





Analysis of Variables Affecting Municipal Borrowing with Quantile Regression in Turkey*

Halil SERBES¹ , Mine AYDEMİR² , Özhan ÇETİNKAYA³ , Nuran Bayram ARLI⁴ 

ABSTRACT

The present study aimed to determine the variables that affect municipal borrowing in Turkey and analyze them using the quantile regression. In this analysis, municipal debt was analyzed for five quantiles (10th, 25th, 50th, 75th ve 90th), and it was observed that various variables explained the debt in different quantiles. Some variables are significant in all quantiles and could explain the municipal debt, while certain variables were not significant in various quantiles. The findings show that per capita budget expenditure has a significant and positively correlated per capita municipal debt in all five quantiles; expenditure commitment rate in four, and non-interest fiscal capacity rate in the first two quantiles. Per capita tax revenue variable was also significant and negatively correlated with per capita municipal debt in all five borrowing groups. However, population and per capita capital expenditure variables were found insignificant in almost five quantiles. The present study demonstrated that the proposals and policies developed on the municipal debt could have different determinants for municipalities with varying levels of debt.

Key Words: Municipality, Borrowing, Fiscal Determinants, Quantile Regression, Turkey.

JEL Classification Codes: C21, H72, H74.

1. INTRODUCTION

Debt stocks of local governments in Turkey have increased significantly, especially in the last thirty years. Municipalities are the primary type of local government in which the debt stock increases. The duties and responsibilities of municipalities have expanded depending on the regulations aimed at strengthening decentralization (Martinez-Vazquez et al., 2016: 1096; Ataay and Güney, 2004: 133; Ministry of Development, 2014: 14-16). Thus, operational expenditures (personnel, purchase of goods and services, interest expenditures) and investment expenditures of municipalities have increased. However, the regulations made to increase revenues were inadequate to finance expenditures in the same period. In addition, it has been determined that the revenue structure of the municipalities triggers an increase in their expenditures (Sağbaş and Saruç, 2004; Acar, 2019; Yaş and Akduğan, 2015). Thus, financing of the budget deficits by borrowing increased the debt stock of municipalities (Çetinkaya, 2020: 194; NALAS, 2011: 29-30). On the other hand, because of providing

intergenerational benefits and not financing all of them from the current year's budget, they also financed their investments (Swianiewicz, 2004: 5-6; Miller and Hildreth, 2007: 110). In addition to the two reasons, the inefficient and ineffective management approach has also increased the debt stock of municipalities (Kurtuluş, 2006: 11).

The debt stock of municipalities consists of loans to domestic or foreign financial institutions and organizations and other liabilities in Turkey. Due to the financing problems they had in the past, the debt stocks of the municipalities were either cancelling or assumed by the Treasury (Falay, 1997: 8; Sakal, 2003: 127). Today, the increase in overdue liabilities and budget escrows, which are among the other liabilities of municipalities, is remarkable. In particular, municipalities delay the payment of the goods and services they purchase from the market by recording them in their escrow accounts because there is not enough revenue in the budget provides an idea regarding their fiscal problems (Eroğlu and Tunç, 2018: 45). These financing problems are

¹ Bursa Uludağ University Faculty of Economics and Administrative Sciences, Department of Public Finance, hserbes@uludag.edu.tr.

² Bursa Uludağ University, Faculty of Economics and Administrative Sciences, Department of Econometrics, mineaydemir@uludag.edu.tr

³ Bursa Uludağ University, Faculty of Economics and Administrative Sciences, Department of Public Finance, ozhanc@uludag.edu.tr

⁴ Bursa Uludağ University, Faculty of Economics and Administrative Sciences, Department of Econometrics, nuranb@uludag.edu.tr

* This paper was produced from the thesis titled Explanatory Factors of Borrowing at the Local Level in Turkey: A Panel Data Analysis on Metropolitan Municipalities which was written by Res. Assist. Dr. Halil Serbes under the consultancy Prof. Dr. Özhan Çetinkaya.

significant for municipalities and the central government as they disrupt the fiscal discipline in the public sector and create macroeconomic instability (Ter-Minassian, 2007: 2-3; Demirbaş, 2015: 6-7). For this reason, it is necessary to determine the factors affecting the borrowing of municipalities in Turkey, taking into account the examples of local governments that went into fiscal crisis due to financial problems (O'Connor, 2009; Honadle et al., 2004; Nacar, 2005). Studies have been conducted to evaluate the reasons for borrowing, types and development of municipalities in Turkey. However, there is no empirical study analyzing the factors that determine the borrowing of municipalities. Thus, this study aims to analyze the factors that determine the borrowing of municipalities in Turkey. With the findings to be obtained, it is thought that helpful information will be presented to the decision-makers, citizens and investors.

In the literature, it has been determined that there are fiscal, economic, demographic, political and institutional factors impacting the borrowing of municipalities or local governments in different countries (USA, Spain, New Zealand, Switzerland, Chile, etc.). The scope of the study is limited to testing the effects of fiscal factors on borrowing. In addition, the population was also included in the analysis as a demographic variable. This analysis was carried out using OLS regression and quantile regression methods. The analysis employed the OLS regression method; it was determined that the debt stock increased as the municipalities' budget expenditures and rigid expenditures increased, and the fiscal capacity ratio decreased. On the contrary, it was determined that the increase in tax expenditures decreased the debt stock. In the quantile regression method, it has been concluded that the effects of these variables change as the debt stock levels differ.

The study includes seven sections. After the introduction, where the study's aim, significance, and methodology were described, the municipal revenues, expenditures, and borrowing in Turkey are introduced in the second section. The third section includes the definition of variables affecting borrowing based on the literature on municipal borrowing. The fourth section describes the methodology. In the fifth section, the dataset and the correlation between the dependent and independent variables are addressed. The sixth section is devoted to the findings and discussion. The final section includes evaluations and recommendations.

2. STRUCTURE OF MUNICIPAL BORROWING IN TURKEY

Due to the principle of the administration's integrity, Turkey is governed by a unitary state structure. Based on this, the public authority is divided between the central government and local governments. Local governments comprise municipalities, provincial administrations, and villages (Constitution, 1982: 123, 127). Municipalities are the most important administrative and fiscal components in this structure.

In the 2020 Local Administrations Annual Report, the total number of municipalities is 1390. Thirty of them are metropolitan municipalities, 51 of which are provincial municipalities, 519 of which are metropolitan district municipalities, 403 of which are district municipalities, and 387 are township municipalities. Although there are a relatively small number of urban municipalities, 77.43% of the population live in areas served by these municipalities (Ministry of Environment and Urbanization, 2021: 27). Some services that municipalities are responsible for can be listed as follows: the development of master plans; implementation, planning, and coordination of transportation and infrastructure services; construction of parks and green spaces; forestation; supporting cultural and sportive activities; providing services for women, the disabled, children and the elderly; preservation of the historical and natural urban texture. The responsibility is distributed among the metropolitan, provincial, and district municipalities within the administrative structure based on the geographical borders (Law No. 5393 Article. 14; Law No. 5216 Articles. 7,8,9).

