for i^{th} cross-section (industry), *t* represents time index *t* and the subindices s_i represents the company scale degradation of cross-sections into four groups; micro, small, medium, and large companies. Thus, we run four different regression models for each of the scale groups.

$$FA\_TA_{i_{si},t} = \beta_0 + \beta_1 CR_{i_{si},t} + \beta_2 ROS_{i_{si},t} + \beta_3 D\_TA_{i_{si},t} + \beta_4 CPI_{i_{si},t} + \beta_5 Marketvol_{i_{si}t} + \beta_6 ECI_{i_{si},t} + \varepsilon \quad (2)$$

3.3. Descriptive Statistics

Table 1 exhibits descriptive statistics of the research variables for each business scale. Starting with macroeconomic variables, in the last 12 years, the Turkish economy has experienced %10 annual inflation on average with a 0.003 standard deviation. The stock market volatility is stable with a low standard deviation. The last macroeconomic variable, the economic confidence index (ECI)[1] is a composite index that summarizes the evaluations, expectations, and tendencies of consumers and producers regarding the general economic situation (TURKSTAT, 2022). Table 1 shows that in the last 12 years, economic confidence has been neutral in the Turkish economy and displays small deviations.

Table 1. Descriptive Statistics

Panel A. Micro-Scale Companies

	FA_TA	*CR*	*ROS*	*D_TA*	*CPI*	*Market_vol*	*ECI*
Mean	0.549	1.973	-0.256	0.622	0.100	73.0	1.005
Std. Dev.	0.012	0.083	0.087	0.011	0.003	1.8	0.005
Median	0.544	1.578	-0.018	0.616	0.084	63.8	1.032
Kurtosis	-0.290	8.653	48.997	8.257	1.105	-0.4	-0.717
Skewness	-0.195	2.722	-6.691	1.578	1.339	0.7	-0.759
Range	0.730	7.816	11.444	1.351	0.141	93.3	0.237
Max.	0.153	0.640	-11.206	0.194	0.062	35.7	0.865
Min.	0.883	8.456	0.238	1.545	0.203	129.0	1.102
# of obs.	204	204	204	204	204	204	204

Panel B. Small-Scale Companies

	FA_TA	*CR*	*ROS*	*D_TA*	*CPI*	*Market_vol*	*ECI*
Mean	0.471	1.390	-0.021	0.662	0.100	73.0	1.005
Std. Dev.	0.012	0.028	0.014	0.008	0.003	1.8	0.005
Median	0.470	1.326	0.019	0.688	0.084	63.8	1.032
Kurtosis	-0.708	5.434	20.443	1.138	1.105	-0.4	-0.717
Skewness	0.158	1.889	-4.413	-0.696	1.339	0.7	-0.759
Range	0.712	2.728	1.369	0.725	0.141	93.3	0.237
Max.	0.151	0.632	-1.210	0.236	0.062	35.7	0.865
Min.	0.863	3.360	0.159	0.961	0.203	129.0	1.102
# of obs.	204	204	204	204	204	204	204

Panel C. Medium-Scale Companies

	FA_TA	*CR*	*ROS*	*D_TA*	*CPI*	*Market_vol*	*ECI*

[1] In the economic confidence index measurement, 100 points means neutral. A score above 100 indicates an increase in economic confidence, while a score below indicates a decrease in economic confidence.

Mean	0.502	1.442	-0.001	0.653	0.101	72.9	1.005
Std. Dev.	0.013	0.025	0.009	0.009	0.003	1.8	0.005
Median	0.500	1.398	0.022	0.655	0.085	62.0	1.043
Kurtosis	-1.076	2.038	18.634	2.111	1.090	-0.4	-0.684
Skewness	0.035	1.164	-3.895	-0.765	1.333	0.7	-0.771
Range	0.722	2.368	1.102	0.864	0.141	93.3	0.237
Max.	0.167	0.576	-0.880	0.196	0.062	35.7	0.865
Min.	0.889	2.944	0.222	1.060	0.203	129.0	1.102
# of obs.	203	203	203	203	203	203	203
Panel D. Large-Scale Companies							
	FA_TA	*CR*	*ROS*	*D_TA*	*CPI*	*Market_vol*	*ECI*
Mean	0.545	1.593	0.042	0.626	0.099	72.3	1.007
Std. Dev.	0.012	0.053	0.008	0.012	0.003	2.0	0.006
Median	0.587	1.419	0.034	0.642	0.085	62.0	1.043
Kurtosis	-0.785	2.755	14.014	-0.074	1.368	-0.3	-0.543
Skewness	-0.572	1.331	-1.443	-0.432	1.381	0.7	-0.841
Range	0.649	3.980	1.009	0.773	0.141	93.3	0.237
Max.	0.191	0.000	-0.642	0.227	0.062	35.7	0.865
Min.	0.840	3.980	0.367	1.000	0.203	129.0	1.102
# of obs.	161	161	161	161	161	161	161

