



## The Relationship Between SME's Loans And Growth In Turkey (2007-2021)<sup>1</sup>

Sultan SARI<sup>2</sup>

### Abstract

"SMEs" are economic units or enterprises that employ less than 250 people and have a net revenue or balance sheet of less than 250 billion TL. According to the data for 2020, 99.76% of all firms operating in Turkey are SMEs. Moreover, 72% of all workers in Turkey work there, and they produce 42.75% of all production. This means that SMEs are an engine of the production and economy of Turkey. This study considers the relationship between SME loans and economic growth with the quarterly data from 2007 - 2021. GDP was employed as the dependent variable, while total SME loans in the banking sector in Turkey, other loans, the weighted average interest rate for banks' TL commercial loans, and the financial development rate were employed as independent variables. The method employed in the study is the Robust Least Square Method S-Estimation, as extreme conditions and outliers exist during the study period (e.g., the Global Crisis and COVID-19 Pandemic). A dummy variable was added to the model for these conditions. The analysis results show a positive and statistically meaningful relationship between SME loans and economic growth. Similarly, the relationship between GDP and other loans is positive and statistically meaningful. Moreover, the financial development's relationship with GDP is also statistically meaningful but in a negative direction. These argumentative findings are also reflected in the literature as well. The relationship between GDP and credit interest rate is negative and statistically meaningful. While the negative relationship between the dummy variable and GDP indicates that Global Crisis and COVID-19 Pandemic influenced the economy negatively, the positive relationship between GDP and SME loans indicates that SMEs need to be supported, and it is useful and productive for the Turkish economy.

**Keywords:** Small and medium enterprises (SMEs), SMEs loans, financial development, growth, Robust Least Square method

**JEL Codes:** E44, G21, C32

## Türkiye'de Kobi Kredileri Ve Büyüme İlişkisi (2007-2021)

### Özet

250 kişiden az yıllık çalışan istihdam eden ve yıllık net satış hasılatı veya mali bilançosundan herhangi biri 250 milyon TL'sini aşmayan ekonomik birimler veya girişimler, Kobi olarak tanımlanmaktadır. 2020 yılı verilerine göre Türkiye'de faaliyet gösteren işletmelerin %99.76'sı küçük ve orta büyüklükte işletme niteliğinde olup istihdamın %72'si ile üretimin %42.75'ini gerçekleştirmektedirler. Yani kobiler üretimin ve ekonominin motoru niteliğindedir. Bu çalışmada bankacılık sektöründe kobilere sağlanan kobi kredileri ve ekonomik büyüme ilişkisi 2007 - 2021 dönemi üçer aylık verileri ile incelenmiştir. Bağımlı değişken olarak GSYH, bağımsız değişkenler olarak bankacılık sektörü kümülatif kobi kredileri, diğer krediler, bankalarca TL üzerinden açılan ticari kredilere uygulanan ağırlıklı ortalama faiz oranı ile M2 para arzının GSYH'ya bölünmesiyle elde edilen finansal gelişme ölçütü alınmıştır. İnceleme dönemi Global kriz ve COVID-19 salgını gibi ekstrem koşulları kapsadığından ve bu tür ekstrem koşullarda verilerde sapmalar tespit edildiğinden yöntem olarak Robust En Küçük Kareler yöntemi S-tahmincisi tercih edilmiştir. Bu ekstrem koşulları temsilen modele bir kukla değişken eklenmiştir. Analiz sonuçları kobi kredileri ve GSYH arasında beklentilere uygun bir şekilde pozitif yönlü ve istatistiki olarak anlamlı bir ilişki olduğunu göstermiştir. Benzer şekilde, diğer kredilerin GSYH ile ilişkisi de pozitif yönlü ve istatistiki olarak anlamlıdır. Ayrıca, finansal gelişme ölçütünün GSYH ile ilişkisi de istatistiksel olarak anlamlı ama negatif yönlüdür. Finansal gelişme ve ekonomik büyüme ilişkisinin yönü iktisadi yazında da tartışmalıdır. Kredi faiz oranı ile GSYH ilişkisi de istatistiki olarak anlamlı ve negatif yönlüdür. Kukla değişkenin GSYH ile negatif yönlü ilişkisi ekonomik kriz ve salgın koşullarının ekonomiyi olumsuz yönde etkilediğini gösterirken, kobi kredilerinin GSYH ile pozitif yönlü ilişkisi kobilerin desteklenmesi gerektiğini göstermektedir.