The municipalities should have adequate revenues to provide services. Notable improvements have been experienced in the transfers from general budget taxes and the own revenues of municipalities since 1980 in Turkey. The changes in regulations have allowed the municipalities to increase their revenues.

Municipal revenues include taxes, fees, expense shares, transfers from general budget taxes, interest and penalty revenues, grants, property and enterprise revenues, and borrowing. Municipalities finance the expenditures required for the services mentioned above with their revenues (Law No. 2464 Article. 59). Although the expenditures are primarily financed with ordinary revenues such as taxes, fees and shares, borrowing has become substantial revenue for municipalities. Due to the diversification of their responsibilities in the process of decentralization, municipal expenditures have increased. However, the same increase has not been observed in

municipal revenues. In developing countries such as Turkey, borrowing requirements have increased due to financing infrastructure investments and balancing revenues and expenditures (Kurtuluş, 2006: 2). However, municipalities are not entirely released on borrowing. The central government enforces fiscal regulations on spending and borrowing, citing fiscal discipline and sustainability factors.

The rule on expenditures aims to reduce the share of municipalities' personnel expenditures in the budget. Within the scope of this rule, it has been determined that the total amount of personnel expenditures will not exceed thirty per cent of the amount to be obtained as a result of multiplying the budget revenues of the last year with the revaluation coefficient, and forty per cent of the municipalities whose population is below 10,000 (Law No. 5393 Article. 49). This rule is essential for providing budget flexibility. Besides, it has implemented rules on the internal and external debt stock of the municipalities. Based on this, it has been determined that the debt stock of the municipalities, affiliates, and corporations where the municipality owns more than fifty per cent of their capital cannot exceed the last amount of budget revenues multiplied by the revaluation rate, and the same limit is also multiplied by 1.5 for the metropolitan municipalities. Thus, the total debt stock has been associated with revenues for fiscal discipline (Yıldırım, 2010: 104; Bali, 2006: 165). However, borrowing for infrastructure investments approved by the Republic of Turkey's Presidency and requiring substantial technological resources has been excluded. Furthermore, the domestic borrowing that does not exceed ten per cent of the calculated amount approves by the municipal council while exceeding ten per cent approves by both the municipal council majority and the Ministry of Environment and Urbanization (Law No. 5393 Article. 68). On the other hand, municipalities can borrow externally only to finance investment projects. Lastly, it has been decided that the Treasury cannot provide any guarantees for public or private sector domestic borrowing. Municipalities are also included in the provision mentioned above (Law No. 4749 Article. 8; Demirbaş, 2015: 23-24).

In Turkey, domestic borrowing is possible from commercial banks, İller Bankası A.Ş. (İLBANK), and bonds for municipalities. The borrowing from commercial banks should be conducted based on the fiscal rule outlined in Article 68 of Municipal Law No. 5393. Municipalities must offer their payment plan to İLBANK to borrow. If this plan is accepted, they can borrow investment loans or

cash loans. Borrowing by issuing bonds is also required in investment project financing, and it should be approved by the Ministry of Treasury and Finance (MTF). The municipalities can also borrow from international organizations or banks (Çetinkaya, 2020: 194-195). The debts from bank loans are a significant part of total borrowing. In addition to bank loans, internal financing occurs when municipalities fail to fulfil their obligations to creditor public institutions and organizations, which is considered borrowing (Kurtuluş, 2006: 9). Financial liabilities to public administrations, operating debts, tax and social security debts are considered internal financing resources. Details of these borrowing are available in the balance sheets published by the MTF and the Local Governments General Activity Reports (LGGAR) (Serbes and Çetinkaya, 2019: 761).

3. DETERMINANTS OF MUNICIPAL BORROWING

The variables affecting municipal borrowing are classified as fiscal (financial), socioeconomic, and political factors in the literature. These variables were analyzed under three categories by Cropf and Wendel (1998), Benito and Bastida (2004) and Balaguer-Coll et al. (2016), and under four categories by Bellot et al. (2017). On the other hand, Ehalaiye et al. (2017) analyzed with only financial variables.

Cropf and Wendel (1998) analyzed the correlation between municipal debt policy and political, socioeconomic, and fiscal attributes. In this context, debt limits, functional responsibility, referenda on general obligations bond issues, reformism, and tax and expenditure limits were used as political attributes. Socioeconomic and fiscal attributes included pre-1939 housing stock, population density, federal grants, sunbelt, and tax reform act. Benito and Bastida (2004) analyzed the impact of financial, socioeconomic, and political variables on municipal borrowing policies. Capital expenditures, capital revenues, independence ratio, and non-financial surplus or deficit were employed as financial variables. Socioeconomic and political variables included coastal or non-coastal municipality, economic level, and population. The political ideology variable was also included among socioeconomic factors. Balaguer-Coll et al. (2016) investigated the correlation between local government debt and financial (fiscal), socioeconomic, and political variables. Capital expenditures, net savings, the ratio of non-financial deficit to non-financial surplus, own fiscal capacity, and expenditure commitment were determined as fiscal variables. The level of tourism, level of economic activity, and population density were determined as

socioeconomic variables. Political variables included the color of the municipality government party, foral regions, and decentralization.

Bellot et al. (2017) investigated the variables explaining local government borrowing in six European nations. These variables were analyzed in four groups: political, demographic and size, budgetary, and economical. On the other hand, tax rules and structural change indicators were also included as dummy variables. The employed political variables included majority in parliament, political affiliation, election year, and regional parties supporting the central government. Demographic and size variables were determined by the annual population growth rate, population density ratio of 64 to the total population, population density, the ratio of regional population to the total population, and city-states. Budgetary variables included the percentage of tax revenue over operative revenue, the ratio of the sum of staff expenditures and purchases to total expenditures, the ratio relating operative expenditures to total expenditures, the ratio relating primary operating balance to operative revenue, capital expenditures, the golden rule, operative revenue in constant Euros per capita, total regional financing, and the real per capita financing to the average of the regions. Lastly, the economic variables included the annual GDP growth rate, GDP per capita of each region in PPP, and the ratio for regional GDP per capita to the national GDP.

Ehalaiye et al. (2017) analyzed financial (fiscal) determinants of local government debt. Capital expenditures and investment in infrastructural assets, rates revenues, net surplus, other assets apart from infrastructural assets, and other income generated apart from rates revenues were employed as fiscal variables. Also, the type of council and global financial crisis is defined as the control variable and dummy variable, respectively.