Shifting our focus from macroeconomic variables to firm-specifics, firstly, we observe that fixed asset holding is higher on micro and large scales. Understandably, large firms have higher fixed assets as discussed in part 2 of this paper. For micro-scale firms, we may comment that as these companies are generally newly established ones, they do hold quite low depreciation costs on their balance sheets. Besides, it is also possible that they hold a low degree of working capital due to a lack of sufficient financial/managerial human resources and strategic planning departments. The profitability of sales and company size exhibit a co-movement. As company size increases, the profitability of sales increases, and also deviation of ROS decreases. Lastly, capital structures display similar characteristics across company sizes. On average, Turkish companies tends to use %62-%67 debt while financing their assets.

Table 2 shows unrestricted correlation matrices of variables. Firstly, the correlation between macroeconomic variables shows apparent relations. We see that there is a positive and moderate level correlation between CPI and market volatility. On the other hand, table 2 reports an adverse relationship between CPI-ECI and Market_vol-ECI. The findings indicate that as inflation and market risk increase, economic confidence decreases.

Table 2. Pearson Correlation Matrices

Panel A. Micro-Scale Companies

	FA_TA	CR	ROS	D_TA	CPI	Market_vol	ECI
FA_TA	1.00						
CR	-0.01	1.00					
ROS	-0.32	-0.06	1.00				
D_TA	-0.23	-0.38	0.00	1.00			
CPI	-0.09	-0.21	0.07	0.40	1.00		
Market_vol	-0.05	-0.08	0.07	0.23	0.56	1.00	
ECI	0.06	0.09	-0.11	-0.25	-0.30	-0.63	1.00

Panel B. Small-Scale Companies							
	FA_TA	CR	ROS	D_TA	CPI	Market_vol	ECI
FA_TA	1.00						
CR	-0.18	1.00					
ROS	-0.44	0.23	1.00				
D_TA	-0.22	-0.53	-0.25	1.00			
CPI	-0.06	-0.17	0.02	0.26	1.00		
Market_vol	-0.07	0.03	0.04	0.07	0.56	1.00	
ECI	0.04	-0.03	-0.04	-0.04	-0.30	-0.63	1.00
Panel C. Medium-Scale Companies							
	FA_TA	CR	ROS	D_TA	CPI	Market_vol	ECI
FA_TA	1.00						
CR	-0.18	1.00					
ROS	-0.36	0.15	1.00				
D_TA	-0.35	-0.30	-0.21	1.00			
CPI	-0.04	-0.01	-0.10	0.29	1.00		
Market_vol	-0.05	0.13	-0.03	0.17	0.57	1.00	
ECI	0.06	-0.18	0.02	-0.12	-0.31	-0.63	1.00
Panel D. Large-Scale Companies							
	FA_TA	CR	ROS	D_TA	CPI	Market_vol	ECI
FA_TA	1.00						
CR	0.13	1.00					
ROS	-0.06	0.30	1.00				
D_TA	-0.30	-0.57	-0.50	1.00			
CPI	-0.04	-0.13	-0.15	0.39	1.00		
Market_vol	-0.04	-0.09	-0.02	0.21	0.57	1.00	
ECI	0.02	0.08	0.08	-0.23	-0.32	-0.61	1.00

Moving the focus from macroeconomic to firm-specific variables, Table 2 displays that the correlation coefficients between liquidity and fixed asset investments are quite low. Mostly, ROS, D_TA, CPI, and Market_vol variables exhibit adverse relationships with FA_TA at all company scales. Also, we do not see any significant, high degree of pairwise correlation among independent variables which points out that the research model should not suffer from multicollinearity problems.

