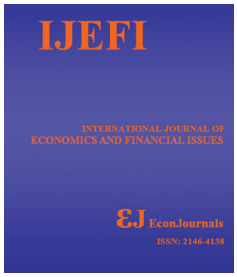

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Dynamic Relationships between Democracy and Tax Revenues: The Case of Turkiye

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ABSTRACT

There is an extensive body of literature emphasizing the relationship between democracy and taxation. However, studies investigating the relationship between democracy and specific types of tax revenues remain limited. This study explores the extent to which democracy influences various categories of tax revenues in Turkiye. Utilizing a sample specifically composed for Turkiye covering the years 2006-2023, it was found that democracy negatively impacts income and corporate tax revenues. These findings align with the predictions of the conflict approach. Conversely, the positive relationship observed between democracy and both indirect and direct tax revenues supports the compatibility approach. Meanwhile, the neutral relationship between total tax revenues and democracy aligns with the skeptical approach. According to the study's findings, there is a statistically significant causal relationship between corporate tax revenues, indirect tax revenues, direct tax revenues, and democracy.

Keywords: Tax Revenues, Democracy, Tax Policy, Autoregressive Distributed Lag Approach, Causality
JEL Classifications: H20, H10, C10

1. INTRODUCTION

The role of a country's political system, particularly democracy, significantly impacts all economic decisions made by the government, including taxation and fiscal policy. It is therefore unsurprising that the relationship between taxes and democracy has received considerable attention from researchers. Taxation involves transferring income and resources from citizens to the government. Consequently, the level and composition of tax revenues, the sources of taxation, and the methods used to levy and collect taxes are inherently influenced by the political system.

For decades, researchers have debated which structural parameters determine the role and extent of economic and social activities undertaken by an effective state. A crucial factor in determining whether a state can effectively and efficiently fulfill its responsibilities is the existence of a tax system that is adapted to the social needs of the governed society. Establishing and maintaining such a system is challenging, and this challenge is even greater in countries with weak political structures and low welfare levels. In democratic states, power is concentrated and delegated based on the will of the people. Citizens in democratic systems anticipate the state to respond to their demands, in line with the principles of public choice theory. Within this framework, the provision of goods and social services is shaped by the expressed desires of society rather than the personal tendencies or interests of rulers (Musgrave and Musgrave, 1989). Many studies suggest a positive association between democracy and tax burden. However, the theoretical basis for this argument varies, and the claim that democracy promotes higher tax collection remains controversial. Researchers broadly agree that different causalities shape the relationship between regime type and taxation. A growing body of literature explores this relationship, encompassing tax collection, tax policy, and tax structures, using various theoretical and methodological approaches.

From the perspective of public economics, the state utilizes tax revenues to achieve three classical functions: allocation, distribution, and economic stability. Within this context, maximizing social welfare through taxation is a key topic of discussion. Taxation authority encompasses the state's ability to levy taxes, collect them, and allocate the revenues to provide public goods needed by society. Research has shown that a state's ability to levy taxes is influenced by both economic welfare and the type of political regime be it democratic or autocratic. Numerous hypotheses have been developed to explain this relationship. According to Vanhanen (2003), democracy entails free and fair elections as the foundation of governance. Welzel (2007) describes democracy as a political structure where the state's power is limited by a constitution and controlled by the populace. Conversely, autocracy is described as a system where one individual holds unchecked and unlimited power over others (Olson, 1993). Tax policy, as a fundamental activity of the government, is shaped by the dynamics of the political system, political parties, and interest groups. It is argued that tax policies in democratic societies are primarily driven by economic concerns and political motivations.

Although the relationship between taxation and democracy has received substantial attention in the economic literature, most studies traditionally focused on how taxation influences a country's political system, examining hypotheses such as "taxation causes democratization," or how democracy impacts tax rates and tax revenues. However, the impact of democracy on specific types of tax burdens in developing countries, such as Turkiye, remains underexplored. This gap presents an opportunity to produce compelling findings. The literature rarely addresses the possibility of an empirical relationship between tax revenue types and democracy. This study seeks to fill that gap, focusing specifically on Turkiye. More precisely, it aims to stand apart from other studies by analyzing the potential bidirectional relationship and its implications for tax policies.

The study is structured as follows: The theoretical framework is discussed in the next section. Section 3 presents a general overview of the related literature. Section 4 explains the data and econometric methods used. Section 5 outlines the econometric findings. Finally, Section 6 evaluates the findings and concludes the study.