Brusca and Labrador (1998), Brusca and Condor (2001), and Balaguer (2001) also investigated the variables affecting municipal borrowing. In these studies, variables such as the number of inhabitants, the annual revenues per inhabitant, the annual expenditures per inhabitant, the net operating balance, the gross operating balance, budgetary surplus per inhabitant, and capital expenditures were employed (as cited in Benito and Bastida 2004: 500).

The studies mentioned above demonstrate different perspectives on the analysis of the variables affecting municipal debt. In the study, only fiscal and population

variables were included in the analysis due to inadequate data and lack of standard data for all municipalities. Based on the variables employed in the literature, budget expenditure per capita, expenditure commitment rate, non-interest fiscal capacity rate, per capita tax revenues, and per capita capital expenditures were accepted as fiscal variables. At the same time, the population was determined as the demographic variable.

4. ESTIMATION METHODS

The quantile regression method was employed to estimate the models in the study. This method was chosen because it is thought to provide a different perspective on determining explanatory variables affecting the borrowing of municipalities with different debt levels. Classical regression OLS estimates were also reported to compare the findings. Quantile regression analysis was developed by Koenker and Bassett (1978). The quantile regression method is used to predict conditional quantile functions. It allows the investigation of the effects of the estimates produced for each quantile. OLS method employed in classical regression investigates the mean conditional distribution. In contrast, quantile regression allows the investigation of all conditional distributions for different quantiles. Since different quantiles are examined, it allows a more holistic analysis of the distribution. The estimated regression coefficients in a quantile can be compared to the regression coefficients in another quantile, allowing the determination of similarities and differences (Koenker and Hallock, 2001: 143).

The quantile regression models provide more detailed information than the classical regression models. In quantile regression analysis, unlike OLS, there is no assumption about the homogeneity of error variance and the distribution of errors, and it appears to be a more flexible approach than the linear regression model (Topaloğlu and Ege, 2021: 415).

In the quantile regression analysis, the Q demonstrates the quantile regression function. When x is known, the function of the conditional distribution of y in p . quantile can be expressed with Equation 1.

$$Q^{(p)}(y_i|x_i) = \beta_0^{(p)} + \beta_1^{(p)} x_i$$

The quantile regression analysis has been developed to estimate functional correlations between any quantile and independent variables in the distribution of the dependent variable. Also, the quantile regression

Table 1: Population Sizes (PS) and Debt Stocks of Municipalities

Population Sizes	Number of municipalities	Total Population	%	Debt (TL)	%
5.000-10.000	1	6.048	0.006	23.998.951	0.03
10.001-20.000	2	27.156	0.028	46.280.572	0.06
20.001-50.000	8	307.744	0.321	353.160.596	0.47
50.001-100.000	18	1.412.025	1.473	1.125.905.263	1.49
100.001-500.000	71	18.869.798	19.690	8.191.333.790	10.82
500.001-1.000.000	27	19.169.531	20.003	8.198.279.031	10.83
1.000.001-5.000.000	20	35.568.224	37.114	32.800.120.227	43.32
PS > 5.000.001	2	20.474.257	21.364	24.981.875.558	32.99
Total	149	95.834.783	100	75.720.953.988	100

functions allow the prediction of the marginal effects of the distribution of the dependent variable in different quantiles (Koenker and Hallock, 2001: 143; Tan and Wang, 2017: 312; Kiliç and Dilber, 2017: 335).

The 10th, 25th, 50th, 75th, and 90th quantiles have been used to investigate the study's per capita municipal debt variable. The study aims to determine the points where the borrowing level is very low, low, medium, high, and very high; in other words, all distribution regions have five quantiles.

5. DATASET AND DEFINITIONS OF THE VARIABLES

5.1 Assignment of the Sample

The study's sample includes metropolitan, provincial, and district municipalities, for which data are available in the Public Administrations Reports published by the Turkish Court of Accounts (TCA). The data used in the analysis are cross-sectional data for 2017. This sample involves N=149 municipalities. The population of the municipalities included in the sample is 5000 or above. Population sizes and debts of the 149 municipalities included in the analysis are given in the Table 1.

When Table 1 is examined, the first column shows the population sizes, the second column shows how many municipalities with this population size, the total population of these municipalities shows in the third column, the ratio in the whole population shows in the fourth column, and the total debt of the municipalities with that population size shows in the fifth column and the last column shows the ratio of this debt to all municipal debts.

The municipalities with the largest population are in the 1-5 million population range. The total debt of 20 municipalities in this range constitutes 43.32% of all

municipalities' debts. The total debt of two municipalities with populations of more than 5 million (Istanbul and Ankara) constitutes 32.99% of the total debt of all municipalities.

When the amount of debt per capita, calculated by dividing the total debts of municipalities by their population, is examined for 149 municipalities, it is calculated that the minimum debt per capita is 29.14 TL, and the maximum debt per person is 3968.08 TL. The average calculated for the debt per person was found to be 644.51 TL (± 635.92). Since the Skewness (2.51) and Kurtosis (8.80) values were also examined, it was determined that the debt per capita variable was not normally distributed.

5.2 Definitions of the Variables

Per capita budget expenditure is the first variable to explain municipal debt stock. The total budget expenditure of each municipality is divided by the population to calculate this variable. The increase in the expenditures of the municipalities have been associated with the expansion of their duties and responsibilities (Kurtuluş, 2006: 4-8), the decision of the executives regarding investments or other areas by considering their political concerns (Çetinkaya and Demirbaş, 2004: 19-20), the failure to pay the goods and services purchased from the market on time (Serbes and Çetinkaya, 2019: 793-794). In addition, it has been determined that the current revenue structures of the municipalities are triggering an increase in expenditures. It has been determined that as the grants of the municipalities from the general budget increase, their expenditures increase at a greater rate (Sağbaşı and Saruç, 2004: 79; Acar, 2019: 66). This increase disrupted the fiscal structure of municipalities and raised their need for borrowing. Previous studies reported a correlation between municipal borrowing and budget

expenditures. Brusca and Labrador (1998) employed this variable and suggested that the increase in annual budget expenditures per capita expanded municipal borrowing (as cited in Benito and Bastida, 2004: 500). A positive correlation is expected between per capita municipal debt and per capita budget expenditures within this study's scope.