**Anahtar Kelimeler:** Küçük ve orta boy işletme (KOBİ), KOBİ kredileri, finansal gelişme, büyüme, Robust En Küçük Kareler Yöntemi (Robust EKK)

**JEL Kodları:** E44, G21, C32

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<sup>2</sup> Dr, Independent Researcher, Ankara, Turkey [sarisultan51@gmail.com](mailto:sarisultan51@gmail.com) ORCID ID: 0000-0002-8670-3625

## 1. INTRODUCTION

Small and medium-sized enterprises (SMEs) are non-subsiary, independent firms that employ fewer than a given number of employees. This number varies across countries. The most frequent upper limit to define an SME is 250 employees, as in the European Union (EU). However, some countries set the limit at 200 employees, while the United States considers SMEs to include firms with fewer than 500 employees. Small firms generally have fewer than 50 employees, while micro-enterprises have at most 10 (in some cases 5) workers. Other criteria to define SMEs are financial assets. For example, the new definition that came into force in the EU provides for an increase in the financial ceilings: the turnover of medium-sized enterprises (50-249 employees) maximum EUR 50 million; that of small enterprises (10-49 employees) max. EUR 10 million while that of micro firms (less than ten employees) maximum EUR 2 million. Alternatively, balance sheets for medium, small and micro enterprises should not exceed EUR 43 million, EUR 10 million, and EUR 2 million, respectively (OECD, 2022).

**Table 1:** SME Definition in EU

Company Category	Staff headcount	Turnover	or	Balance sheet total
Medium-sized	<250	≤ € 50 m		≤ € 43 m
Small	<50	≤ € 10 m		≤ € 10 m
Micro	<10	≤ € 2 m		≤ € 2 m

**Source:** European Commission

In Turkey, "SME" are described as economic units or enterprises that employ less than 250 people and have a net revenue or balance sheet of less than 250 billion TL (SME Regulation)<sup>1</sup>.

SMEs, as described above, play a major role in most economies, particularly in developing countries. SMEs account for most businesses worldwide and are important contributors to job creation and economic development. They represent about 90% of businesses and more than 50% of employment worldwide. Formal SMEs contribute up to 40% of emerging economies' national income (GDP). These numbers are significantly higher when informal SMEs are included (World Bank).

SMEs are very important in Turkey as well. Even a summary statistic demonstrates this importance well. According to data for the year 2020, there are 3.295.995 SMEs, consisting of 99,76% of all enterprises in Turkey. SMEs employed 76% of all employment in 2009, and they produced 44,67% of the production with this employment. For the year 2020, these amounts consist of 42,75% of production with 72% of all employment. Moreover, SMEs created 41% of all added values in 2020 (TSI). However, these important SMEs have disadvantages, such as low technology, lack of a professional manager, foreign trade, and finances. Turkey's most important foreign finance source is

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<sup>1</sup> "Article 4; b) Small and medium enterprises (SME): It is described economic units or enterprises that employed less than 250 people and net revenue or balance sheet less than 125 billion TL and here categorized as micro-enterprises, small enterprises, and medium-sized enterprises". Later, the limit of "125 billion TL" was increased to "250 billion TL" (DÜNYA; AA ) on 18.03.2022.

banks, especially their special loans for SMEs. On the other hand, the share of these SME loans in the total cash loans does not exceed 27% between 2007 – 2020. Moreover, for example, while this rate was 26,79% in 2007, because of Global Crisis, in 2008, it decreased to 23,03% and in 2009 to 21,21%. Despite government support and measures for the COVID-19 Pandemic, a share of 23,73% is observed in the year 2020 (BRSA).

Therefore, this creates a motivation to consider the relationship between economic growth and SME loans and the contributions of SME loans to economic development by the Robust Least Square method (Robust LSM) by using the data from 2007-2021 in Turkey. Hence, in this study, the second section reviews the related literature after this short introduction. While the third section presents the model and data, and the fourth section discusses the findings. Finally, the study finishes with a summary and conclusion.