2. THEORETICAL FRAMEWORK

Taxation is a crucial topic in both economics and politics. The tax system and the implementation of tax reforms lie at the core of economic policy. Furthermore, taxation is one of the most hotly debated issues in the political arena. In modern democracies, the support of voters is essential for implementing tax reforms, prompting policymakers to design tax systems and propose reforms that satisfy as many voters as possible. Taxation, as an issue, can influence and even shift voter preferences, particularly among non-ideological citizens likely a significant proportion of the electorate. These individuals often award which party to support based on the perceived advantages they can gain relative to opposing parties (Profeta, 2007; Rosen and Gayer, 2010).

In contrast, the tax decision-making process in traditionally non-democratic countries is far more complex and often unpredictable. Economically and politically powerful interest groups tend to dominate such systems. Even when these countries undergo democratic transitions, the influence of these groups may persist, interacting with voter preferences to shape tax policy outcomes. Therefore, the association between taxation and democracy is far from straightforward. This dynamic is influenced not only by the level of democratization in a country but also by its economic growth, development status, and the structural characteristics of its tax system.

In the public policy literature, three main theories attempt to explain the association between democracy, economic growth, and taxation, often referred to as the "compatibility approach," the "conflict approach," and the "skeptical approach." The compatibility approach suggests that democracy protects civil liberties and fundamental freedoms, provides a stable environment for investments, and ensures free and fair political participation, all of which contribute to economic growth (Baum and Lake, 2003; Leblang, 1997). Tax revenue collection, as an integral part of macroeconomic regulation supporting public expenditures, is closely tied to democracy, which is expected to have a positive impact on tax revenues, especially in developed nations (Lipset, 1959; Heo and Tan, 2001; Başar et al., 2009). On the other hand, the conflict approach argues that democracy allows social groups to extract benefits from the state, potentially undermining economic growth. Non-democratic regimes, by contrast, may resist these demands by suppressing groups such as labor unions and consumer rights advocates. Proponents of this approach also highlight the emergence of "development traps" that require active state intervention to resolve (Boix, 2003; Fjeldstad and Moore, 2009). While democracy may have a positive relationship with tax revenues, this connection is often weaker or even negative in developing countries, which frequently struggle to manage conflicts effectively (Huntington, 1968; Bhagwati, 2002). Finally, the skeptical approach posits that there is no consistent or systematic relationship between democracy, economic growth, and taxation. Instead, it emphasizes the importance of stability and effective policy implementation, irrespective of regime type, and highlights the variability in economic performance across both democratic and autocratic systems (Esposto and Zaleski, 1999; Comeau, 2003). These theories underscore the multifaceted and context-dependent nature of the relationship between political regimes, economic growth, and taxation.

As illustrated in Table 1, there is a strong connection between the level of tax collection and the type of political regime. Theoretical propositions regarding tax structure and regime type are also summarized in Table 1. Broadly speaking, governments under democratic rule are suggested to have a greater capacity for taxation due to enhanced legitimacy and better governance practices. Moreover, the pressure for redistribution in democratic systems often leads to a significant focus on public welfare, which drives higher tax collection. These processes tend to reinforce one another, making democratic politics more conducive to robust tax collection. Additionally, democratic systems typically exhibit lower rates of increase in direct and indirect taxes, as

Table 1: Regime type and taxation

Regime	Higher tax collection	Lower tax collection	Ability to engage in coercive state-building	Impact on tax structure and levels
Democracy	• Higher legitimacy and credibility • Better public services, higher levels of redistribution • Higher economic growth and prosperity	• Decreased freedom to coerce, greater dependence on political support from citizens • Higher development initiatives	• Lower	• Lower increase rates in direct and indirect taxes
Autocracy	• More freedom to enforce compliance • Allocation of income to managers' own interests • Less development initiatives	• Less legitimacy and credibility • Smaller support group, less interest in tax collection and distribution	• Higher	• Higher increase rates in direct and indirect taxes

Source: Garcia and Haldenwang, 2016; D'Arcy, 2012; Therkildsen, 2004

the coercive tendencies of the state are minimized. In contrast, autocratic regimes, while potentially interested in generating high tax revenues, often impose higher rates of increase in direct and indirect taxes. However, such regimes are generally reliant on a narrow base of supporters who may resist higher tax burdens, leading to systemic inefficiencies. Autocratic systems are also characterized by a higher degree of coercion, which can undermine the sustainability of their tax collection efforts. Consequently, autocratic governments tend to experience lower overall tax collection on average.