4. FINDINGS

In this study, we employ panel data regression as the sample space of this research consists of both random and independent sample (cross-sections) units for different periods. In panel data regression analysis, before applying the research models, it is better to determine the best estimator for analysis. Thus, we have tested three estimators for the models; pooled OLS method, fixed effect method, and random effect method. Pooled OLS method assumes there is no heterogeneity in cross-sectional units whereas fixed effects permit individuality among all cross-sections; which are industries in this study. Lastly, the random effect method assumes that the model parameters are random.

Table 3. Estimator Selection Tests

	Micro-Scale Companies	**Small-Scale Companies**	**Medium-Scale Companies**	**Large-Scale Companies**
Fixed Effect vs Pooled OLS (F-Test for Individual Effects) (H0: No significant effects of cross-sections)	F-value=99.742 p-value<2.2e-16 Choose Fixed Effect over Pooled OLS	F-value=139.82 p-value<2.2e-16 Choose Fixed Effect over Pooled OLS	F-value=136.82 p-value<2.2e-16 Choose Fixed Effect over Pooled OLS	F-value=72.07 p-value<2.2e-16 Choose Fixed Effect over Pooled OLS
Fixed Effect vs Random Effect (Hausman Test) (H0: Random effect is more consistent)	Chi-square=16.683 p-value=0.01052 Choose Fixed Effect over Random Effect	Chi-square=5.028 p-value=0.5403 Choose Random Effect over Fixed Effect	Chi-square=99.00 p-value<2.2e-16 Choose Fixed Effect over Random Effect	Chi-square=0.58 p-value=0.99 Choose Random Effect over Fixed Effect
Random Effect vs Pooled OLS (Breusch-Pagan Lagrange Multiplier Test) (H0: Pooled OLS is more consistent)	Chi-square=715.18 p-value<2.2e-16 Choose Random Effect over Pooled OLS	Chi-square=754.1 p-value<2.2e-16 Choose Random Effect over Pooled OLS	Chi-square=604.07 p-value<2.2e-16 Choose Random Effect over Pooled OLS	Chi-square=508.34 p-value<2.2e-16 Choose Random Effect over Pooled OLS

Table 3 exhibits estimator selection test results for our four different regression models. We applied F-test for deciding between the fixed-effect model and pooled OLS model, the Hausman test for selection between fixed effect and random effect models, and lastly, the Breusch-Pagan LM test for testing pooled OLS over the random effect model. After all testing above in table 3, our results indicate that for micro-scale and large-scale companies, it is better to use the fixed effect method and for small-scale and medium-scale companies, we should use the random effect method.

Table 4. Panel Regression Results

Panel A. Regression for Micro-Scale Companies				
	Estimate	Std. Error	t-value	p-value
CR	-0.0180	0.0059	-3.0547	0.0026***
ROS	-0.0078	0.0010	-7.5191	0.0000***
D_TA	-0.0027	0.0787	-0.0345	0.9725
CPI	-0.5414	0.2013	-2.6897	0.0078***
Market_vol	0.0004	0.0002	2.1468	0.0331**
ECI	0.1385	0.0563	2.4602	0.0148**
R^2	0.1637			
Adj. R^2	0.0621			
F-statistics	F-stat=5.9063 p-value=1.1896e-05			
Panel B. Regression for Small-Scale Companies				
	Estimate	Std. Error	t-value	p-value
Intercept	0.6749	0.0629	10.7318	0.0000***
CR	-0.0556	0.0173	-3.2179	0.0015***

ROS	-0.1289	0.0236	-5.4565	0.0000***
D_TA	-0.1420	0.0977	-1.4528	0.1479
CPI	-0.1613	0.1532	-1.0530	0.2937
Market_vol	-0.0002	0.0002	-1.2992	0.1954
ECI	-0.0035	0.0257	-0.1361	0.8919
R^2	0.2020			
Adj. R^2	0.1770			
Chi-square	Chi-sqr=49.8676 p-value=4.9972e-09			
Panel C. Regression for Medium-Scale Companies				
	Estimate	Std. Error	t-value	p-value
CR	-0.03489	0.01949	-1.79000	0.07514*
ROS	-0.04792	0.02121	-2.25940	0.02506**
D_TA	-0.26436	0.06523	-4.05280	0.00008***
CPI	0.06104	0.15746	0.38770	0.69870
Market_vol	-0.00003	0.00016	-0.16870	0.86623
ECI	0.06265	0.06097	1.02760	0.30550
R^2	0.2433			
Adj. R^2	0.1509			
F-statistics	F-stat=9.6478 p-value=3.3499e-09			
Panel D. Regression for Large-Scale Companies				
	Estimate	Std. Error	t-value	p-value
Intercept	0.8668	0.1012	8.5610	0.0000***
CR	-0.0281	0.0122	-2.3054	0.0225**
ROS	-0.1400	0.0748	-1.8725	0.0630*
D_TA	-0.3664	0.1295	-2.8290	0.0053***
CPI	0.3622	0.2118	1.7101	0.0893*
Market_vol	-0.0004	0.0002	-2.4125	0.0170**
ECI	-0.0559	0.0348	-1.6069	0.1101
R^2	0.1984			
Adj. R^2	0.1672			
Chi-square	Chi-sqr=34.0736 p-value=6.5109e-06			