## 2. LITERATURE REVIEW

Firstly, the reviewed literature presents the importance and place of SMEs in Turkey's economy. Moreover, they recommend a development plan based on SMEs, especially in regional development. For example, Özdemir et al. (2007) argues: "SMEs are essential actors of economies, especially after the 1980s with their qualifications of flexible, dynamic, creative, innovative, simple, resistant to the crises and compatible with globalization". Özdemir et al. (2007) condition Turkey's economic success to the SME's success. They claim that SMEs must be supported to expand investment and export, employ and decrease unemployment, and resist economic crises».

Türkoğlu (2002); studies "the effects of SMEs on regional development» and recommended «the strategies on the based of SMEs for regional developments ».Ay and Talaşlı (2007) consider "the place and the problems of SMEs on exporting» and recommends some strategies for them to export. Keskin et al. (2009) studies "the resources for regional development, SMEs and exporting problems under Erzurum province ». Çatal (2007) considers "the role of SMEs on Regional Development. It shows the advantages and disadvantages of SMEs and says "the most important contributions of SMEs are to accelerate the regional development and to find out the potentials and energy of country by decreasing the differences of regional development levels between regions. Iraz (2006) theoretically studies "the contributions of SMEs to national socio-economic system». According to him, SMEs are important, but to stress, it does not mean that the larger global companies are unimportant. They need and complete with each other, so they must work together in the knowledge societies under globalization. Nurrachmi et al. (2012) studies "the development of SMEs in Turkey with the micro and macro models of Kobayachi". Although SMEs are the engine of economic growth, a supporter of employment, and the bridge between Turkey and the EU with their flexible structures, when compared with other developing countries, especially in innovation, they experience some difficulties in finance and internationalism.

Tutar and Ünlüleblebici (2014) inspire this study because they consider "the contributions of SME loans (one of the most important supports to SMEs) to economics growth" and test the causality relationship between SME loans and growth to find out the direction of this relationship. The result of this study is that "there is a relation between SME loan and growth, and its direction is from SME loan to growth".

In this way, Demirci (2017) studied the same relationship with monthly data between 2006-2016 using by Johansen cointegration test, VAR model, and Granger causality test under VECM. They determine that "economic growth and operational credits for micro firms are cointegrated and there is a positive relationship between them and in the long run, so it shows that there is a causal relationship from growth to the operational credits for micro firms, in the short run also, from economic growth to the operational credits for micro firms".

International literature about the relationship between SMEs and growth is richer than in Turkish literature, but not on the relationship between SME loans and growth. Most international literature shows a general focus on the relationship between SMEs and growth. One of these studies is Ming-Wen- Hu (2010). This study examines the contribution to economic growth from the SME sector by regression analysis using a dataset on both developed and developing economies. Based on data covering thirty-seven countries over the period from the 1960s to the 1990s, its findings support the hypothesis that small businesses are beneficial to economic prosperity and there is a systematic relationship between SMEs and economic growth; however, this study highlights considerable diversity in terms of the patterns of the contribution, by the SME sector, to overall economic growth. According to them, "Within the mature economies, it is the entrepreneurship inherited from the SME sector that helps to drive economic growth, whereas, in contrast, within the less-developed economies, the main contributor to economic growth from the SME sector is their value in terms of job creation. "

Beck et al. (2005) consider the relationship between the relative size of the SMEs, economic growth, and poverty by using a new database on the share of SME labor in the total manufacturing labor force from 76 countries. They found a strong association between the importance of SMEs and GDP per capita growth. This relationship, however, is not robust for controlling for simultaneity bias. Thus, while a large SME sector is a characteristic of successful economies, the data fails to support the hypothesis that SMEs exert a causal impact on growth. However, there is no evidence that SMEs reduce poverty. Moreover, they find evidence that the overall business environment facing large and small firms influences economic growth.