3. EMPIRICAL LITERATURE

The relationship between taxation and democracy has been a prominent focus in economic literature. While researchers share a general interest in this topic, they often approach it from different perspectives. Some explore how taxation influences democracy, adhering to the hypothesis that "taxation causes democratization," while others concentrate on how democracy impacts taxation.

Cheibub (1998) conducted a cross-sectional regression analysis involving 108 countries from 1970 to 1990, concluding that authoritarian states are not superior to democratic states in terms of tax revenues, and that authoritarianism is not associated with higher levels of tax collection. Similarly, Ross (2004) analyzed data from 113 countries spanning 1971-1997 using pooled time series and found that increases in tax levels do not necessarily lead to democratization. Kenny and Winer (2006) examined the tax structures of 100 democratic and non-democratic regimes, determining that democracies tend to increase tax revenues. Aidt and Jensen (2009) demonstrated that political competition boosts total revenue and the share of direct taxes while reducing the share of indirect taxes, as evidenced by their analysis of Western European countries from 1860 to 1938. Conversely, Mulligan et al. (2004) found that democracies often have flatter personal income tax structures and lower tax revenue-to-GDP ratios compared to nondemocratic regimes.

Ehrhart (2011) provided econometric evidence supporting the importance of democracy in generating local tax revenues, using a panel of 66 developing countries from 1990 to 2005. Mahdavi (2008) examined the determinants of tax revenues and their composition in 43 developing countries from 1973 to 2002, finding that income, profit, and capital gains taxes are generally higher in more democratic nations. Timmons (2010) argued that democratization increases indirect taxes, as shown in his study of 18 OECD countries from 1970 to 1999. Similarly, Mutascu (2011) identified a positive and significant relationship between democracy and taxation in 51 countries using panel regression data from 2002 to 2008. Acemoğlu et al. (2013) analyzed the relationship between democracy and tax revenues in 184 countries, showing that democratization significantly boosts tax revenues.

Jin Yi (2012) used a pooled time series dataset covering 84 countries from 1970 to 2000 and found that taxation has a conditional effect on democratization. Le et al. (2012) observed that the global increase in tax revenues between 1998 and 2009 was particularly pronounced in low-income countries, indicating that regime type influences tax policy formulation. Profeta et al. (2013) investigated the impact of democracy on tax and expenditure policies in developing countries, analyzing data from Southeast Asia, Latin America, and the EU between 1990 and 2005. Their findings revealed that democratization positively affects corporate and trade taxes in Latin America and direct and personal income taxes in the EU. Ziari and Rahemi (2013) studied the relationship between tax revenues and democracy indices for 21 countries grouped by high, medium, and low democracy levels. Their results demonstrated that tax revenues positively affect democracy in all groups, albeit to varying degrees.

Baskaran (2014) examined 122 countries between 1981 and 2008, using the Least Squares method, and found a bidirectional causal relationship between tax revenues and democracy. Ashraf and Sarwar (2016) analyzed 50 developing countries from 1996 to 2013 using panel data and showed that democracy positively influences tax collection, while autocracy negatively impacts direct, indirect, and total tax revenues. Türedi and Topal (2016) analyzed the relationship between democracy and taxation in 60 developing countries from 2006 to 2012, identifying a bidirectional causality between the two variables. Garcia and Haldenwang (2016) investigated the relationship between political regimes and tax-to-GDP ratios in 131 countries between 1990 and 2008, finding that regime type affects taxation, though not linearly in favor of democracy. Kato and Tanaka (2016) discovered that VAT positively influences democratization, based on panel data from 160 countries between 1960 and 2007.

Andersson (2018) studied 32 countries from 1800 to 2012, concluding that democracy increases income taxes in developed nations. Balamatsias (2018) used data from 74 countries between 1993 and 2012 to test the democracy-tax relationship, finding that democracy increases both direct and indirect taxes. Farazmand (2020) examined the nonlinear relationship between tax revenues, welfare, and democracy levels in 77 countries from 2000 to 2015, identifying a negative U-shaped relationship between tax revenue share and democracy. Şaşmaz (2019) analyzed democratization and tax revenues in 32 OECD countries between 2010 and 2017, concluding that democratization caused tax revenue increases in six countries and vice versa in five. Zheng et al. (2020) found that democratization increased tax revenues in 89 countries between 1981 and 2016.