Table 4 reports panel regression results. According to table 4, in panel A, %16.37, in Panel B, %20.2, in Panel C, %24.3, and Panel D, %19.8 of the variation in fixed asset investments of micro, small, medium, and large scale are explained by the econometric models. Besides, four panels in table 4 report that the research models are statistically significant.

In Panel A, B, C, and D, we see that capital structure has a significant and adverse impact on medium and large-scale companies' fixed asset investments, though there is no relationship between capital structures and fixed assets of micro and small-scale firms. Our findings imply that as company size increases, the impact of the capital structure becomes significant and waxier impact on the dependent variable. We can comment that fixed-asset investment decisions of micro and small-scale companies do not depend on capital structures.

However, as company scale increments, funding the assets with debt becomes harder for companies. On the other hand, the insignificant relationship in Panel A and B points out that micro and small-size companies take long-run investment decisions no matter what their debt burden is and these companies can take higher risks for a higher return on investment. The other two firm-specific factors, profitability, and liquidity have significant and inversely affect non-current assets at all company sizes. In all panels, ROS and CR variables have significant and negative impacts on FA_TA. These findings indicate that in fixed-asset investment periods, micro, small, medium, and large-scale companies' profitability and liquidity decreases. It is not a surprising finding that profitability and liquidity have an inverse relationship with fixed assets that are expected to be the source of a business's future, long-run performance booster, not present.

On the macroeconomic side, our models report no significant relationship between macroeconomic variables and fixed assets of small and medium-sized companies. However, for two extreme cases; micro and large size companies, we detect some significant impacts of macroeconomic variables on fixed asset investments. When confidence in future economic conditions tends to be positive, micro-scale companies also towards their resources for long-term investments. On the other hand, Panel D does not show a similar result for large-scale firms.

CPI and Market_vol variables perform different impacts on micro and large-size companies. Firstly, CPI has a negative coefficient on Panel A, however, it has a positive sign in Panel D. An exact opposite case is true for Market_vol variable. Firstly, the increases in inflation encourage large size companies. On the other hand, a high level of inflation harms the investment decisions of micro-scale companies. Discussing this finding, it is rather possible that large-size companies regard inflation as an opportunity for investments and direct their funds towards noncurrent assets with the intent of protection from decreasing purchasing power, the expectation of increment in future asset prices, and increased accounting profit. On the contrary, micro-scale companies tend to decrease fixed asset investments in times of inflation. This may be due to the fact that these companies behave timidly in times of high inflation and focus on managing business operations well against a decreasing demand owing to general price increases.

Surprisingly, the regression models detected a positive relationship between market volatility and fixed asset investments for micro-companies. This result may imply that micro-scale companies in an emerging market like Türkiye tend to increase their fixed assets investments when the market risk (or risk appetite) tends to increase. We may also comment that micro-scale firms seek risk and may be called risk-tolerance or risk-seekers. On the other hand, financial market volatility discourages large-scale companies from long-run investments. It is acceptable that large-scale firms have more responsibilities against capital owners compared to micro-scale companies which most likely have a narrow and more compact ownership structure. From this perspective, this topic may be investigated in further studies concerning Agency Theory, which is a complex phenomenon in business and finance literature.

5. PRACTICAL IMPLICATIONS

The findings of this study imply many practical implications for businesses. In a general assessment, at all company scales, we show that profitability and liquidity significantly decrease in times of long-term investments. This may be a problem in short-term management and should be watched carefully. For companies at all scales, we suggest that companies should consider short-term value, working capital, and fund loss in line with corporate strategic planning[2] when they decide to take long-term investment decisions. When companies decide to invest in noncurrent assets, they should plan and manage their working capital carefully.