Summarily, in the international literature on it, generally, some studies find that there is a positive relationship between SMEs and growth (Aris, 2007; Madanchian et al., 2015; Kandasamy et al., 2015; Cania et al., 2016; Myslimi et al., 2016; Gherghina et al., 2020). However, some of them find that there is a negative relationship between SMEs and growth. For example, Cravo et al. ( 2009) claim that their result is coherent with the findings for developing countries, and there is a positive relationship between the employment of SMEs, in other words, human resources of SMEs, and that is more important than the size of SMEs. Mahmood et al. (2016) studied China and found that there is an incubator for SMEs, so SMEs contribute to economic development.

### **3. METHOD and DATA**

This study considers the relationship between SME loans and economic growth with the quarterly data for Turkey between 2007 and 2021 by Robust Least Square Method S-Estimation.

As seen in the table below, it is used GDP as a dependent variable; as an independent variable; total SMEs loans in the banking sector in Turkey, other loans ( total loans – SMEs loans), the weighted average interest rate for bank TL commercial loans, and financial development rate (produced by dividing M2 to GDP) are used. The computer program used is Eviews 10.

**Table 2:** Variables and Sources

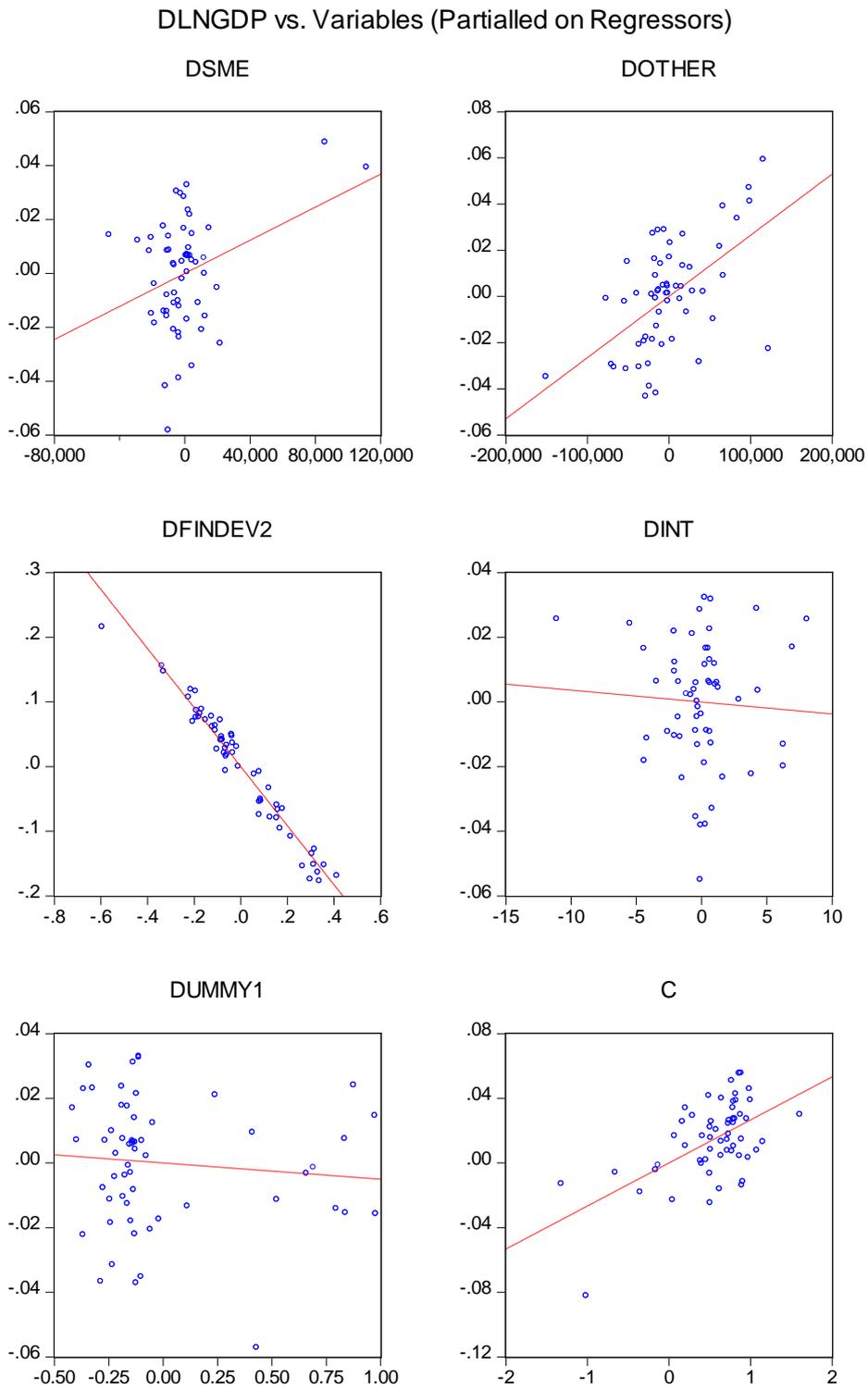
Variable	Description	Source
LnGDP	Gross National Product	TSI (Turkish Statistical Inst.)
SME	SME Loans	BRSA (Banking Regulation and Supervision Agency)
OTHER	Other Loans ( Total Cash Loans - SME Loans)	Derived from BRSA
FINDEV <sup>1</sup>	Financial Development Rate ( M2 / GDP )	Derived from TRCB (Turkey Republic Central Bank)
INT	Weighted Average Interest Rate for Bank's TL Commercial Loans	TRCB
DUMMY1	Dummy for Global Crisis and COVID-19 Pandemic	