Tabar and Karas (2021) studied the impact of taxes on democracy in 37 OECD countries from 2010 to 2019, using panel regression models to show that the tax burden positively affects democracy. Rashid et al. (2021) examined 59 countries (30 developed and 29 developing) between 2006 and 2013, finding a positive relationship between democracy and tax revenues in developed countries but a negative relationship in developing countries. Ilaboya et al. (2021) analyzed Nigeria from 1980 to 2017, identifying a weak positive relationship between the tax burden and democratization. Şahbaz et al. (2022) explored democracy and tax revenues in 24 OECD countries from 1980 to 2018, showing that democracy positively affects the tax burden. Önder and Dökmen (2023) analyzed 128 countries with varying development levels from 2003 to 2019, finding a positive and statistically significant relationship between democracy and tax revenues. Demirkilic et al. (2023) studied 33 EU member and candidate countries from 2010 to 2020, revealing bidirectional causal relationships between democratization and tax revenues. Finally, Tagem and Morrissey (2023) analyzed 39 Sub-Saharan countries, concluding that democracy directly enhances tax capacity.

4. DATA AND ECONOMETRIC METHODOLOGY

The study utilized variables related to the Turkiye economy, including total taxes, indirect taxes, direct taxes, corporate tax, income tax, inflation rate, reel gross domestic product growth, and the democracy index. To enhance the reliability of the findings derived from the statistical analyses, inflation rate and economic growth rate were incorporated as separate control variables within the models. The definitions and abbreviations of the variables employed in the time series analysis are presented in Table 2.

In Table 2, the income tax-to-GDP ratio is represented by the variable V1, the corporate tax-to-GDP ratio by V2, the direct taxes-to-GDP ratio by V3, the indirect taxes-to-GDP ratio by V4, and the total taxes-to-GDP ratio by V5. The inflation rate is denoted as EO, the reel gross domestic product growth rate as BO, and the democracy index as DE. Democracy scores for Turkiye were obtained from the Economist Intelligence Unit (EIU, 2023), which publishes democracy data starting from 2006. Therefore, the sample period for this analysis spans eighteen years, from 2006 to 2023.

Table 2: Abbreviations and definitions of variables

Variable	Definition
V1	income tax/gdp
V2	corporate tax/gdp
V3	direct taxes/gdp
V4	indirect taxes/gdp
V5	total taxes/gdp
BO	economic growth rate
EO	inflation rate produced from CPI.
DE	democracy Index

Table 3: Descriptive statistics

Series	Mean	Maximum	Minimum	SD
DE	4.945	5.760	4.090	0.630
V1	0.070	0.100	0.040	0.017
V2	0.031	0.050	0.010	0.010
V3	4.495	4.830	4.120	0.228
V4	10.017	11.210	8.380	0.896
V5	16.588	18.100	13.300	1.507
BO	0.048	0.095	-0.062	0.039
EO	0.141	0.544	0.060	0.131

SD: Standard deviation

In the time series analysis, firstly descriptive statistics of the series were summarized and then stationarity levels of the variables were investigated under the unit root tests. In order to determine the stationarity properties of the series, the Augmented Dickey and Fuller (ADF, 1979) method, which is based on the assumption that the error terms are independent and homogeneous, as well as the Phillips and Perron (1988) method, which suggests that the error terms have weak dependence and heterogeneity, was used.

To investigate the long-run relationship between the variables subjected to the unit root tests, the autoregressive distributed lag (ARDL) Bounds test was used. This test is highly effective for analyzing both long- and short-run relationships. The bounds test, introduced by Pesaran et al. (2001), offers several advantages over traditional cointegration methods such as Engle-Granger and Johansen-Juselius cointegration tests. A key feature of the bounds test is that it can assess the cointegration relationship regardless of whether the variables are integrated of order I(0), I(1), or a combination of the two (Tanrıöver and Yamak, 2015). This flexibility eliminates the need for pre-testing the integration order of the series. Furthermore, the ARDL Bounds test is well-suited for small sample sizes, making it particularly advantageous in contexts where data availability is limited (Kamaruddin and Jusoff, 2009).

