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KOBİ Kredilerinin Bankaya Özgü Belirleyicileri: Türkiye KOBİ Piyasasından Kanıtlar

Fatih KAYHAN
Kırklareli Üniversitesi

Mehmet İSLAMOĞLU
Karabük Üniversitesi

Öz

Bu çalışmanın amacı, Küçük ve Orta Ölçekli İşletmelere (KOBİ) sağlanan krediler ile bankaya özgü değişkenler arasındaki ilişkiyi incelemektir. KOBİ'ler ticari, katılım ve yatırım ve kalkınma bankaları için çok önemli bir müşteri segmentidir.Çalışma, Türkiye'deki KOBİ'leri kapsamakta olup, Bankacılık Düzenleme ve Denetleme Kurumu'ndan veriler alınmış ve 2010-2021 yılları arasındaki dönem analiz edilmiştir.Analiz yöntemi olarak OLS kullanılmıştır. Veri yapısı zaman serisidir. Bu çalışmanın araştırma sorusu, bankaya özgü değişkenlerin (KOBİ'lere kullandırılan) nakit kredilerin toplam kredilere oranı üzerinde istatistiksel olarak anlamlı bir etkisinin olup olmadığıdır. Toplam kredilerin aktiflere oranı, takipteki alacaklar oranı (TGA), aktif karlılığı (ROA), özkaynak karlılığı (ROE), finansal varlıkların mevduata oranı ve ayrıca yabancı varlıklar/özkaynaklar oranı, açıklayıcı değişkenler olarak kabul edilmektedir. Önde gelen makro-ekonomik, finansal değişkenler ise kontrol değişkenleri olarak kullanılmıştır. Bulgular, KOBİ-nakit kredi oranının bankaların toplam kredilerinin varlıklara oranındaki artıştan olumlu etkilendiğini göstermektedir; ve TGA oranındaki artış, yabancı kaynakların bankaların pasifleri içindeki ağırlığı ile negatif yönde değişmektedir. Çalışmada toplam kredilerin aktiflere oranı, takipteki alacakların ve borç yapısının, KOBİ'lere kullandırılan nakit krediler üzerinde önemli bir etkiye sahip olduğu sonucuna ulaşılmıştır.

Anahtar Sözcükler

KOBİ Kredileri, Banka Finansalları,Türkiye
JEL Sınıflaması: M20,G20,G21

Bank-Specific Determinants of SME Loans: Empirical Evidence from Turkish SME Market

Abstract

The aim of this study is to review the relation between loans provided to Small and Medium Enterprises (SMEs) and bank-specific variables. SMEs are very important client segment for commercial, participation as well as investment and development banks. The study covers SMEs in Turkey, data is received from Banking Regulatory and Supervisory Agency and quarterly period between 2010 and 2021 is analyzed.OLS is employed as method of analysis. Data structure is time-series. Whether bank-specific variables have statistically impact on the ratio of SME-cash-loans over total loans is the research question of this paper. Total loans over assets, non-performing-loans ratio (NPL), return on assets (ROA), return on equity (ROE), the ratio of financial assets over deposits and also the ratio of foreign assets/equity are considered as explanatory variables; and leading economic-financial variables are used as control variables. Findings indicate that the ratio of SME-cash-loans are positively influenced by increase in the banks' ratio of total loans over assets; and negatively by the increase in NPL ratio, by the weight of foreign sources in liabilities of banks. The paper concludes that total loans over assets, NPL and liability structure have significant impact on SMEs-cash loans.

Keywords

SME Loans, Bank Financials, Turkey
JEL Classification**:** M20, G20, G21

GİRİŞ

Are loans provided by banks for Small and Medium Enterprises (SME, KOBİ) significantly affected by bank-specific variables? This study aims to find an answer to this question. SMEs are considered as one of the most significant client segment of all banks, especially for commercial and participation banks. Despite the fact that investment and development banks mostly give loans to corporate clients with medium and long term maturity, it is apparent that they also provide loans to SME clients. SMEs are important companies for banks in view of the fact that the number of SMEs are much greater than that of commercial and corporate banks. Giving loans to SMEs enables banks in order to minimize credit risk. Giving loans to SMEs companies is essential in regard to effective credit-risk management and asset-liability management are concerned. The importance of this study is attributable to this very fact.The motivation behind this paper results from the need to fill the gap in literature in Turkey pertaining to the relation between of SME loans and bank-specific variables.

Definition of SME in Turkey last changed at the end of 2021. CMRT (The Central Bank of Turkey) 'Financial Stability Report, May 2022' states in its Macroeconomic Outlook part that the limit on the definition of SME in the Capital Adequacy Regulation is increased from (TL) 150 million to 220 million, and the retail credit limit to TL 10 million for resident SMEs.

Small and Medium Enterprises Development Organization, KOSGEB[1], in Turkey is of vital importance as far as SMEs are concerned. On its official website, this organization is explained as follows: KOSGEB furnished services and supported only for the production industry SMEs until 2009. Nonetheless, on account of the increase in the added value production and employment creation potentials of the industries other than the production sector in Turkey, the need to enlarge the target population of KOSGEB in order to encompass all SMEs appeared.

According to ISO (Istanbul Chamber of Commerce) The Second-Big-500 Companies Data[2], 2021 results of these companies that cover mostly SMEs indicate that net sales from production realized TL 339 billion with 77% annual increase, total employment 261.000 with 5% annual increase and total export USD 13,5 billion with 35,5% annual increase.

The research question of this paper is about whether bank-specific variables (ratios) have –statistically- a significant impact upon loans granted by banks for SMEs. Data is retrieved from Banking Regulatory and Supervisory Agency (BRSA) and Turkish Statistical Institute.

The study is limited to Turkish SMEs and banks. Analysis is conducted via quarterly data covering the period 2010-2021. Dependent variable is the ratio of SME cash-loans over total loans. On the other hand, explanatory variables are the ratios of total loans over total assets, NPL (Non-Performing Loans) Ratio, ROA (Return on Assets), ROE (Return on Equity), the ratio of 'financial assets over deposit' also the ratio of 'foreign assets over equity'. The method employed in this paper is OLS (Ordinary Least Squares). Data structure is time-series.