A method is preferred, Robust Least Square Method S-Estimation; because of extreme conditions in the data period, such as Global Crisis and COVID-19 Pandemic and so there are many outliers in the serials (as seen below in the Leverage Plots and Influence Statistics). Therefore, a dummy is added to the Global Crisis and COVID-19 Pandemic model.

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<sup>1</sup> There are many financial development indicators (Kar and Pentecost, 2000: 6-8; Altıntaş and Ayriçay, 2010: 75) . Here it is preferred the rate of M2 / GDP. However, it can be seen another model uses an alternative financial development indicator ( Total Loans / GDP) in APPENDIX 1.

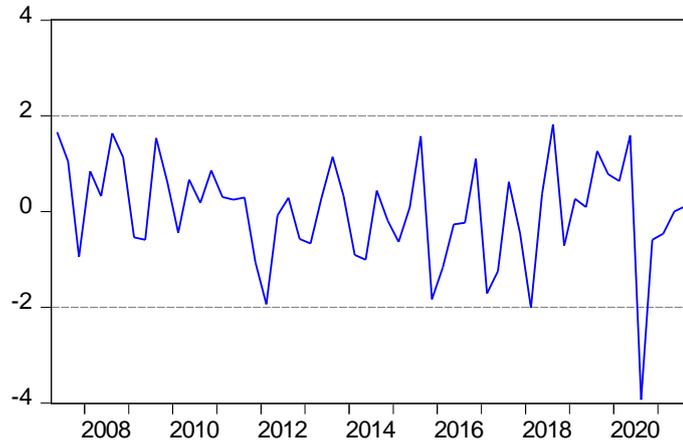
**Figure 1: Leverage Plots**



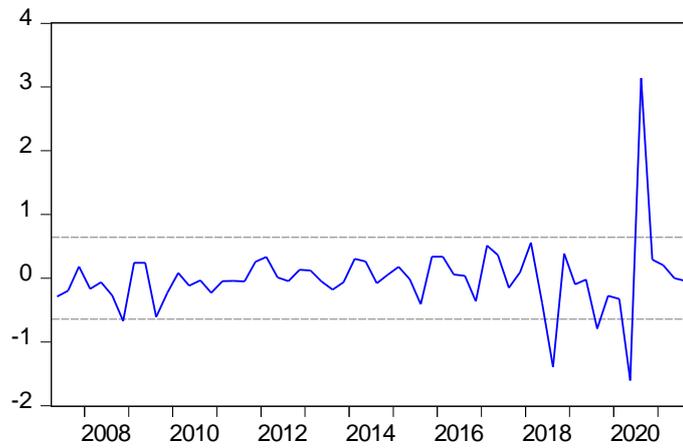
**Figure 2: Influence Statistics**

Influence Statistics

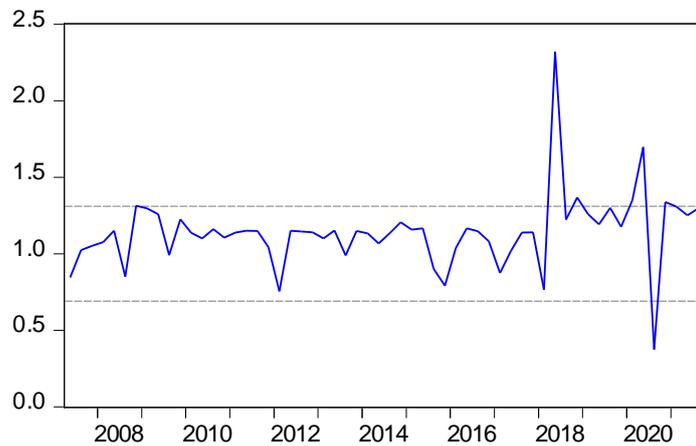
RStudent



DFFITS



COVRATIO



The Robust least squares refer to a variety of regression methods designed to be robust or less sensitive to outliers. EViews offers three different methods for robust least squares: M-estimation (Huber, 1973), S-estimation (Rousseeuw and Yohai, 1984), and MM-estimation (Yohai, 1987). These three methods differ in their emphases. While M-estimation addresses dependent variable outliers where the value of the dependent variable differs markedly from the regression model norm, S-estimation is a computationally intensive procedure focusing on outliers in the regressor variables. MM-estimation is a combination of S-estimation and M-estimation. The procedure starts by performing S-estimation and then uses the estimates obtained from S-estimation as the starting point for M-estimation. Since MM estimation combines the other two methods, it addresses outliers in the dependent and independent variables (Eviews).

Hence, it used Robust Least Square Method S-Estimation, and the model formulation produced is here:

$$DLNGDP = C(1)*DSME + C(2)*DOTHER + C(3)*DFINDEV2 + C(4)*DINT + C(5)*DUMMY1 + C(6)$$

#### 4. EMPIRICAL RESULTS

Firstly, it is necessary to explain the dependent variable is transformed logarithmically. The variables (serials) for unit root are tested by Augmented Dickey-Fuller Test (ADF) commonly used in the literature. As seen below in the summary results (Table 3), all variables are not stationary.

**Table 3:** Unit Root Test For Level

Serial	ADF(H0:has a unit root)		
	Test Sta (no Trend)	.05 critical value (no trend)	Stationary
LNGDP	2,83	-2,92	Not Sta.
SME	4,35	-2,92	Not Sta.
OTHER	4,67	-2,91	Not Sta.
INT	-2,42	-2,91	Not Sta.
FINDEV2	-2,58	-2,92	Not Sta.

Therefore, in the second stage, the unit root is tested for the first differences of serials, and finally, all of them are stationary, as seen below in Table 4.

**Table 4:** Unit Root Test For First Difference

Serial	ADF(H0:has a unit root)		
	Test Sta (no Trend)	.05 critical value (no trend)	Stationary
LNGDP	-3,1	-2,92	Stationary
SME	-5,81	-2,92	Stationary
OTHER	-2,98	-2,91	Stationary
INT	-7,39	-2,91	Stationary
FINDEV2	-3,68	-2,92	Stationary

Table 5 reports the summary of the Robust S-Estimation model findings. As seen below, the F statistic, in other words, the P value, showing whether the model is statistically meaningful or not, is 0,0, meaning that the model is collectively statistically meaningful. R-squared, showing the percentage of the variance in the dependent variable that the independent variables explain collectively, is 0,81 and the Adjusted R-squared is 0,79. It means that according to the R-squared value, the independent variables in the model can explain 81% of the variance in the dependent variable ( GDP ) that the independent variables explain collectively. According to the Adjusted R-squared, this percentage decreased by 79%, but again high enough. Higher R-squared values represent smaller differences between the observed data and the fitted values (Gujarati and Porter, 2009:73).