Per capita capital expenditure calculated by dividing the population's municipal capital (investment) expenditures is the second variable to explain municipal debt stock. Investment expenditures, which are one of the two essential components of the budget expenditures of municipalities in Turkey, have increased due to the investment need created by the rapid population growth, especially in metropolitan municipalities (Güler, 1997: 43-44; Şengül, 2009: 201). This need has been widely financed by bank loans from the 1980s (Eroğlu and Tunç, 2018: 43). Thus, it can be argued that there is a correlation between municipal borrowing and capital expenditures in Turkey. Cropf and Wendel (1998), Benito and Bastida (2004), Balaguer-Coll et al. (2016), Ehalaiye et al. (2017) and Bellot et al. (2017) analyzed the correlation between capital spending and municipal debt. In each study, it was assumed that the increase in capital spending increased municipal debt. Accordingly, a positive correlation is expected between municipal debt and capital expenditures.

Expenditure commitment rate calculated with the ratio of total rigid expenditures to budget expenditures is the third variable explaining municipal debt stock. It is stated that expenditures that are obligatory to be paid because they are based on institutional or legal regulations and that are not preferred to be reduced due to political reasons are of a rigid attribute (IFS, 2017: 1; Munoz and Olaberria, 2019: 3). Personnel expenditures, transfers to social security institutions, expenditures for health goods and services, fiscal transfers to local governments, assistance to public economic enterprises, or interest expenditures are considered rigid expenditures (IMF 2014: 11; IMF 2013: 24). Personnel expenditures, state premium expenditures for social security institutions and interest expenditures are among the rigid expenditures of municipalities. Çebi (2015: 4) emphasized that these rigid expenditures could grow public debt stock and the borrowing costs, increasing the total expenditures permanently. This variable was employed by Balaguer-Coll et al. (2016). Similarly, Bellot et al. (2017) used the ratio of staff expenditures and purchases to the total expenditures variable. A positive correlation was estimated between the variable used in both studies and municipal debts.

The non-interest fiscal capacity rate calculated with the ratio of budget expenditures to non-interest budget revenues is the fourth variable affecting municipal debt stock. This variable represents the primary budget balance given by each municipality in a fiscal year. Pinar (2015: 126) and Tokatlıoğlu and Selen (2017: 164) described the primary budget balance as an indicator that reflects whether budget revenues could finance non-interest public spending. Based on this definition, it is known that municipalities will reduce their debt stock by running a budget surplus. However, despite the increase in their expenditures to compensate for the decrease in the liveability of the cities and the welfare of the citizens due to the rapid and unplanned increasing population (Falay, 1995: 13-24; Gül, 2009: 97-98), the budget deficits of the municipalities have gained continuity because of the insufficient tax revenues and the inability to collect all the accrued taxes (Arikboğa, 2016: 292-293; Yılmaz and Bağlı, 2011; Ökmen and Koç, 2015: 562). Benito and Bastida (2004) and Balaguer-Coll et al. (2016) used this variable in their studies. They concluded that the higher the ratio, the higher the borrowing. Thus, we estimated that municipal borrowing would increase as the rate increases.

Per capita tax revenue calculated by dividing the municipal tax revenues by the population is the fifth variable explaining municipal stock. It has been stated that, especially in countries with high dependence on fiscal transfers, the efforts of the administrators to collect taxes will decrease, and moral hazard will arise (Letelier, 2011: 396; De Mello, 2000: 375). Thus, the high dependency of municipalities on fiscal transfers has revealed that they increase their expenditures more than their revenues (Yaş and Akduğan, 2015: 64). This result can also be associated with the common pool problem (De Mello, 2000: 375). Also, the high fiscal dependency and the lack of taxation powers have led to a low ratio of tax revenues to budget revenues (Ulusoy and Akdemir, 2009: 281-282; Eroğlu and Serbes, 2018: 96-97). Benito and Bastida (2004) and Balaguer-Coll et al. (2016) employed the rate of tax revenues to total revenues. Benito and Bastida (2004) predicted that municipal debt would decrease as tax revenues increase. However, Balaguer-Coll et al. (2016) assumed that the direction of the correlation could be both positive and negative. The municipal debt could decrease as tax revenues increase, while the increase in municipal revenues could reduce the fiscal risk and facilitate access to loans. In the study, it is assumed that municipal borrowing will decrease as the tax revenues increase.

Table 2: Definition of Variables

Variable	Definition	Transform	Expected Sign
Dependent Variable			
Per capita municipal debt stock	Municipal debt stock/ Population	Logarithmic	
Independent Variables			
Per capita budget expenditure	Budget expenditures/ Population	Logarithmic	+
Per capita capital expenditure	Capital expenditures/ Population	Logarithmic	+
Expenditure commitment rate	Rigid expenditures/ Budget expenditures	Rate	+
Non-interest fiscal capacity rate	Non-interest budget expenditure/Non-interest budget revenues	Rate	+
Per capita tax revenue	Tax revenues/ Population	Logarithmic	-
Population	Population living within the municipal boundaries	Logarithmic	+/-

The last variable employed to explain municipal debt stock is population. This variable has been employed with different forms such as the population density (Cropf and Wendel, 1998; Balaguer-Coll et al., 2016); the population in different groups (Benito and Bastida, 2004); annual population growth rate, population over 64 years, and population density (Bellot et al., 2017). Cropf and Wendel (1998) determined a significant and positive relationship in one of the two models they established between borrowing and the population and that the relationship between these variables was insignificant in the other. Balaguer-Coll et al. (2016) concluded that as the population density increased, municipal debt was expected to decrease (negative correlation). Bellot et al. (2017), the direction of the correlations between these variables and municipal debt varied by country. Based on previous studies, it has been assumed that the correlation between municipal borrowing and population is uncertain in Turkey. An essential part of the overall budget, which has the highest share of municipal resources' revenue share, is distributed according to Turkey's population. Thus, population growth can decrease municipal borrowing requirements by increasing the municipal revenues. Therefore, a negative correlation can arise between municipal debt and the population. However, the increasing urban population, new investments, and extended public services to preserve the quality of life can increase the borrowing requirements by triggering expansion in spending. Thus,

a positive correlation can be assumed between municipal borrowing and the population.

The dependent variable of this study is per capita municipal debt stock. The variable was calculated by proportioning the municipalities' total debt to their population and used by taking the logarithm. The definitions of all variables, the conversions, and the direction of the expected correlation between the dependent and independent variables are explained in Table 2.

The correlation coefficient was used to examine the relationships between the variables. The correlation coefficients calculated for the variables used in the study are summarized in Table 3.

When the correlation coefficients between the variables were examined, it was seen that there were no highly correlated variables.