Contribution of the study to the literature is that there are a couple of studies regarding these issues, however, this study covering the last 10 years (after 2010) will make a pivotal contribution to this field of study since there have been some important economic, political, financial developments in Turkey after 2010 (the gradual end of 2008 Global Financial Crisis).

The study is composed of four parts: The first part is about financial institutions and funding for SMEs. The second part reviews the related literature. Data, method, analysis and findings are provided in the third part. The last part, section four, concludes the paper.

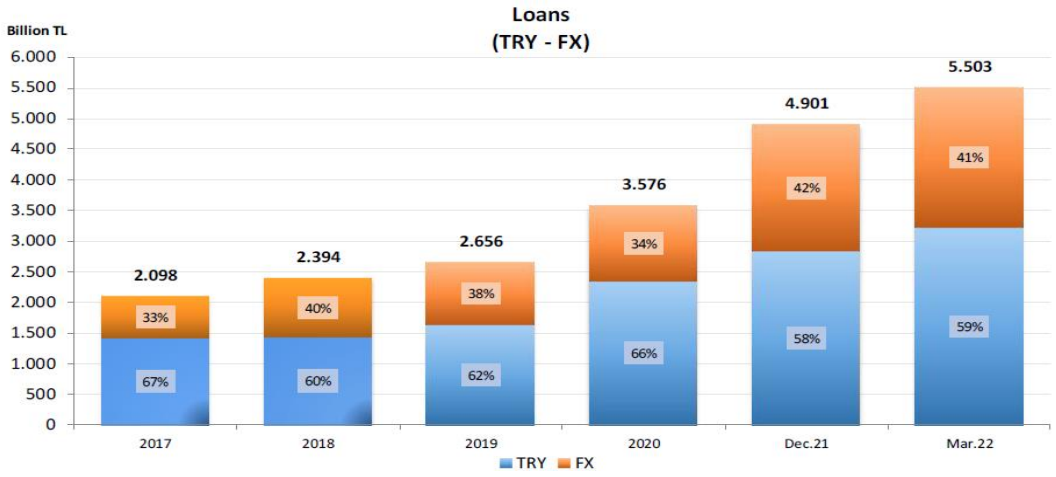
[1] https://en.kosgeb.gov.tr/site/tr/genel/detay/347/about-kosgeb Access Date: 01.12.2022
[2] https://www.iso500.org.tr Access Date: 01.12.2022

1. FINANCIAL INSTITUTIONS AND FUNDING FOR SMES

In this part, loans provided to SMEs by financial institutions –local and global- are explained. World Bank Group's support and standpoint regarding SMEs can be defined as follows: World Bank gives much importance to SMEs globally and provides funding through International Bank for Reconstruction and Development (IBRD) and International Development Association (IDA), the leading bank and agency in the entire global financial group.

Below, total loans granted by Turkish Banks (with TRY, FX detail) is indicated for the period between 2017-2022.

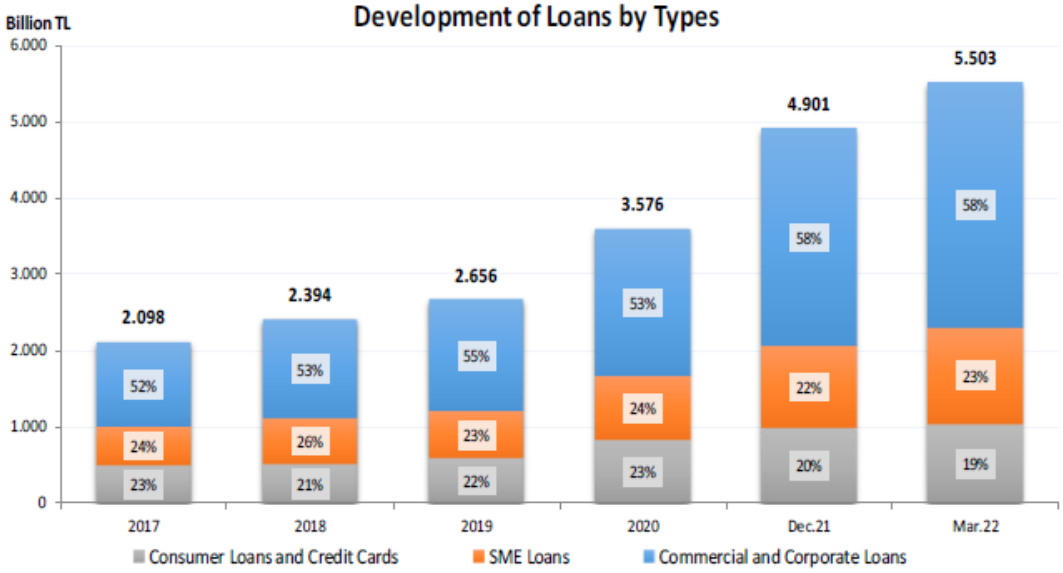
Figure 1:Loans (Granted by Banks Operating in Turkey, TRY, FX)



Source:BRSA-Main Indicators Report, March 2022

As can be seen above (Figure 1), as of March 2022, total amounts of loans realized as TL 5.5 billion, and TL 3.2 billion of this amount is made up of TL loans and the rest (TL 2.3 billion) FX loans.