The bounds test is initiated by estimating the following equation (1):

$$\Delta Y_t = \beta_0 + \beta_1 Y_{t-1} + \beta_2 X_{t-1} + \sum_{i=1}^{m} \alpha_i \Delta Y_{t-i} + \sum_{i=0}^{m} \theta_i \Delta X_{t-i} + u_t \quad (1)$$

In equation (1), Y and X are the variables for which the cointegration relationship is investigated. Exploring whether there is a cointegration relationship between variables requires testing the null hypothesis (H_0: $\beta_1 = \beta_2 = 0$) with the F test. If the

Table 4: Unit root test statistics of series

Variables	ADF t-statistics		PP t-statistics	
	Constant	Constant+Trend	Constant	Constant+Trend
DE	−0.843	−1.686	−0.795	−1.686
ΔDE	−3.636**	−3.536*	−3.623**	−3.519*
V1	−1.840	−2.259	−2.144	−2.201
ΔV1	−4.861***	−4.817***	−5.026***	−7.299***
V2	−1.917	−2.368	−1.816	−2.369
ΔV2	−6.035***	−6.215***	−6.100***	−12.459***
V3	−2.374	−2.317	−2.430	−3.373
ΔV3	−4.855***	−3.828**	−5.401***	−5.628***
V4	−1.704	−2.439	−1.647	−2.404
ΔV4	−4.193***	−4.075**	−6.827***	−6.215***
V5	−0.771	0.227	−0.630	−1.786
ΔV5	−4.963***	−4.706***	−5.032***	−11.053***
BO	−4.797***	−4.261**	−3.821**	−3.707*
EO	3.921	2.499	−0.671	−1.658
ΔEO	0.019	−5.269***	−4.488***	−5.534***

***, ** and *imply that the related statistic is statistically significant at 1%, 5% and 10% levels, respectively. The optimal lag length in the ADF test was determined using the Akaike Information Criterion. The maximum lag length was taken as 3 years

Table 5: ARDL bounds test statistics in DE-V1 relationship

Function	Model	F-statistics
DE=f (V1)	(1,0)	8.684***
DE=f (V1, BO)	(1,0,1)	9.114***
DE=f (V1, EO)	(3,3,3)	3.834*
V1=f (DE)	(1,1)	3.022
V1=f (DE, BO)	(1,1,2)	2.691
V1=f (DE, EO)	(3,3,3)	7.153***

***, ** and * imply that the related statistic is statistically significant at the 1%, 5% and 10% levels, respectively. ARDL: Autoregressive distributed lag

computed F statistic is greater than the upper critical value, it is decided that there is a cointegration relationship between the series, and if it is smaller than the lower critical value, it is decided that there is no cointegration relationship. If the calculated F statistic remains between the lower and upper critical values, a definitive interpretation cannot be made and other cointegration tests must be applied (Hansen, 2022; Kremers et al., 1992).

Finally, if there is a cointegration relationship between the variables, the cointegration equation and the error correction model is estimated by equations (2) and (3), respectively (Pesaran et al., 2001);

$$Y_t = \beta_0 + \sum_{i=1}^{m} \alpha_i \Delta Y_{t-i} + \sum_{i=0}^{m} \theta_i \Delta X_{t-i} + u_t \quad (2)$$

$$\Delta Y_t = \beta_0 + \beta_1 EC_{t-1} + \sum_{i=1}^{m} \alpha_i \Delta Y_{t-i} + \sum_{i=0}^{m} \theta_i \Delta X_{t-i} + u_t \quad (3)$$

In order to dynamically test the series considered in the study, Toda and Yamamoto (1995) causality analysis was used. The Toda-Yamamota test requires the estimation of equations (4) and (5) below in order to determine possible causal relationships between variables.

$$Y_t = \alpha_0 + \sum_{i=1}^{p} \delta_{1i} Y_{t-i} + \sum_{j=p+1}^{dmax} \delta_{2j} \Delta Y_{t-j} + \sum_{i=1}^{p} \lambda_{1i} X + \sum_{j=p+1}^{dmax} \lambda_{2j} X_{t-j} + u_t \quad (4)$$

$$X_t = \beta_0 + \sum_{i=1}^{p} \theta_{1i} X_{t-i} + \sum_{j=p+1}^{dmax} \theta_{2j} X_{t-j} + \sum_{i=1}^{p} \gamma_{1i} Y_{t-i} + \sum_{j=p+1}^{dmax} \gamma_{2j} Y_{t-j} + v_t \quad (5)$$

To conclude that X is the Granger cause of Y, the λ_{1i}'s in equation (4) must be different from zero as a whole. Similarly, in order to say that Granger causality runs from Y to X, the γ_{1i}'s in equation (5) must be different from zero as a whole (Stock and Watson, 2007).