**Table 5:** Robust S-estimation Findings

Variable	Coefficient	Std. Error	z-Statistic	Prob.
DSME	3.75E-07	1.06E-07	3,538913	0,0004
DOTHER	4.40E-07	4.84E-08	9,08619	0
DFINDEV2	-0,492998	0,011745	-41,9762	0
DINT	-0,001937	0,000776	-2,49487	0,0126
DUMMY1	-0,016977	0,006188	-2,74358	0,0061
C	0,019908	0,003144	6,331324	0
R-squared	0,815906	Adjusted R-squared	0,798204	
Rn-squared statistic	1908,759	Prob(Rn-squared stat.)	0	

Firstly, as seen in Table 5, there is a positive and statistically meaningful relationship between SME loans and economic growth (DLNGDP). It indicates that the more SME loans, the more GDP will increase. This result is coherent with Tutar and Ünlüleblebici's (2014) findings and partially with Demirci's (2017) results. In addition, it supports some studies that found a positive correlation between SMEs and economic growth (Aris, 2007; Madanchian et al., 2015; Kandasamy et al., 2015; Cania et al., 2016; Myslimi et al., 2016; Gherghina et al., 2020). Secondly, in the same way, the relationship between GDP (DLNGDP) and other loans (DOTHER) also is positive and statistically meaningful. As remembered, "other loans" means total loans minus SME loans. Both the SME loans and other loans' positive relationship with GDP is coherent with some studies' results that there is a positive relationship between credit and growth (Çonkar et al., 2018<sup>1</sup>; Tandoğan and Özyurt, 2013<sup>2</sup>; Apaydın, 2018<sup>3</sup>). Thirdly, the financial development's (DFINDEV) relationship with GDP is also statistically meaningful but in a negative direction as it is argumentative the relationship between financial development and GDP in the literature (Özcan and Arı, 2011: 122, 124; Altıntaş and Ayriçay, 2010: 73-74, 76-80). In addition, it is necessary to stress that the result can change according to the best financial development indicators, especially for Turkey, as expressed in the literature (Aslan and Korap, 2006; Kar and Pentecost, 2000). However, as seen in the alternative model's output in APPENDIX1<sup>4</sup>, this result does not change when it is used different financial development indicators (Total loans / GDP). The alternative financial development's (DFINDEV1) relationship with GDP is also statistically meaningful but in a negative direction. Fourthly, a negative and statistically meaningful relationship exists between GDP and Credit Interest Rate (DINT). A high credit interest rate is a negative indicator for the economy, so when the Credit Interest Rate (DINT) increases, GDP decrease because of bad economic conditions. Finally, as expected, there is a negative and statistically meaningful relationship between GDP and the dummy variable. It means that Global Crisis and COVID-19 Pandemic negatively affect Turkey's GDP. Therefore, it is recommended that SMEs must be supported, especially in crisis times.

## 5. SUMMARY AND CONCLUSION

In this study, the author considered the relationship between SMEs loans and economic growth via the Robust Least Square Method S-Estimation by using the quarterly data between 2007-2021 on GDP, total SMEs loans in the banking sector in Turkey, other loans, Weighted Average Interest Rate

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<sup>1</sup> There are many studies considering the relationship between credits and growth. Çonkar et al. (2018) investigate the causality relationship between credits of deposit banks and participation banks in Turkey and economic growth by Granger causality analysis with the Toda-Yamamoto approach. According to their findings, there is a two-way causality relationship between deposit bank credits and gross domestic product and a one-way causality relationship between deposit bank credits and fixed capital formation.

<sup>2</sup> Tandoğan and Özyurt's (2013) study aims to reveal the relationships between the banking sector and sustainable economic development and economic growth in the case of Turkey's economy. Accordingly, the series of human development index (HDI), sustainable human development index (SHDI), and external debt sustainability were used to measure sustainable economic development. The Causality Test developed by Toda and Yamamoto (2005) was used to determine the relationships between these series. The findings reveal the linear relationships between the banking sector and sustainable economic development and economic growth. These empirical results suggest that the banking sector could be used as an effective tool to progress in economic growth and social and environmental fields.

<sup>3</sup> Apaydın's (2018) study examines the development and sectoral distribution of banking credits in Turkey after financial liberalization and the effects of loans on economic growth by the ARDL model by using Turkey's 2000-2016 period data. According to the findings, agriculture, industry, and services sector credits affect economic growth positively, while loans to the construction sector affect long-term economic growth negatively. Although the industrial sector's share in loans declined gradually, it was found to be the sector that increased the economic growth most.