6. FINDINGS AND DISCUSSION

Two methods were employed to estimate the correlations between the dependent variable and independent variables. The first method was the classical regression, and the second was quantile regression. The method compatible with the study's aim is the quantile regression, which investigates the significance of the variables at various municipal debt levels. Therefore, a variable not significant in the classical regression estimate

Table 3: Correlation Coefficients

	1	2	3	4	5	6
1. Per capita municipal debt	-					
2. Per capita budget expenditure	.664**	-				
3. Per capita capital expenditure	.220*	.528**	-			
4. Expenditure commitment rate	.145	-.150	-.641**	-		
5. Non-interest fiscal capacity rate	.313**	.363**	.422**	-.318**	-	
6. Per capita tax revenue	.114	.426**	-.110	.200*	-.024	-
7. Population	-.164*	-.208*	.361*	-.625**	.095	-.535**

*p<.05; ** p<.01

Table 4: OLS Regression Estimates for Municipalities' Debt Stock

	Estimate	Std. Error	t value	p
Intercept	-2.13**	0.57	-3.72	0.000
Per capita budget expenditure	1.69**	0.15	10.81	0.000
Per capita capital expenditure	-0.15	0.08	-1.76	0.080
Expenditure commitment rate	1.29**	0.34	3.73	0.000
Non-interest fiscal capacity rate	0.35*	0.14	2.40	0.017
Per capita tax revenue	-0.22**	0.05	-4.21	0.000
Population	0.015	0.06	0.23	0.811

*p<.05; ** p<.01

can be found significant in the quantile regression model using different quantiles. OLS regression estimates are presented in Table 4 in detail.

In OLS estimates, it was concluded that the *per capita budget expenditure* and *expenditure commitment rate* was statistically significant at 1%. The correlation between these variables and per capita municipal debt stock were positive, consistent with the expectations. The positive correlation reflects that an increase in *per capita budget expenditure* and *expenditure commitment rate* will increase per capita municipal debt. The *non-interest fiscal capacity rate* was statistically significant at the 5% significance. Also, the correlation between the variable and per capita municipal debt stock were positive, consistent with the expectations. The positive correlation reflects that an increase in non-interest fiscal capacity rate will increase per capita municipal debt. *Per capita tax revenue* was also statistically significant at 1%. In contrast, the correlation between per capita tax revenue and per capita municipal debt was negative as expected. Accordingly, it can be stated that per capita municipal debt reduces as per capita tax revenue increases. The

per capita capital expenditure and *population* variables were not found statistically significant based on OLS estimation findings.

Quantile regression estimates are presented in Table 5 in detail.

In the quantile regression model, it was observed that the *per capita budget expenditure* was significant in all five quantiles and positively correlated with per capita municipal debt. These findings revealed that per capita budget expenditure could be a significant variable to explain municipal borrowing. It could also be enounced that the findings reported by Brusca and Labrador (1998) were confirmed for Turkish municipalities. Two factors can explain the fact that per capita budget expenditure is a determinant variable for all Turkish municipalities with various debt levels. Firstly, it can be stated that the fiscal dependence of all metropolitan, provincial, and district municipalities in Turkey on the central government is effective. The main fiscal indicator reflecting the municipalities' dependence is the ratio of transfers from general budget shares to total

Table 5: Quantile Regression Estimates for Municipalities' Debt Stock

	Quantile regression				
	0.10	0.25	0.50	0.75	0.90
Intercept	-3.12*	-2.17**	-1.71**	-1.46*	-0.45
Per capita budget expenditure	1.65**	1.63**	1.60**	1.62**	1.57**
Per capita capital expenditure	-0.28	-0.19*	-0.10	-0.02	-0.04
Expenditure commitment rate	1.78**	1.31**	1.10**	1.50**	1.15
Non-interest fiscal capacity rate	0.84**	0.64**	0.13	-0.03	-0.36
Per capita tax revenue	-0.26*	-0.23**	-0.17**	-0.21**	-0.24**
Population	0.11	-0.01	0.03	-0.02	-0.05

*p<.05; ** p<.01

budget revenues. This rate was 72.1% in metropolitan municipalities, 54.1% in provincial municipalities, and 40.7% in district municipalities in 2017 (Ministry of Environment and Urbanization, 2019: 120). Thus, it can be stated that dependence on the central government raises municipal spending and thereby increasing the borrowing requirement (Sağbaşı and Saruç, 2004: 89; Yaş and Akduğan, 2015: 64-65; Acar, 2019: 67). Due to the high fiscal dependency, it can be interpreted that municipalities consider the liberating role of the central government and postpone reducing their spending and borrowing tendencies by paying less attention to their financial situation (Letelier, 2011: 397). The second factor can be stated that the principle of the economical use of public resources is not yet adequately established in the municipalities. Municipal procurements are considered as one of the concrete examples of the wasteful use of resources. In procurement processes, the relations between the municipalities and their companies have led to controversies. Meşe (2011: 210-211) argued that these companies got most of the procurements, especially for services such as cleaning, parks, road construction, and security. It is considered that the companies receive the procurements organized by the municipalities, and the resources remain in the municipality, leading to prudence. However, İlhan (2013: 19-22) argued that awarding the tenders to companies would not be adequate to determine prudence. He employed two instruments indicating whether the costs changed when a service was awarded to a municipal company or a private company. These instruments were the price advantage rate and the fiscal year profit or loss of the companies. The price advantage ratio reflects how much the contract price held is below the cost estimating calculated by the administration. With the calculation

made for 2008 and 2009, it was concluded that private companies performed the services at a lower cost than municipal ones. Furthermore, it was reported that the municipal corporations' total losses were higher than their total profits during the years mentioned above. Thus, it can be enounced that awarding the procurements to the municipal companies does not lead to the economical use of municipal resources. On the other hand, the implementation of the employment policy through companies can increase the waste of public resources. The number of permanent employees in public institutions and organizations has been reduced with the public personnel reform in Turkey. This decline was reflected in the municipalities with the implementation of personnel employment as a provision to the extent required by their responsibilities. Furthermore, a fiscal rule adopted an upper limit for personnel expenditures in the budget have been enforced. However, since the restrictions mentioned above do not apply to municipal companies, municipalities utilize these companies for employment needs. Thus, it was stated that it would be difficult to determine the number and cost of municipal and company personnel. Although the number of permanent personnel decreased after the public personnel reform, it was estimated that the de facto personnel expenditures of the municipalities have increased due to the employment of additional personnel in companies. Thus, it can be stated that the municipal spending principle's prudence was not observed in the utilization of municipal resources (Meşe, 2011: 207-209; Karahanoğulları, 1998: 283-284). Avoidance of the municipalities to pay for the services procured from the private sector due to the lack of resources may also be a detriment to the principle of prudence in resource utilization. Thus, companies can determine the services'

contract price above current market prices since they think they will not receive payments on time. Similarly, the prudence principle is breached due to the allocation of more resources than the budgeted amount for a service. The ratio of the escrow liabilities to the liabilities of local governments in Turkey was realized as 17.2% in 2017 (Ministry of Internal Affairs, 2018: 102). The majority of the amounts were in the municipal escrow account. Thus, it can be stated that municipalities face significant fiscal problems (Eroğlu and Tunç, 2018: 45).