5. ECONOMETRIC FINDINGS

The study focuses on the period between 2006 and 2023 to scrutinize the effect of the democracy index on various types of tax revenues in Turkiye. To provide context for the analysis, descriptive statistics for the series used in the study are summarized in Table 3. These include the mean, maximum, minimum, and standard deviation values of the democracy index (DE), inflation rate (EO), growth rate (BO), total tax burden (V5), indirect tax burden (V4), direct tax burden (V3), corporate tax burden (V2), and income tax burden (V1).

An examination of Table 3 reveals that the average value of the inflation rate (EO) for the 2006-2023 period is approximately 0.141. The average total tax revenues (V5) during the same period amount to 16.588 billion TL, with a standard deviation of 1.507. Among the control variables, the inflation rate exhibits the highest standard deviation, while the growth rate (BO) has the smallest. To determine whether the variables used in the analysis contain a unit root i.e., whether they are stationary or non-stationary the ADF and PP unit root tests were employed. The results of these tests are presented in Table 4.

As seen the Table 4, the growth rate (BO) was determined to be stationary at level I(0) according to both ADF and PP tests. In contrast, the variables DE, V1, V2, V3, V4, V5, and EO were found to be stationary at the first difference level, I(1). Consequently, the ARDL approach was utilized in the subsequent stages of the

Table 6: Long-run coefficients in DE-V1 relationship

Dependent variable DE				Dependent variable V1
Constant	7.631***	7.899***	8.221***	0.227***
V1	−39.492***	−39.011***	−36.021***	
DE				−0.028***
BO		−6.912*		
EO			−7.157***	−0.201***
ECT_{t-1}	−0.395***	−0.400***	−1.697***	−2.018***
$\chi^2_{autocorrelation}$	0.001	0.513	5.793**	4.640**
$\chi^2_{heteroscedasticity}$	0.811	3.891	13.163	14.171
CUSUM	Stable	Stable	Stable	Stable
CUSUMSQ	Stable	Stable	Stable	Stable

***, ** and * imply that the related statistic is statistically significant at 1%, 5% and 10% levels, respectively. Since the regression equation DE=f (V1, EO) has autocorrelation problem, the variance-covariance matrix of the coefficients was estimated under the Newey-West correction

Table 7: ARDL bounds test statistics in DE-V2 relationship

Function	Model	F-statistics
DE=f (V2)	(1,0)	3.409
DE=f (V2, BO)	(3,1,3)	4.929**
DE=f (V2, EO)	(1,0,0)	2.378
V2=f (DE)	(1,0)	3.426
V2=f (DE, BO)	(1,0,0)	2.437
V2=f (DE, EO)	(2,3,3)	8.108***

***, ** and * imply that the related statistic is statistically significant at the 1%, 5% and 10% levels, respectively. ARDL: Autoregressive distributed lag

Table 8: Long-run coefficients in DE-V2 relationship

Dependent variable DE		Dependent variable V2
Constant	8.387***	0.126***
V2	−80.555***	
DE		−0.016***
BO	−19.948*	
EO		−0.148**
ECT_{t-1}	−0.534***	−1.706***
$\chi^2_{autocorrelation}$	3.185*	0.005
$\chi^2_{heteroscedasticity}$	3.431	11.713
CUSUM	Stable	Stable
CUSUMSQ	Stable	Stable

***, ** and * imply that the related statistic is statistically significant at 1%, 5% and 10% levels, respectively. Since the regression equation DE=f (V2) has autocorrelation problem, the variance-covariance matrix of the coefficients was estimated under the Newey-West correction

Table 9: ARDL bounds test statistics in DE-V3 relationship

Function	Model	F-statistics
DE=f (V3)	(3,2)	5.001**
DE=f (V3, BO)	(3,2,0)	3.494
DE=f (V3, EO)	(1,2,2)	2.713
V3=f (DE)	(1,0)	1.850
V3=f (DE, BO)	(1,0,3)	3.475
V3=f (DE, EO)	(1,0,0)	3.612

** implies that the related statistic is statistically significant at the 5% level. ARDL: Autoregressive distributed lag

analysis, as it accommodates variables that are stationary at level or difference, such as I(0) and/or I(1). In this context, the bounds test results for the relationship between DE and V1 are given in Table 5.