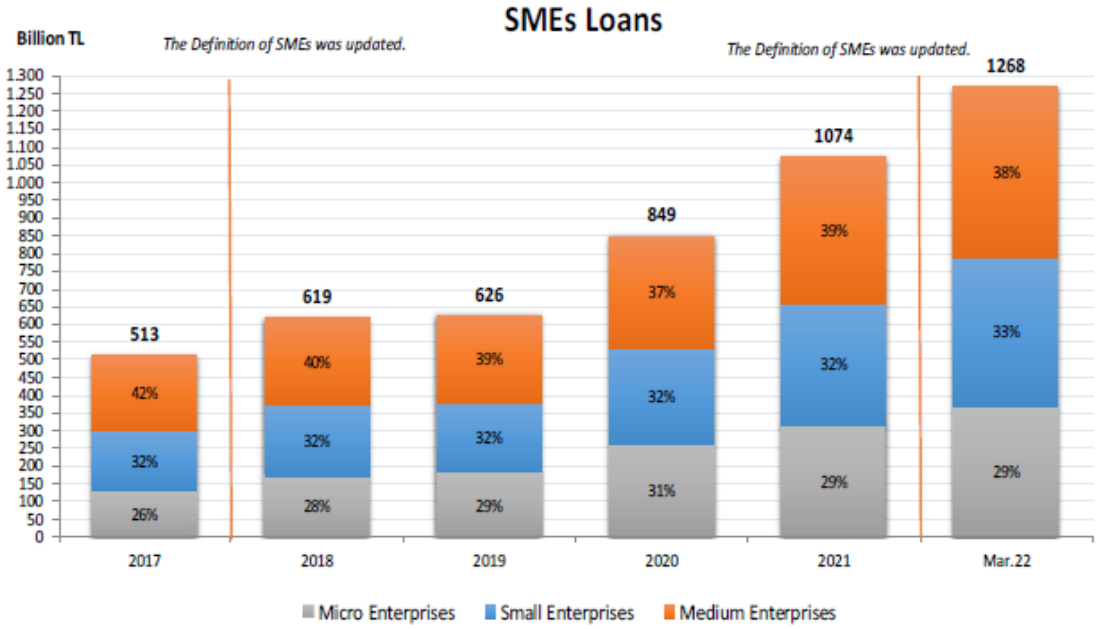
Figure 2:Development of Loans by Types (Granted by Banks Operating in Turkey)



Source:BRSA-Main Indicators Report, March 2022

Figure 2 indicates that as of March 2022, SMEs loans realized as TL 1.267 billion, which means approximately 23 percent of total loans.

Figure 3:SMEs Loans (Granted by Banks Operating in Turkey)



Source:BRSA-Main Indicators Report, March 2022

It is seen from Figure 3 that in terms of the loan-amount all operating classes of SMEs (micro, small enterprises and medium SMEs) increased in comparison to the previous quarter.

Public and private banks (Commercial, Participation and Investment & Development Banks) in Turkey give special importance to SME Financing. For example, Vakıfbank[3] provides cash-loans, non-cah-loans, project-investment loans, foreing-trade related loans and loans against receipt of Grain Board of Turkey (‘*Toprak Mahsulleri Ofisi Makbuz Mukabili Kredi*’). In addition, Ziraat Bank (the largest public bank in the country in regard to total assets) provides a number of loan facilities in collaboration with KOSGEB.

More importantly, it is Halkbank that from the establishment to recent times provided the greatest support for SMEs due to its special vision and mission in funding SMEs. Halkbank[4] is active in providing funding to SME loans via comprehensive digital loan platform. The bank also provides advisory services for SMEs banks in terms of incentives, labor law, law of obligations, investments, tax and foreign trade issues.

In addition to these commercial public banks, Development Investment Bank of Turkey[5] (*TKYB*), which is the largest public bank in Turkey in investment & development banking branch, remarkably supports SMEs with a number of banking solutions (project loans). TKYB enables SMEs to make use of loans via guarantee facilities of Credit Guarantee Fund (*KGF*). What is more, the bank enables SMEs suffering from COVID-19 to benefit from loans with the support of KGF Guarantee (‘*Kefalet’*) mechanisms.

Participation banks in Turkey also provide a variety of funding for SMEs as well as other non-interest banking products. For instance, Ziraat Katılım Bank[6], one of the state-run

[3] https://www.vakifbank.com.tr/kobi-kredileri.aspx?pageID=135 Access Date: 01.12.2022
[4] https://www.halkbankkobi.com.tr/ Access Date: 01.12.2022
[5] https://kalkinma.com.tr/en/home Access Date: 01.12.2022
[6] https://www.ziraatkatilim.com.tr/ticari/kgf-teminatli-finansmanlar Access Date: 01.12.2022

participation bank in Turkey enables SMEs to benefit from loan facilities with the help of KGF collateral.

2. LITERATURE REVIEW

This part reviews previous studies about SMEs and loans provided for the working capital and investment needs of SMEs. There are a number of local and international studies covering the subject matter of this study. Nonetheless, leading studies are taken up in this part in order to briefly cover literature.

Cziráky et al. (2005) investigates determinants of the low SME Loan Approval Rate in Croatia and offer a new method for examining consistency in loan evalution decisions and determinants of loan approval. Their findings reject overall consistency of criteria but show a preference toward smaller loans. Out of all SME loan demands, banks opted for smaller companies which demanded smaller loans. The results indicate that individual banks differ in their criteria and in their loan-size preferences and that there exists no positive association between the bank's size and its loan-size preference. A similar study is conducted by Shikumo and Mwangi (2016) for Kenya; they investigate what determines lending to SMEs by commercial Banks. They find that bank size and liquidity significantly affect giving loans to SMEs by commercial banks in Kenya whilst credit risk and interest rates do not have a significant impact on lending to SMEs.

Beck et al. (2008) investigate bank lending for SMEs (worldwide) by employing data from a survey of 91 banks in 45 countries. They find that banks regard the SME segment as very profitable, however, perceive macro-issues in developing countries and competition in developed countries as the leading problems. In order to give financial service for SMEs, banks founded specialized departments and decentralized the sale of products to the branches. Nevertheless, loan approval, risk management, and loan recovery functions remain centralized. When compared with big firms, banks are less exposed to small businesses, apply charge with higher interest rates and fees, and experience more non-performing loans from lending to them.

Mercieca et al. (2009) study bank structure, competition, and SME financing relationships in European Regions and make use of a unique data about SMEs for certain European regions, they empirically examine the influence of increasing concentration and competition on the number of lending relationships maintained by SMEs. They find that competition positively affects on the number of lending relationships, and they find weak proof that concentration brings down the number of banking relationships and weak evidence that they tend to offset each other.

Şahin and Doğukanlı (2014) examine the influence of foreign banks' entry on SME lending. Based on the findings of analysis covering years between 2006-12 and 2013-07 for Turkey, they argue that foreign ownership causes SME loan supply to decrease (with 6 months delay) and contend that foreign banks lead to decline in SME lending. Regarding the effect of world financial crisis on SME lending, Sannajust (2014) finds that world financial crisis causes SMEs to suffer from more and to be faced with more bank-loan-rejection.