The significant and positive correlation was maintained in four quantiles determined in the quantile regression model for *expenditure commitment rate*. However, this variable was not significant in the group of municipalities with very high borrowing. Thus, the expenditure commitment rate can be considered as one of the three significant variables explaining municipal borrowing. The variable is insignificant in the last group because the municipalities in this group cannot reduce their borrowing even when they reduce personnel, state premiums to social security institutions, or interest expenditures. Therefore, it can be stated that the first two variables will be more effective in reducing the borrowing of municipalities with very high debt. It could be stated that the findings reported with the OLS regression model by Balaguer-Coll et. al. (2016) were confirmed for Turkey. However, the findings obtained with quantile regression analysis were different. They concluded that the effect of the variable increased as the municipal debt expanded. It was determined that the direction of the relationship was negative in municipalities with low and medium debt, and positive in municipalities with high and very high debt. Due to the effectiveness of reducing debt, it is crucial to pay attention to the principle of employment proportional to the responsibilities of the municipalities. This rule will allow the reduction of the budget deficit or borrowing requirement for investments, reducing financing costs, and controlling interest expenditures. Furthermore, the reduction of the share of rigid expenditures in the budget is necessary for decision-making during periods of instability (Çebi, 2015: 4). These expenditures could not be easily reduced since they are binding by rules or contracts, or they might lead to political costs due to citizens' reactions.

It was observed that the significant and positive correlation between the *non-interest fiscal capacity rate* and per capita municipal debt stock in 10th and 25th quantiles. However, this variable was not significant in municipalities with moderate, high, or very high debt. Thus, it can be stated that the findings obtained with

the OLS regression model by Balaguer-Coll et. al. (2016) are valid for Turkey. However, it was determined that the direction of the correlation between the variable and municipal borrowing was positive in all the quantiles based on their study. Furthermore, it was concluded that the impact was only significant in high debt municipalities. Thus, it could be stated that previous study findings were different compared to the findings on Turkish municipalities. The analysis revealed that the non-interest fiscal capacity rate was statistically significant for Turkish municipalities with low and very low debt. However, the correlation was insignificant for municipalities with moderate, high, and very high debt, indicating that it was not effective in reducing municipal debt. Thus, it is possible for the municipalities in the first two groups to reduce their borrowing by balancing their budgets. The budget could be balanced by increasing revenues or by reducing spending. There are several methods to increase municipal revenues. One of these methods is to improve fiscal autonomy and increase municipal revenues. However, it is not sufficient to target revenue growth alone. It is also significant that whether municipalities collect their accrued revenues. The amounts of tax collecting are especially important for municipalities' tax revenues. In 2017, the metropolitan municipality with the highest collection received tax revenue of 5.5 times more than the municipality with the lowest collection. This rate occurred about 21 times in provincial municipalities, while 44 times in district municipalities. In addition to the regulations that aim to increase municipal revenues, economical use of municipal resources sparingly can help achieve a balanced budget and decrease borrowing.

The *per capita capital expenditure* variable was found insignificant in every quantile except the low per capita municipal debt level (25th), where the variable was found statistically significant. Furthermore, a negative correlation was determined between the per capita capital expenditure and per capita municipal debt.

7. CONCLUSION

The study aims to determine the variables affecting municipal borrowing in Turkey. Thus, the correlation between per capita municipal borrowing, which was determined as the independent variable, and per capita budget expenditure, per capita capital expenditure, expenditure commitment rate, non-interest fiscal capacity rate, per capita tax revenue and population variables were analysed with OLS regression and quantile regression methods.

In OLS regression analysis, the variable with the highest coefficient in municipal borrowing was determined as per capita budget expenditure in Turkey. Therefore, municipalities can decrease borrowing significantly by reducing their budget expenditure. Furthermore, it was concluded that as the share of rigid expenditures such as personnel, state premiums to social security institutions, and interest expenditures in municipal budget expenditures would decrease, municipal debt would reduce. On the other hand, it was determined that as municipalities' capacity to cover spending with primary budget revenues increases, municipal borrowing would decrease. Thus, the correlations between the first three variables and the municipal borrowing were positive, as expected. On the contrary, the direction of the correlation between municipal tax revenues and municipal borrowing was negative. Thus, it can be stated that municipal borrowing will decrease as tax revenues increase. However, contrary to the first four variables, no significant correlation was determined between per capita municipal debt and per capita capital expenditure and population variables.

In contrast with the OLS regression method, five quantiles (10th, 25th, 50th, 75th, and 90th) were constituted using the quantile regression analysis, which allows the determination of explanatory variables for municipalities with different debt levels. Accordingly, it was determined that per capita budget expenditure was an important variable in explaining municipal borrowing and significant and positive in all quantiles. Furthermore, there was a significant and negative correlation between per capita tax revenue and per capita municipal debt. However, different findings were obtained for the expenditure commitment and non-interest fiscal capacity rates compared to the OLS regression model. This difference was evident in the non-interest fiscal capacity rate variable. While this variable was significant and positive in explaining the debt of municipalities with very low (10th) and low (25th) borrowing, it was not significant for municipalities with moderate (50th), high (75th), and very high (90) debt. On the other hand, the expenditure commitment rate was significant and positive in the first four quantiles; however, it was insignificant in municipalities with very high debt. Conversely, the per capita capital expenditure was significant only in the 25th quantile and was insignificant in the remaining quantiles. The population variable was also insignificant in explaining the per capita municipal debt in all quantiles.

The findings obtained with quantile regression analysis demonstrate that priority measures should be taken concerning expenditure to reduce the debt of municipalities in Turkey. However, it is not essential to designing the content of the measures to reduce the expenditures of the municipalities. The real problem in expenditures is that administrators do not utilise municipal resources economically. It is essential to award procurements to the company offering the best proposal to look out for public interest, based on the principles of competition and transparency. On the other hand, making arrangements for the municipalities to achieve a revenue level proper with their responsibilities, economical use of resources can be provided. As the fiscal dependencies of the municipalities increase, the administrators' tendency to consider the central administration as a liberator balancing the municipal budget in times of crisis may decrease. Thus, the administrators can perform more responsibly and economically in using the revenues they obtain as a result of a particular effort. Furthermore, it was considered that increasing the municipalities' own revenues and income-generating capacities will be beneficial in solving the financing problems. Municipal debt can also be reduced by decreasing the share of rigid expenditures in budget expenditures, especially in municipalities except for the very high debt group.