Table 10: Long-run coefficients in DE-V3 relationship

Dependent variable DE	
Constant	−24.750
V3	6.428*
DE	
BO	
EO	
ECT_{t-1}	−0.169***
$\chi^2_{autocorrelation}$	4.856**
$\chi^2_{heteroscedasticity}$	7.536
CUSUM	Stable
CUSUMSQ	Stable

***, ** and * imply that the related statistic is statistically significant at 1%, 5% and 10% levels, respectively. Since the regression equation DE=f (V3) has autocorrelation problem, the variance-covariance matrix of the coefficients was estimated under the Newey-West correction

Table 11: ARDL bounds test statistics in DE-V4 relationship

Function	Model	F-statistics
DE=f (V4)	(3,1)	3.425
DE=f (V4, BO)	(3,1,3)	3.814*
DE=f (V4, EO)	(3,1,0)	2.313
V4=f (DE)	(3,3)	1.501
V4=f (DE, BO)	(3,2,1)	18.692***
V4=f (DE, EO)	(3,1,3)	2.147

*** and * imply that the related statistic is statistically significant at the 1% and 10% levels, respectively. ARDL: Autoregressive distributed lag

Table 12: Long-run coefficients in DE-V4 relationship

Dependent variable DE		Dependent variable V4
Constant	−6.947	0.590
V4	1.193**	
DE		1.576***
BO	15.261	23.988**
EO		
ECT_{t-1}	0.348	−0.695***
$\chi^2_{autocorrelation}$	2.369	0.393
$\chi^2_{heteroscedasticity}$	9.983	6.594
CUSUM	Stable	Stable
CUSUMSQ	Stable	Stable

***, ** and * imply that the related statistic is statistically significant at the 1%, 5% and 10% levels, respectively

According to the ARDL bounds test statistics presented in Table 5, with the exception of the V1=f(DE) and V1=f(DE,BO) models, the calculated F statistic for all other models exceeded the lower critical value outlined in the Pesaran et al. (2001) table. Consequently, the null hypothesis, which posits that there is no cointegration relationship between the variables in the model, was rejected. Based on these ARDL bounds test results, it was concluded that a long-run relationship exists between the democracy index (DE) and the income tax burden (V1). Furthermore, the long-run coefficients and the results of the error correction model (ECM) are provided in Table 6.

As shown in Table 6, in the model where DE is the dependent variable, a negative and statistically significant relationship exists between income tax revenues (V1) and the democracy index (DE) in Turkiye. Additionally, the growth rate (BO) and inflation rate (EO) have a negative impact on the democracy index (DE). Similarly, in the model where V1 is the dependent variable, negative and statistically significant relationships are observed between income tax revenues, the democracy index, and inflation. These findings align with the "conflict approach," which suggests that democracy can negatively affect growth and tax revenues, particularly in developing countries. Moreover, across all models examining the DE-V1 relationship in Table 6, the error correction coefficients are negative and statistically significant, indicating that short-term deviations from equilibrium are corrected in the long run. The stability of the models is further confirmed by the results of the CUSUM and CUSUMSQ statistics, which demonstrate that all models are stable.

The ARDL bounds test statistics for the relationship between the democracy index and corporate tax revenues are presented in Table 7.

As shown in Table 7, the F statistics for the equations DE=f(V2, BO) and V2=f(DE, EO) exceed the upper critical value specified by Pesaran et al. (2001). Consequently, the null hypothesis implies that there is no long-run relationship between the series is rejected. Based on the ARDL bounds test results, a long-run relationship between DE and V2 in the specified equations was identified. Additionally, the results for the long-run coefficients and the error correction model are presented in Table 8.

As shown in Table 8, negative and statistically significant relationships were observed between corporate tax and the democracy index in the models where both DE and V2 were used as dependent variables. In both models, the coefficients of explanatory variables, growth rate and inflation rate, were also estimated to be negative and statistically significant. These findings support the "conflict approach," which suggests that increased democratization and inflation levels can have a diminishing effect on corporate tax revenues. Additionally, the findings confirm that the coefficients of the error correction terms are negative and statistically significant, indicating that deviations from the equilibrium relationship are corrected over time. The stability of the models is further corroborated by the CUSUM and CUSUMSQ test statistics, which confirm that both ARDL models are stable.

Table 9 shows the F statistic values for the bounds test on the DE (democracy index)-V3 (direct taxes) relationship.

Based on the F statistic values calculated for the DE=f(V3) function in Table 9, a long-run relationship between the democracy index (DE) and direct tax revenues (V3) was identified at a 5% significance level. Following the confirmation of this long-run relationship, the long-run coefficients were estimated using the ARDL model. The results, including the test statistics for the long-run coefficients, the error correction term, and diagnostic tests, are presented in Table 10.