<sup>4</sup> It can be seen the Unit Root Test Results of Alternative Model In APPENDIX2.

for Bank's TL Commercial Loans and financial development rate. The analysis results show a positive and statistically meaningful relationship between SME loans and economic growth. The relationship between GDP and other loans also is positive and statistically meaningful. However, the financial development's relationship with GDP is also statistically meaningful, with a negative direction even in the alternative model with a different financial development indicator in APPENDIX1. Thus, it is argumentative in the literature as well. While the negative relationship between the dummy variable and GDP shows that Global Crisis and COVID-19 Pandemic influenced the economy negatively, the positive relationship between GDP and SME loans shows that SMEs need to be supported more financially. It is useful and productive for the economy. Therefore, it is recommended some policies support SMEs in Turkey.

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**APPENDIX 1. Alternative Model (with trend)**

Dependent Variable: DLNGDP

Method: Robust Least Squares

Date: 03/19/22 Time: 14:06

Sample (adjusted): 2007Q2 2021Q3

Included observations: 58 after adjustments

Method: S-estimation

S settings: tuning=1.547645, breakdown=0.5, trials=200, subsmpl=6,  
 refine=2, compare=5

Random number generator: rng=kn, seed=1130468227

Huber Type I Standard Errors & Covariance

Variable	Coefficient	Std. Error	z-Statistic	Prob.
DSME	4.20E-07	5.67E-08	7.396766	0.0000
DOTHER	5.03E-07	2.41E-08	20.82790	0.0000
INT	-0.001728	0.000237	-7.275803	0.0000
DFINDEV1	-0.404624	0.005554	-72.85774	0.0000
DUMMY1	-0.041830	0.003216	-13.00641	0.0000
C	0.036631	0.003915	9.355627	0.0000

Robust Statistics

R-squared	0.829949	Adjusted R-squared	0.813598
Scale	0.015989	Deviance	0.000256
Rn-squared statistic	5876.080	Prob(Rn-squared stat.)	0.000000

Non-robust Statistics

Mean dependent var	0.039979	S.D. dependent var	0.096367
S.E. of regression	0.031022	Sum squared resid	0.050044

## APPENDIX 2. Unit Root Test Results of Alternative Model

Null Hypothesis: Unit root (individual unit root process)

Series: LNGSYH, SME, OTHER, INT, FINDEV1

Date: 03/19/22 Time: 15:24

Sample: 2007Q1 2021Q3

Exogenous variables: Individual effects, individual linear trends

Automatic selection of maximum lags

Automatic lag length selection based on SIC: 0 to 7

Total number of observations: 267

Cross-sections included: 5

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Method	Statistic	Prob.**
ADF - Fisher Chi-square	7.95961	0.6328
ADF - Choi Z-stat	3.24667	0.9994

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\*\* Probabilities for Fisher tests are computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality.

### Intermediate ADF test results UNTITLED

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Series	Prob.	Lag	Max Lag	Obs
LNGSYH	0.7669	7	10	51
SME	0.9872	6	10	52
OTHER	0.9998	0	10	58
INT	0.0248	3	10	55
FINDEV1	0.9970	7	10	51

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Null Hypothesis: Unit root (individual unit root process)

Series: LNGSYH, SME, OTHER, INT, FINDEV1

Date: 03/19/22 Time: 15:25

Sample: 2007Q1 2021Q3

Exogenous variables: Individual effects, individual linear trends

Automatic selection of maximum lags

Automatic lag length selection based on SIC: 0 to 6

Total number of observations: 268

Cross-sections included: 5

---

Method	Statistic	Prob.**
ADF - Fisher Chi-square	127.659	0.0000
ADF - Choi Z-stat	-9.91972	0.0000

---

\*\* Probabilities for Fisher tests are computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality.

Intermediate ADF test results D(UNTITLED)

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Series	Prob.	Lag	Max Lag	Obs
D(LNGSYH)	0.0019	6	10	51
D(SME)	0.0000	5	10	52
D(OTHER)	0.0000	0	10	57
D(INT)	0.0000	0	10	57
D(FINDEV1)	0.0001	6	10	51

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