Bank lending is the most common source of external finance for many SMEs, which often heavily rely on conventional debt to meet their start-up, cash flow and investment needs. Nonetheless, traditional bank finance creates difficulties to SMEs, especially to newer, innovative and fast-growing companies, which have a higher risk-return profile (OECD Report, 2015:6).

İslamoglu (2015) studies predictive power of financial ratios with regards to the Turkish Banking Industry in relation to the stock market index. Findings of the empirical evidence in the paper show that while an increase in debt-to-equity ratio has a negative effect on banking-industry-stock-index, shareholders' equity to total assets ratio has a positive impact on the growth of the Index. It is maintained that shareholders' equity to total assets ratio and provisions/non-performing loans ratio have a causal relationship with the BIST XBANK Index, which is the

banking-industry-stock-index. Çan (2015) reviews credit and capital market integration and SME securitization with regard to SMEs funding support. He argues that despite the fact that SMEs account for one of the major driving forces of the economy, they are encountered with important difficulties in accessing funding. This very fact poses one of the major obstacles for a strong economy. In an effort to solve this issue, a number of ideas are proposed. This study re-introduces SME securitization techniques as a solution to the funding issues of these business groups. Apan and İslamoglu (2016) review financial management in SMEs in Turkey. They argue that in regard to the share of employment, investment and the share of exports, SMEs has become an important player for the national economy. In contrast, the share of SMEs in total loans turns out to be very low when compared to developed countries. In this study, financial ratios of banks are specified as the leading predictive and explanatory variable.

In regard to Islamic finance and SMEs funding, Elasrag (2016) examines Islamic Finance for SMEs and argues that these businesses constitute the most of the economic structure of the economy. In emerging economies, SMEs account for the majority of employment. It is a long-term and wise strategy to invest in these businesses, with sustainable returns that multiply across regions, countries. They make up the great majority of firms: In global scale, SMEs make up over 95% of all firms, constitute about half of GDP and 60%–70% of total employment.

Erdoğan (2016) studies SME lending practices of banks and maintains that banks perform a preliminary assessment in the branch and collect financial information and intelligence after the loan application; although banks demand business plans from the SMEs that apply for bank loans, most of the SMEs cannot present such a plan, then banks are obliged to use their own projection for these SMEs. Lack of equity capital, a high debt ratio and being a new company results in decision of ‘rejection’ from banks. Banks use credit scoring method in loan evaluation process. Regarding effects of COVID-19 upon SMEs in Turkey, Istanbul Chamber of Commerce, in its report for the year of 2020 explains adverse effects of the pandemic as follows: Despite negative impacts of the pandemic, Turkey showed growth in economy and industry in 2020, while it managed to be one of the few countries where growth provided significant support to SMEs. In the last quarter of the year Turkey's financial vulnerabilities increased, the Turkish lira has depreciated significantly TL interest rates have increased significantly in 2020.

Yetgin and Ekşi (2017) reviews the bank lending attitude to SMEs and maintain that banks size and deposit interest rates are found to have a significant effect on SME loans while the profitability of assets has no significant effect on the loans. Kersten et al. (2017) review SME finance literature and find that SME finance has a positive significant effect on investments, firm performance and employment.

Demirci (2018) confirms the contribution of SMEs to employment, value-added, export and innovation considerably in developing and developed countries and the findings of the paper indicate that economic growth and bank lending to micro firms are cointegrated: There is a positive association between these variables and causality from economic growth to micro enterprises in the long run. Brei et al. (2020) argue that higher growth in SME lending is related with greater banking system stability (in emerging market economies) and they also contend that in these countries, financial development is relatively lower and information asymmetries are higher, hence profitable projects are likely to remain unfinanced.

3. DATA, METHOD, ANALYSIS

This part covers data, method and analysis. Firstly, data structure, data set and variables are introduced. Then, descriptive analysis is provided. Finally, econometric analysis based on time-series data is conducted and findings are provided. Table 1 below explains data set and variables.

Tablo 1: Data Set and Definition of Variables

Name of Variable	Variable Type	Brief Explanation	Source	Period
SMECASHX	Dependent	SME Cash Loans / Total Loans	BRSA	Quarterly
SMENCASH	Dependent	SME Non-Cash Loans / Total Loans	BRSA	Quarterly
LOANSX	Explanatory	Loans / Assets	BRSA	Quarterly
NPLRAT	Explanatory	Non-Performing Loans (NPL) / Total Cash Loans	BRSA	Quarterly
ROARAT	Explanatory	Net Profit / Total Assets (Average)	BRSA	Quarterly
ROERAT	Explanatory	Net Profit / Total Equity (Average)	BRSA	Quarterly
FASDEP	Explanatory	Financial Assets / Total Deposit	BRSA	Quarterly
FOREIGN	Explanatory	Foreign Sources / Total Equity	BRSA	Quarterly
GDP	Explanatory	Gross Domestic Product (Growth)	TUIK	Quarterly
PPI	Explanatory	Purchaser Price Index	CBRT	Quarterly
REER	Explanatory	Reel Effective Exchange Rate	CBRT	Quarterly
LOANSINT	Explanatory	Interest Rate Applicable for Loans That Banks provide for Firms	CBRT	Quarterly

Table 2 below illustrates the descriptive statistics. The mean of SMENCASH and SMENCASHX are 0.074 and 0.247, respectively. When the maximum and minimum values are examined, SMENCASH takes values between 0.061 and 0.083, while SMECASHX takes values between 0.215 and 0.277. However, both variables are normally distributed according to Jarque-Bera (JB) normal distribution test results. Among other variables, FOREIGN (784,308) has the highest mean and LOANSX with the lowest 0.594. Therefore, the highest standard deviation value belongs to the FOREIGN variable. LOANSX has the lowest standard deviation value (0.041). PPI, NPLRAT, LOANSINT, GDP, FOREIGN and FASDEP variables are not normally distributed according to the JB test. The skewness coefficient of all non-normally distributed variables is greater than zero. This shows that most of the values taken by the mentioned variables are lower than the mean. In other words, it can be said that there are positive shocks in the series.

Finally, as the analysis period consists of quarterly data for 2010-2021, the sample volume is 48 in all variables.