The regression results, estimated by selecting various quantiles, provided a different perspective for the municipalities with various debt levels to determine the explanatory variables that affect their borrowing and intervene with these explanatory variables when they are required to act strategically about their debt. Considering the ongoing debate about municipal borrowing in Turkey, the findings can assist decision-makers in preparing budgets and strategic plans, utilise resources effectively and economically, and even restructure the relationship between the central and local governments. Thus, the perceptions of investors regarding the financial situation of municipalities may change positively. This change allows municipalities to reduce their borrowing costs. On the other hand, with the efficient use of resources, the fiscal capacity of the municipalities can be strengthened, and citizens can be provided with better quality and low-cost services. In addition, with the improvement of their fiscal position, it becomes easier for municipalities to make timely payments to companies for goods and services purchased from the market instead of allocating them as a budgetary escrow. Thus, trust in municipalities will increase, and companies will also receive their progress payments on time.

The limitations of the study that investigated the explanatory variables of municipal borrowing should also be noted. The first limitation is the small number of municipalities for which data were available. Another limitation of the study is that certain fiscal, socioeconomic, and political variables could not be used due to the unavailability of the data and lack of standard data for all municipalities. The inability to use these variables enables the analysis of the effects of only the determined models' fiscal variables and population variables. In contrast, the scope of the models is limited due to the exclusion of the effects of political and socioeconomic variables from the analysis.

REFERENCES

- Acar, Y. (2019), Does Flypaper Effect Exist? New Evidence from Turkish Municipalities, *Sosyoekonomi*, 27(39), 55-68.
- Akai, N. and Sakata, M. (2002), Fical Decentralization Contributes to Economic Growth: Evidence from State-Level Cross-Section Data for the United States, *Journal of Urban Economics*, 52(1), 93-108.
- Arıkboğa, Ü. (2016), Revenue Structure of Municipalities in Turkey: Problems and Solution Proposals, *Mustafa Kemal University Journal of Graduate School of Social Sciences*, 13(33), 276-297.
- Ataay, F. and Güney, A. (2004), Yerelleşme ve Kalkınma Sorunu: Kamu Yönetimi Reformu Üzerine Değerlendirme, *Mülkiye Dergisi*, 28(243), 131-146.
- Balaguer-Coll, M. T., Prior, D. and Tortosa-Ausina, E. (2016), On the Determinants of Local Government Debt: Does One Size Fit All?, *International Public Management Journal*, 19(4), 513-542.
- Bali, B. B. (2006), Mali Desantralizasyon Sürecinde Yerel Yönetimlerin Borçlanması: Bir Teorik Çerçeve Denemesi, A. Güner and S. Yılmaz in, *Mali Yerelleşme: Teori ve Uygulama Üzerine Yazılar* (s. 149-177), İstanbul: Güncel Publishing.
- Bellot, N. J., Selva, M. L. and Menendez, L. G. (2017), Determinants of Sub-Central European Government Debt, *The Spanish Review of Financial Economics*, 15(2), 52-62.
- Benito, B. and Bastida, F. (2004), The Determinants of the Municipal Debt Policy in Spain, *Journal of Public Budgeting, Accounting & Financial Management*, 16(4), 492-525.
- Blöchliger, H. and King, D. (2006), *Fiscal Autonomy of Sub-Central Governments*, OECD WPs on Fiscal Federalism, No. 2: OECD Publishing.
- Cropf, R. and George, W. (1998), The Determinants of municipal Debt Policy: A Pooled Time-Series Analysis, *Environment and Planning Government Policy*, 16(2), 211-224.
- Çebi, C. (2015), Bütçe Harcama Katılığı, *Türkiye Cumhuriyet Merkez Bankası Ekonomi Notları*, 23, 1-13.
- Çetinkaya, Ö. (2020), *Mahalli İdareler Maliyesi*, Bursa: Ekin Publishing.
- Çetinkaya, Ö. and Demirbaş, T. (2004), Laws Relating to Municipal Borrowing in Turkey, Structure of Loans and Examining of This Structure, *Akdeniz IIBF Journal*, 3(8), 18-37.
- Demirbaş, T. (2015), An Examination of Fiscal Rules for Local Government, *U.U. International Journal of Social Inquiry*, 8(2), 1-32.
- De Mello, L. R. (2000), Fiscal Decentralization and Intergovernmental Fiscal Relations: A Cross-Country Analysis, *World Development*, 28(2), 365-380.
- Ebel, R. and Yılmaz, S. (2002), *On the Measurement and Impact of Fiscal Decentralization*, Policy Research WP No. 2809: The World Bank.
- Ehalaiye, D., Botica-Redmayne, N. and Laswad F. (2017), Financial Determinants of Local Government Debt in New Zealand, *Pacific Accounting Review*, 29(4), 512-533.
- Eroğlu, E. and Serbes, H. (2018), Fiscal Autonomy of Sub-Central Governments in Turkey, M. P. Bolívar and M.D. Subires in, *Financial Sustainability and Intergenerational Equity in Local Governments* (s. 83-100), IGI Global.
- Eroğlu, E. and Tunç, G. (2018), State Re-scaling and Financialisation: An Evaluation of the Financial Activities of Local Governments, *Emek Araştırma Dergisi*, 9(14), 23-50.
- Falay, N. (1995), 1980 Sonrasında Yerel Yönetimlerin Finansman Açığı Sorunu ve Türkiye, *Çağdaş Yerel Yönetimler*, 4(5), 13-24.
- Falay, N. (1997), Türkiye'de Yerel Yönetimlerin Mali Yapısına İlişkin Eğilimler, *Çağdaş Yerel Yönetimler*, 6(2), 3-13.
- Gül, M. (2009), Türkiye'de Belediyelerin Dış Borçlanması, *Sayıştay Dergisi*, 74/75, 97-115.