Another suggestion to companies would be on capital structures and financing policies. The findings show that as business scale increases, the importance of capital structure on fixed asset investments also increases. The structure of capital is one of the most important decision processes of financial management. Though there is gigantic literature on capital structure with different views, the main idea is that capital structure is directly related to enterprise value. Thus, for micro and small business scales, though the findings imply that their fixed asset investment decisions are irrelevant from capital structure, we suggest that they should still manage their long-term debts carefully while planning long-term investments. These investments take a long time until the initial investment to finish and, in this period, as we know that liquidity and profitability harm, they may face bankruptcy risks. Thus, we suggest that micro and small-scale companies should still constrain their decisions based on their capital structure.

For medium and large-scale companies, we suggest a financing strategy with a high portion of equity capital. The findings of this study show that as company scales increase, funding assets with debt becomes harder since long-term investments cause a high increase in debt/equity ratios for medium and large-scale companies. This may cause an exponential increase in the cost of debt and thus, will directly raise the cost of capital and harm enterprise value. It is better to finance long-term investments by following an investment plan that heavily depends on equity financing.

To mention micro-scale companies, our findings suggest that in high inflation periods, micro-size companies should avoid long-term asset investments and try to manage scarce financial sources to stay alive. Also, micro-scale companies are mostly risk-takers and tend to increase their noncurrent asset investments when market risk shows an upward movement. We suggest that these companies should evaluate the environment (both internal and external) carefully since this risk-taker attitude may endanger ongoing concerns of business. Besides, the findings on the liquidity and profitability of these companies support this suggestion. Also, future economic expectations are an important decision criterion for long-term investments for micro-scale companies. When there is an optimistic expectation on future macroeconomic environment, micro-scale companies tend to increase their long-term investments. It is reasonable that under these expectations, demands for goods and services are expected to increase and so, these companies would like to augment their production capacity to catch the wave. Besides, considering this hypothesis with decreasing cost of

[2] i.e. If a firm is planning an Initial Public Offering in short or medium term, then they may prefer avoiding or minimizing their long-term investments, etc.

capital and getting easy to find financial funds owing to optimistic macroeconomic expectations, it is acceptable that these risk-taker companies tend to increase their capital expenditures. To sum up, we also suggest that micro-scale companies to increment their long-term investments under optimistic future macroeconomic expectations.

6. CONCLUSION

Fixed-asset investment decisions are one of the most important ones among all managerial processes, in terms of sustainable business growth and ongoing concern of companies. Besides its company-specific importance, on the macroeconomic side, businesses are the main, maybe the most important components of economies in our modern capitalist economic systems. Thus, we have investigated such a substantial topic, fixed asset investments. But we also highlight that managerial decision processes differ across company scales. So, this reality is also considered in this research.

In this paper, we used panel data sets from four different company scales as follows; micro, small, medium, and large scales, and investigated the firm-specific and macroeconomic factors affecting long-term asset investments. According to the panel data regression models, at all four business scales, liquidity and profitability have adverse relationships with long-term assets. We could not find any significant impact of capital structure on investment decisions of micro and small-scale companies, however, we showed that long-term asset investments of medium and large-scale companies are affected negatively by high levels of long-term debts.

On macroeconomic factors, the findings showed that only micro and large-size companies have been affected by macroeconomic conditions in terms of non-current asset investments. While large-size firms get benefit from high inflation and behave purchasing decisions in their fixed assets, micro-scale companies displayed the opposite. The last finding, we obtained from panel data regression models is that in times of bear market, large-scale firms tend to slow down their long-run investments while micro-sized companies do the opposite. For large-size firms, have more complex capital structures and carry higher responsibilities against capital holders. Thus, it is acceptable that they take steps backward in those periods. For micro-sized companies, this is not the case since their ownership structure is more compact and limited, most likely one or few owners.

Further studies may highlight the blind spots of this paper. For instance, in such a globalized business environment, there should be some global economic factors that affect corporate investment decisions rather than national economic factors. Another important research topic could be the investigation of how fixed asset investments affect firm performance in long run. As the literature points out, long-run managerial investment decisions bring results in long term. But how and in which shape do these results show their benefits? This topic is not covered in this research. Lastly, as we only considered an emerging market Türkiye, in our paper, further studies may consider the case in terms of developed or undeveloped countries.

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