Table 2:Descriptive Statistics

Variable	*Statistic*									
	Mean	*Median*	*Max*	*Min*	*Std. Dev.*	*Skewness*	*Kurtosis*	*Jarque-Bera*	*p-val.*	*T*
SMENCASH	0.074	0.076	0.083	0.061	0.005	-0.720	2.876	4.176	0.124	48
SMECASHX	0.247	0.246	0.277	0.215	0.014	-0.060	2.245	1.168	0.558	48
ROERAT	9.018	8.417	20.118	2.743	4.388	0.334	2.300	1.874	0.392	48
ROARAT	0.981	0.906	2.457	0.264	0.493	0.626	3.150	3.183	0.204	48
REER	92.514	99.020	123.160	47.900	19.073	-0.472	2.204	3.050	0.218	48
PPI	14.555	9.329	79.870	1.777	14.734	2.396	9.722	136.295	0.000	48
NPLRAT	3.398	3.121	5.357	2.656	0.712	1.132	3.237	10.355	0.006	48
LOANSX	0.594	0.602	0.653	0.484	0.041	-0.844	3.169	5.753	0.056	48
LOANSINT	15.173	14.511	30.555	8.539	5.106	1.161	4.194	13.642	0.001	48
GDP	4.867	4.850	21.700	-10.400	4.849	0.230	6.174	20.567	0.000	48
FOREIGN	784.308	780.490	1179.042	617.679	107.544	1.066	5.280	19.499	0.000	48
FASDEP	31.089	29.072	51.574	22.716	7.931	1.076	3.061	9.277	0.010	48

Descriptive statistics of the variables show that their means and standard deviations differ. In order to eliminate this difference and to ensure the stability of the variance, which is the basic condition in time series analysis, the natural logarithm of the variables was taken first. Then, the seasonally affected variables were seasonally adjusted with the Tramo-Seat method.

The stationarity levels of the non-seasonal variables are determined by the Extended Dickey Fuller (1979) and Phillips-Perron (1988) unit root tests, and the results are reported in Table 3.

Table 3: Unit Root Test Results

Variable	*ADF*		*PP*	
	Test stat	*p-val.*	*Test stat*	*p-val.**
SMENCASH	-3.400	0.016	-3.365	0.017
SMECASHX	-2.428	0.361	-2.191	0.483
ROERAT	-2.004	0.584	-2.118	0.522
ROARAT	-2.140	0.510	-2.140	0.510
REER	-2.127	0.517	-1.943	0.616
PPI	-2.636	0.266	-2.796	0.205
NPLRAT	-2.227	0.199	-2.397	0.147
LOANSX	-0.378	0.985	-0.351	0.986
LOANSINT	-3.764	0.028	-2.649	0.216
GDP	-6.481	0.000	-6.481	0.000
FOREIGN	-2.506	0.323	-2.471	0.340
FASDEP	-3.437	0.014	-2.159	0.223
ΔSMECASHX**	-7.750	0.000	-8.098	0.000
ΔROERAT	-5.123	0.000	-5.122	0.000
ΔROARAT	-5.108	0.000	-5.091	0.000
ΔREER	-7.502	0.000	-7.685	0.000
ΔPPI	-7.124	0.000	-7.125	0.000
ΔNPLRAT	-3.718	0.007	-3.718	0.007
ΔLOANSX	-2.901	0.053	-2.726	0.077
ΔLOANSINT	-4.515	0.000	-4.551	0.000
ΔFOREIGN	-7.267	0.000	-7.269	0.000
ΔFASDEP	-3.687	0.007	-3.849	0.005

** These are probability values corresponding to MacKinnon (1996) critical values. **'Δ' is the difference operator.*

The theoretical representation of the models analyzed in this study is given below. In Equation 1, besides the explanatory variables, GDP, PPI, REER and LOANIST were added to the model as control variables.

$$SMECASHX_t = f\begin{pmatrix} LOANX_t, NPLRAT_t, ROARAT_t, ROERAT_t, FASDEP_t, FOREIGN_t, \\ GDP_t, PPI_t, REER_t, LOANSINT_t \end{pmatrix}$$

In Table 4, four different models (Model 1a, Model 1b, Model 1c and Model 1d) are estimated for Equation 1. In Model 1a, Model 1b and Model 1c, estimations were made without including control variables in the model. In Model 1d, control variables are included in the model.

In Model 1a estimation results, ΔROARAT was excluded from the model and Model 1b was estimated because it caused multi-collinearity. All variables, except ΔROERAT and ΔFASDEP, were estimated statistically significant. In Model 1c, variables with statistically insignificant coefficients in Model 1b were removed from the model and re-estimated. Finally, in Model 1d, control variables were included in the model, but the coefficient estimates for variables other than GDP were excluded from the model because they were statistically insignificant. In all four models, the condition of normal distribution, equal variance and no autocorrelation were provided. In addition, in order to provide normal distribution and equal variance assumptions, the models were given 1 (as dummy variable) in 2012Q4, 2013Q1 and 2018Q2; dummy variables that take the value 0 in other periods are added. The adjusted R2 value is highest (83.6%) in Model 1d. This shows that 83.6 % of the variation on the dependent variable can be explained by the variables of LOANSX, NPLRAT, FOREIGN and GDP. The model in which the F-statistic and log-likelihood value is the highest and the model selection criteria (Akaike, Schwarz, and Hannan-Quinn (HQ)) is the minimum was determined as Model 1d.