- Güler, B. A. (1997), Yerel Altyapı Yatırımı ve Finansmanı: İller Bankası: 1945-1995, *Amme İdaresi Dergisi*, 30(1), 43-67.
- Honadle, B. W., Costa, J. M. & Cigler, B. A. (2004), *Fiscal Health For Local Governments: An Introduction to Concepts*, California: Elsevire Academic Press.
- IFS. (2017), *Fiscal Rigidities and Their Effects in Ghana*, Policy Brief No: 3.
- IMF. (2013), *Turkey Staff Report for the 2013 Article IV Consultation*, IMF Country Report No: 13/363.
- IMF. (2014), *Turkey in Transition: Time for a Fiscal Policy Pivot?*, Report No: 85104-TR.
- İlhan, İ. (2013), A Study on the Relationships Between Municipalities and Their Corporations in Procurement in Turkey, *Journal of Turkish Court of Accounts*, 88, 5-25.
- Karahanoğulları, O. (1998), Belediye Personelinin Hukuki Yapısına İlişkin Gözlemler, *Ankara Hukuk Fakültesi Journal*, 47(1-4), 279-318.
- Kılıç, R., and Dilber, C. (2017), Türkiye ve BRICS Ülkelerinin Finansal Piyasaları Arasındaki İlişkinin Kantil Regresyon Yöntemi İle İncelenmesi, *Akademik Sosyal Araştırmalar Dergisi*, 5(48), 331-342.
- Koenker, R. and Bassett Jr. G. (1978), Regression Quantiles, *Econometrica: Journal of the Econometric Society*, 46(1), 33-50.
- Koenker, R. and Hallock, K. F. (2001), Quantile Regression, *Journal of Economic Perspective*, 15(4), 143-156.
- Kurtuluş, B. (2006), *Türkiye'de Belediyelerin Mali Yapısı ve Harcamalarının Finansmanı*, Ankara: T.C. Başbakanlık Devlet Planlama Teşkilatı.
- Letelier S. L. E. (2011), Theory and Evidence of Municipal Borrowing in Chile, *Public Choice*, 146(3), 395-411.
- Martinez-Vazquez, J., Lago-Peñas, S. and Sacchi A. (2016), The Impact of Fiscal Decentralization: A Survey, *Journal of Economic Surveys*, 31(4), 1095-1129.
- Meşe, M. (2011), Belediye Şirketleri Üzerine Bir Değerlendirme, *Dış Denetim Journal*, April-June: 203-215.
- Miller, G.J. and Hildreth, B. (2007), Local Debt Management, A. Shah in, *Local Public Financial Management* (s. 109-155), Washington: The World Bank.
- Munoz, E. and Olaberria, E. (2019), *Are Budget Rigidities a Source of Fiscal Distress and a Constraint for Fiscal Consolidation?*, Policy Research WP No. 8957, World Bank Group.
- Nacar, B. (2005), The Theoretical Approaches on the Fiscal Crisis of the Local Governments: Causes, Suggestions and An Assessment, *Akdeniz IIBF Journal*, 3(9), 202-247.
- NALAS. (2006), *Guidelines on Local Government Borrowing and Recent Developments in NALAS Countries*.
- O'Connor, J. (2009), *The Fiscal Crisis of the State*, New Brunswick: Transaction Publishers.
- Ökmen, M. and Koç, N. (2015), Borrowing as a Municipal Revenues in Turkey and Suggestions About Debt Reduction, *Journal of Management and Economics*, 22(2), 551-565.
- Pınar, A. (2015), *Maliye Politikası: Teori ve Uygulama*, Ankara: Turhan Publishing.
- Republic of Turkey Ministry of Internal Affairs. (2018), *2017 Local Governments General Activity Report*, Ankara.
- Republic of Turkey Ministry of Environment and Urbanization. (2019), *2018 Local Governments General Activity Report*, Ankara.
- Republic of Turkey Ministry of Environment and Urbanization. (2021), *2020 Local Governments General Activity Report*, Ankara.
- Republic of Turkey Ministry of Development. (2014), *Onuncu Kalkınma Planı 2014-2018: Yerel Yönetimler Özel İhtisas Komisyonu Raporu*, Ankara.
- Sağbaşı, İ. and Saruç, N. T. (2004), Intergovernmental Transfers and the Flypaper Effect in Turkey, *Turkish Studies*, 5(2), 79-92.
- Sakal, M. (2003), *Türkiye'de Mali Disiplin Sorunu: Kamu Açıkları ve Borçlanmanın Sürdürülebilirliği*, Ankara: Gazi Publishing.

- Serbes, H. and Çetinkaya, Ö. (2019), An Analysis of the Structures of Municipal Liabilities Based on the Fiscal Statements in Turkey, *International Journal of Social Inquiry*, 12(2), 757-800.
- Swianiewicz, P. (2004), The Theory of Local Borrowing and the West-European Experience: A Report on Central and Eastern Europe, P. Swianiewicz in, *Local Government Borrowing: Risks and Rewards* (s. 1-23), Budapest: Open Society Institute.
- Şengül, T. (2009), Yerel Devlet Sorunu ve Yerel Devletin Dönüşümünde Yeni Eğilimler, *Praksis*, 9, 183-220.
- Tan, X. and Wang, X. (2017), Dependence Changes Between the Carbon Price and Its Fundamentals: A Quantile Regression Approach, *Applied Energy*, 190, 306–325.
- Ter-Minassian, T. (2007), Fiscal Rules for Subnational Governments: Can They Promote Fiscal Discipline?, *OECD Journal on Budgeting*, 6(3), 1-11.
- Tokatlıoğlu, M. and Selen, U. (2017), *Maliye Politikası*, Bursa: Ekin Publishing.
- Topaloğlu, E. E. and Ege, İ. (2021), Finansal Esneklik, Firma Değeri ve Finansal Performans İlişkisi: İnşaat Sektörü Üzerine Panel Kantil Regresyon Yaklaşımı, *Sosyoekonomi*, 29(49), 409-425.
- Ulusoy, A. and Akdemir, T. (2009), Local Government and Fiscal Autonomy: Comparative Analysis of Turkey and OECD Countries, *Balıkesir University the Journal of Social Sciences Institute*, 12(21), 259-287.
- Yalçındağ, S. (1993), Bitmeyen Senfoni: Yerel Yönetimler Reformu. *Amme İdaresi Dergisi*, 26(1), 43-69.
- Yaş, H. and Akduğan, U. (2015), Analyzing the Financial Transfers Delivered to Municipalities in Turkey within the Scope of Flypaper Effect, *Maliye Dergisi*, 168, 49-68.
- Yıldırım, Z. (2010), Belediye Hizmetlerinin Finansmanında Borçlanma, F. Altuğ, Ö. Çetinkaya and S. İpek in, *Mahalli İdareler Maliyesi Üzerine Yazılar* (s. 97-116), Bursa: Ekin Publishing.
- Yılmaz, H. H. and Mehmet S. (2011), *Bağlı Karşılaştırmalı Bir Çerçeve de Türkiye’de Mali Yerelleşme Düzeyi ve Belediyelerde Özgelir Yaratma Kapasitesi Üzerinde Etkisi* [Paper presentation]. 4th Yerel Yönetimlerin Mali Forumu (26-27 November), Ankara.
- Municipal Revenues Law. (1981). 2464 Numbered.
- The Constitution of the Republic of Turkey. (1982). 2709 Numbered.
- Law on the Regulation of Public Financing and Debt Management. (2002). 4749 Numbered.
- Metropolitan Municipality Law. (2004). 5216 Numbered.
- Municipality Law. (2005). 5393 Numbered.