Table 4: Estimation Results

Variable	*Model 1a*		*Model 1b*		*Model 1c*		*Model 1d*	
	Coefficient	*Prob.*	*Coefficient*	*Prob.*	*Coefficient*	*Prob.*	*Coefficient*	*Prob.*
Constant	-0.006**	0.039**	-0.005**	0.050	-0.005***	0.054	0.018**	0.028
ΔLOANSX	0.373***	0.079***	0.366***	0.083	0.444**	0.028	**0.448****	0.015
ΔNPLRAT	-0.239*	0.000*	-0.242*	0.000	-0.227*	0.000	**-0.213***	0.000
ΔROARAT	-0.076	0.388	-		-		-	
ΔROERAT	0.055	0.550	-0.019	0.559	-		-	
ΔFASDEP	0.168	0.289	0.198	0.203	-		-	
ΔFOREIGN	-0.303*	0.000*	-0.287*	0.000	-0.282*	0.000	**-0.251***	0.001
D2012Q4	0.088*	0.000*	0.087*	0.000	0.083*	0.000	0.084*	0.000
D2013Q1	0.060*	0.002*	0.059*	0.002	0.055*	0.003	0.054*	0.001
D2018Q2	0.175*	0.000*	0.174*	0.000	0.172*	0.000	0.172*	0.000
GDP	-		-		-		**-0.009***	0.003
$\overline{R}^2$	0.799		0.801		0.800		0.836	
F-stat	21.404	0.000	24.134	0.000	31.646	0.000	34.419	0.000
Log likelihood	131.234		130.754		129.426		134.651	
Akaike	-5.159		-5.181		-5.210		-5.389	
Schwarz	-4.765		-4.827		-4.934		-5.074	
HQ	-5.011		-5.048		-5.106		-5.271	
JB	2.524	0.283	1.974	0.372	1.968	0.373	1.117	0.572
LM	0.448	0.799	0.608	0.738	0.851	0.653	3.371	0.185
White	9.243	0.415	7.811	0.452	5.907	0.433	5.269	0.627

*,** and *** indicate significance at the %1, 5% and 10% levels, respectively.

The results show that LOANSX has positive and statistically significant on SMECASH in all four models and the highest coefficient estimate has been reached on the Model 1d (0.448). NPLRAT has been estimated negative and significiant for all model and the highest estimate has been reached in forth model. Similar to the NPLRAT estimates, the coefficiant estimates of FOREIGN are statisticially significant and negative and the highets estimate has been achieved in the Model 1d.

Accordingly, if the Model 1d coefficient estimates are to be interpreted, while other variables are constant;1% increase in LOANSX increases SMECASHX by 0.448%; 1% increase in NPLRAT reduces SMECASHX by 0.213%; 1% increase in FOREIGN reduces SMECASHX by 0.251%, and 1% increase in GDP reduces SMECASHX by 0.0093%. Also, 83.6% of the variability in SMECASHX is explained by the variables in the model. This value is quite high as a percentage in explaining variation of SMECASHX. Models from 1a to 1d include SMECASHX and static estimation results of explanatory variables. However, dynamic structure is also important in time series. For this reason, considering the dynamic structure for Equation 1, lagged values of up to 3 lags for each variable were included in the model and statistically insignificant coefficient estimates were removed from the model and re-estimated. The dynamic model estimation results of Equation 1 are given in Table 5.

Table 5: Dynamic Model Estimation Results

Variable	*Coefficient*	*Prob.*
Constant	0.023**	0.011
$\Delta SMECASHX_{t-1}$	0.187*	0.010
$\Delta NPLRAT_{t}$	-0.233*	0.000
$\Delta ROERAT_{t-2}$	-0.102*	0.002
$\Delta FASDEP_{t}$	-0.339**	0.039
$\Delta FOREIGN_{t}$	-0.380*	0.000
GDP_{t}	-0.010*	0.003
ΔPPI_{t-1}	0.010**	0.016
$\Delta REER_{t}$	0.099***	0.060
$\Delta REER_{t-2}$	-0.122*	0.008
$\Delta LOANSINT_{t-1}$	-0.084*	0.001
D2012Q4	0.081*	0.000
D2018Q2	0.173*	0.000
$\overline{R}^2$	0.858	
F-stat	23.199*	0.000
Log likelihood	135.333	
Akaike	-5.437	
Schwarz	-4.915	
HQ	-5.242	
JB	1.339	0.512
LM	3.921	0.141
White	10.651	0.559

*,** and *** indicate significance at the %1, 5% and 10% levels, respectively.

The estimated coefficients of NPLRAT, FASDEP FOREIGN, GDP and REER are statistically significant at the time t. Except for GDP, all the variables have negative impact on SMECASH. FOREIGN is the lowest effect on SMECASH at the time t and FASDEP, NPLRAT and GDP has minimum coefficient estimates at the time t, respectively. At the time t-1, the autoregressive variable and PPI has positive effect but LOANSINT is negative. Finally, the results show that only the ROERAT and REER have significant coefficient estimates at the time t-2 and REER has lowest effect on the SMECASH.

As can be seen Table 5, as in the case of Table 4 estimation results, NPLRAT, FOREIGN and GDP variables have similar (negative) effect on SMECASHX.

Findings can be explained as follows: When banks (all type of banks) increase their loans over assets ratios, this have statistically significant positive effect on the ratio of cash-loans (that are only provided to SMEs) over total loans. That is, when total loans are up, there is an upward trend for cash-loans for SMEs. Secondly, as expected, when NPL ratio increase, SME-cash-loans over total loans ratio goes down, this indicates that increase in non-performing loan brings about a decline in the SME-cash-loans. Similarly, in the liability side of banks' balance sheet, when foreign liabilities increase, this has negative impact upon the ratio of SME-cash-loans/total loans. The negative impact of increase in GDP upon the ratio of SME-cash-loans/total loans can be explained as follows: During economic expansion, banks opt for provide more funding for corporate companies and individuals than SMEs. This does not necessarily mean a decrease of volume in the total amount of loans for SMEs. Expanding economic activity causes banks to allocate more loans to other lines of business than SMEs.

CONCLUSION

Small and Medium Enterprises comprise significant part of all businesses in the world and in Turkey. Their increasing number, dynamic business structure, production power and employment-capacity cause these business type to be center of interest with respect to literature of financial economics. Covering about 23 percent of all loans amount provided by Turkish Banks, SMEs loans are important for SMEs, banks and the total economy. Not only banks but also non-banking financial institutions provide financing for SMEs, for instance factoring and leasing companies. However, banks provide the greatest funding for SMEs due to the fact that banks comprise about 90 percent of all financial institutions (leading financial institutions).

The research question of the study is whether bank-specific variables (ratios) significantly affect loans granted by banks for SMEs. The study is limited to SMEs and Banks of Turkey. Data is received from Banking Regulatory and Supervisory Agency (BRSA) official website, Central Bank of Turkey and Turkish Statistical Institute. Analysis is carried out by using quarterly data. The years between 2010-2021 are covered. Dependent variable is the ratio of cash-loans (used for SMEs) over bank assets; on the other hand, explanatory variables are as follows: NPL Ratio, ROA, ROE, the ratio of financial assets over deposit also the ratio of foreign assets/equity. The method utilized in this paper is OLS (Ordinary Least Squares).

Empirical results indicate that an incline in the ratio of 'overall loans over assets' has statistically a significant positive effect on the ratio of 'SME-cash-loans over total loans'. Another way of saying, when total loans are going up, the ratio of SME-cash-loans over total loans increases. Secondly, in the event that NPL ratio increases, SME-cash-loans over total loans ratio goes down, which shows that increase in non-performing loans results in a decline in the SME-cash-loans. In a similar way, in the liability side of banks' balance sheet, when the ratio of foreign liabilities over equity capital increases, the ratio of SME-cash-loans/total loans is negatively affected.

Considering all these, the study concludes that when policy-makers plan to make a considerable change (organizational, legal or other changes) regarding SMEs in Turkey, they are recommended to take into consideration the very fact that banks' preference of funding SMEs are remarkably affected by the ratios of total loans over total assets, non-performing loans as well as the liability structures of the banks (foreign sources over equity).

APPENDIX- REGRESSION RESULTS

Model 1a (Table 4)

Dependent Variable: DSMECASHX
Method: Least Squares
Sample (adjusted): 2010Q2 2021Q4
Included observations: 47 after adjustments

Variable	Coefficient	Std. Error	**t-Statistic**	Prob.
C	-0.005932	0.002764	**-2.146247**	0.0385
DLOANSX	0.373329	0.206905	**1.804349**	0.0793
DNPLRAT	-0.239292	0.053872	**-4.441840**	0.0001
DROARAT	-0.076045	0.086980	**-0.874278**	0.3876
DROERAT	0.055116	0.091246	**0.604039**	0.5495
DFASDEP	0.168476	0.156509	**1.076457**	0.2887
DFOREIGN	-0.302667	0.075666	**-4.000062**	0.0003
D2012Q4	0.088036	0.017745	**4.961121**	0.0000
D2013Q1	0.060284	0.017676	**3.410452**	0.0016
D2018Q2	0.174667	0.017306	**10.09263**	0.0000

R-squared	0.838876	Mean dependent var	0.000415
Adjusted R-squared	0.799684	S.D. dependent var	0.037343
S.E. of regression	0.016714	Akaike info criterion	-5.158895
Sum squared resid	0.010336	Schwarz criterion	-4.765246
Log likelihood	131.2340	Hannan-Quinn criter.	-5.010762
F-statistic	21.40410	Durbin-Watson stat	1.796250
Prob(F-statistic)	0.000000		

Model 1b (Table 4)

Dependent Variable: DSMECASHX
Method: Least Squares
Sample (adjusted): 2010Q2 2021Q4
Included observations: 47 after adjustments

Variable	Coefficient	Std. Error	**t-Statistic**	Prob.
C	-0.005487	0.002708	**-2.026015**	0.0498
DLOANSX	0.366431	0.206112	**1.777823**	0.0834
DNPLRAT	-0.241859	0.053625	**-4.510179**	0.0001
DROERAT	-0.019308	0.032751	**-0.589548**	0.5590
DFASDEP	0.197531	0.152465	**1.295580**	0.2029
DFOREIGN	-0.287354	0.073382	**-3.915871**	0.0004
D2012Q4	0.087351	0.017673	**4.942659**	0.0000
D2013Q1	0.058927	0.017553	**3.357041**	0.0018
D2018Q2	0.174425	0.017250	**10.11131**	0.0000

R-squared	0.835547	Mean dependent var	0.000415
Adjusted R-squared	0.800926	S.D. dependent var	0.037343
S.E. of regression	0.016662	Akaike info criterion	-5.181000
Sum squared resid	0.010549	Schwarz criterion	-4.826716

Log likelihood	130.7535	Hannan-Quinn criter.	-5.047681
F-statistic	24.13372	Durbin-Watson stat	1.760046
Prob(F-statistic)	0.000000		

Model 1c (Table 4)

Dependent Variable: DSMECASHX
Method: Least Squares
Sample (adjusted): 2010Q2 2021Q4
Included observations: 47 after adjustments

Variable	Coefficient	Std. Error	**t-Statistic**	Prob.
C	-0.005395	0.002713	**-1.988258**	0.0537
DLOANSX	0.443982	0.194069	**2.287751**	0.0275
DNPLRAT	-0.226652	0.052559	**-4.312357**	0.0001
DFOREIGN	-0.282132	0.072055	**-3.915489**	0.0003
D2012Q4	0.083316	0.017419	**4.782992**	0.0000
D2013Q1	0.054517	0.017328	**3.146088**	0.0031
D2018Q2	0.172171	0.017226	**9.995030**	0.0000

R-squared	0.825993	Mean dependent var	0.000415
Adjusted R-squared	0.799892	S.D. dependent var	0.037343
S.E. of regression	0.016705	Akaike info criterion	-5.209632
Sum squared resid	0.011162	Schwarz criterion	-4.934078
Log likelihood	129.4264	Hannan-Quinn criter.	-5.105940
F-statistic	31.64596	Durbin-Watson stat	1.725827
Prob(F-statistic)	0.000000		

Model 1d (Table 4)

Dependent Variable: DSMECASHX
Method: Least Squares
Sample (adjusted): 2010Q2 2021Q4
Included observations: 47 after adjustments

Variable	Coefficient	Std. Error	**t-Statistic**	Prob.
C	0.018033	0.007910	**2.279662**	0.0282
DLOANSX	0.448099	0.175869	**2.547910**	0.0149
DNPLRAT	-0.213030	0.047829	**-4.454031**	0.0001
DFOREIGN	-0.251016	0.066055	**-3.800088**	0.0005
D2012Q4	0.084170	0.015788	**5.331409**	0.0000
D2013Q1	0.054057	0.015704	**3.442318**	0.0014
D2018Q2	0.172116	0.015610	**11.02619**	0.0000
GDP	-0.009127	0.002929	**-3.116085**	0.0034

R-squared	0.860680	Mean dependent var	0.000415
Adjusted R-squared	0.835674	S.D. dependent var	0.037343
S.E. of regression	0.015138	Akaike info criterion	-5.389401
Sum squared resid	0.008937	Schwarz criterion	-5.074483
Log likelihood	134.6509	Hannan-Quinn criter.	-5.270895

F-statistic	34.41873	Durbin-Watson stat	1.462462

Dynamic Model Estimation Results (Table 5)

Dependent Variable: DSMECASHX
Method: Variable Selection
Sample (adjusted): 2010Q4 2021Q4
Included observations: 45 after adjustments
Number of always included regressors: 3
Number of search regressors: 22
Selection method: Uni-directional
Stopping criterion: p-value = 0.05

Variable	Coefficient	Std. Error	**t-Statistic**	Prob.*
C	0.023345	0.008596	**2.715734**	0.0106
D2012Q4	0.081121	0.015477	**5.241421**	0.0000
D2018Q2	0.173019	0.014983	**11.54740**	0.0000
DREER	0.098863	0.050714	**1.949410**	0.0601
GDP	-0.010311	0.003235	**-3.187131**	0.0032
DPPI(-1)	0.010251	0.004038	**2.538564**	0.0162
DROERAT(-2)	-0.102005	0.030488	**-3.345785**	0.0021
DNPLRAT	-0.232564	0.039770	**-5.847774**	0.0000
DFOREIGN	-0.379793	0.078849	**-4.816737**	0.0000
DREER(-2)	-0.122299	0.042897	**-2.851002**	0.0076
DLOANSINT(-1)	-0.083629	0.022042	**-3.794117**	0.0006
DFASDEP	-0.339169	0.157576	**-2.152413**	0.0390
DSMECASHX(-1)	0.187372	0.068172	**2.748506**	0.0098

R-squared	0.896906	Mean dependent var	-0.000840
Adjusted R-squared	0.858246	S.D. dependent var	0.037664
S.E. of regression	0.014181	Akaike info criterion	-5.437020
Sum squared resid	0.006435	Schwarz criterion	-4.915095
Log likelihood	135.3330	Hannan-Quinn criter.	-5.242452
F-statistic	23.19980	Durbin-Watson stat	1.419382
Prob(F-statistic)	0.000000		

REFERENCES

Apan, M. & İslamoğlu, M. (2016). KOBİ'lerde Finans Yönetimi. International Journal of Sport Culture and Science, 2(1), 208-218.

Banking Regulatory and Supervisory Agency (2022) Turkish Banking Sector Main Indicators Report March, 2022. Istanbul.

Beck, T.& Demirguc-Kunt, A. & Martinez, P. M. (2008). Bank Financing for SMEs Around the World: Drivers, Obstacles, Business Models, and Lending Practices. The World Bank, Policy Research Working Paper; No. 4785, 1-9.

Brei, M & Gadanecz, B. & Mehrotra, A. (2020). SME lending and banking system stability: Some mechanism at work. Emerging Market Review, 43(C),1-11.

Central Bank of Republic of Turkey (2022)Financial Stability Report, 2022. May. Ankara

Çan, E. (2015). Credit and Capital Market Integration and SME Securitization in terms of SMEs Financing Support. Bankacılar Dergisi, 26(92) 25-52.

Cziráky, D., Tišma, S., & Pisarovic, A. (2005). Determinants of the Low SME Loan Approval Rate in Croatia. Small Business Economics, 25(4), 347–372.

Demirci, N. S. (2018). Türkiye'de Ölçek Bazında KOBİ Kredileri ve Ekonomik Büyüme İlişkisi: Eşbütünleşme ve Nedensellik Analizi (2006-2016). Anadolu Üniversitesi Sosyal Bilimler Dergisi, 18(1), 113-128.

Elasrag, H. (2016). Islamic Finance for SMEs. Journal of Economic and Social Thought, 3(3), 437-453.

Erdoğan, A. İ. (2017). SME Lending Practices of Banks. International Journal of Social Sciences and Education Research, 3(1), 241-249.

İslamoglu, M. (2015). Predictive Power of Financial Ratios With Regard To the Turkish Banking Industry: An Empirical Study on the Stock Market Index. Asian Economic and Financial Review. 5. 249-263.

İstanbul Chamber of Industry (2020), The Second 500 Big Industrial Firms Report. İstanbul.

Kersten, R. & Harms, J. & Liket, K. & Maas, K. (2017). Small Firms, large Impact? A systematic review of the SME Finance Literature. World Development, 97, 330-348.

Mercieca, S. & Schaeck, K. & Wolfe, S. (2009). Bank Market Structure, Competition, and SME Financing Relationships in European Regions. Journal of Financial Services Research, Springer; Western Finance Association, 36(2), 137-155.

OECD Report 2015. New Approaches to SME and Entrepreneurship Financing: Broadening the Range of Instruments.

Sannajust, A. (2014). IPAG Business School Working Paper Series. Impact of the World Financial Crisis to SMEs: The determinants of bank loan rejection in Europe and USA.

Şahin, A. & Doğukanlı, H. (2014). Yabancı Bankaların KOBİ Kredilerine Etkileri: Türkiye İçin Bir İnceleme. BDDK Bankacılık ve Finansal Piyasalar Dergisi, 8(2), 39-73.

Shikum, D.H. & Mwangi, M. (2020). Determinants of Lending to Small and Medium Enterprises by Commercial Banks in Kenya. Journal of Economics and Finance, 7(4) 57-63.

Yetgin, R. & Ekşi, İ.H. (2017). Kobilere Kredi Verme Tutumu: Türk Bankacılık Sektöründe Bir Uygulama. Business and Economics Research Journal, 8(3), 487-500.

Yazar/yazarlar bilgisi:
Dr. Öğr. Üyesi Fatih KAYHAN
Kırklareli Üniversitesi/Uygulamalı Bilimler Fakültesi/Finans ve Bankacılık Bölümü
E- posta: fatih.kayhan@klu.edu.tr
https://orcid.org/ 0000-0001-7844-8663

Prof. Dr. Mehmet İSLAMOĞLU
Karabük Üniversitesi/İşletme Fakültesi/Finans ve Bankacılık Bölümü
E-posta: mislamoglu75@gmail.com
https://orcid.org/ 0000-0002-7774-0299

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