Table 13: ARDL bounds test statistics in DE-V5 relationship

Function	Model	F-statistics
DE=f (V5)	(1,0)	1.441
DE=f (V5, BO)	(3,3,3)	2.433
DE=f (V5, EO)	(3,3,3)	10.124***
V5=f (DE)	(3,3)	2.683
V5=f (DE, BO)	(3,2,3)	2.828
V5=f (DE, EO)	(3,3,3)	18.828***

*** and * imply that the related statistic is statistically significant at the 1% and 10% levels, respectively. ARDL: Autoregressive distributed lag

Table 14: Long-run coefficients in DE-V5 relationship

Dependent variable DE		Dependent variable V5
Constant	16.012	23.376*
V5	−0.791	
DE		−1.551
BO	100.339	57.029
EO		
ECT_{t-1}	0.176	0.807
$\chi^2_{autocorrelation}$	6.819***	0.179
$\chi^2_{heteroscedasticity}$	5.128	11.235
CUSUM	Stable	Stable
CUSUMSQ	Stable	Stable

***, ** and * imply that the related statistic is statistically significant at the 1%, 5% and 10% levels, respectively

An examination of the long-run equation reveals that direct tax revenues have a positive and statistically significant relationship with the democracy index. In other words, there is a positive association between V3 and DE, with V3 shown to positively influence DE at a 5% significance level in the long run. This finding aligns with the "compatibility approach," which posits a positive relationship between tax revenues and democratization.

Furthermore, the coefficient of the error correction term is negative and statistically significant, indicating that approximately 16% of any short-run deviation will be corrected in the subsequent period, steering the system toward long-run equilibrium. As evidenced by the diagnostic results, the model is stable. Subsequently, the study investigated whether a long-run relationship exists between indirect tax revenues and the democracy index using the ARDL bounds test.

Based on the calculated F-statistics, a statistically significant long-run relationship was identified between V4 and DE used as a measure of democratization in Turkiye. This relationship was observed in the functions DE=f(V4, BO) and V4=f(DE, BO) at significance levels of 1% and 10%, respectively. Following the confirmation of the cointegration relationship, the long-run coefficients were obtained under the ARDL model. The findings, including the long-run coefficients of the independent variables, the coefficient of the error correction term, and diagnostic test statistics, are given in Table 12.

Table 15: Toda-yamamato causality test statistics

H_0 hypothesis	VAR optimal lag length	χ^2 statistics	Result
V1 is not cause and DE is not result	1	0.146	Not reject
DE is not cause and V1 is not result	1	0.499	Not reject
V2 is not cause and DE is not result	4	15.884***	Reject
DE is not cause and V2 is not result	4	54.801***	Reject
V3 is not cause and DE is not result	4	139.048***	Reject
DE is not cause and V3 is not result	4	49.280***	Reject
V4 is not cause and DE is not result	4	143.508***	Reject
DE is not cause and V4 is not result	4	107.536***	Reject
V5 is not cause and DE is not result	1	0.283	Not reject
DE is not cause and V5 is not result	1	0.541	Not reject

*** implies that the related statistics are statistically significant at the 1% level, respectively

In the long-run regression equation where indirect tax revenues (V4) are taken as the dependent variable, both coefficients (DE and BO) are found to be statistically significant at 1% and 5% levels, respectively. As shown in Table 12, an increase in the level of democratization (DE) has a positive effect on indirect tax revenues (V4), which is consistent with the "compatibility approach." However, the positive error correction term coefficient in the DE=f(V4, BO) function demonstrates that this model may have some issues.

On the other hand, in the model where V4 is the dependent variable, the error correction term coefficient is negative and statistically significant at the 1% level. This implies that approximately 69% of any short-run deviation will be corrected in the following period, driving the system toward long-run equilibrium. Additionally, Table 12 confirms that both models are stable.

The F-statistic values for the ARDL bounds testing approach in the DE-V5 relationship are presented in Table 13.

As shown in Table 13, the F-statistic calculated for the bounds test is 10.124 and 18.82 in the functions DE=f(V5, EO) and V5=f(DE, EO), respectively. These F-statistic values are statistically significant at the 1% level, indicating a cointegration relationship between the democracy index (DE), total tax revenues (V5), and the inflation rate (EO).

The results for the long-run equation in the ARDL model, including the long-run coefficients of the independent variables, the coefficient of the error correction term, and diagnostic test statistics, are also given in Table 14.

As shown in Table 14, the coefficients of the error correction term in both equations are positive and not statistically significant. These findings align with the "skeptical approach," which suggests that there is no systematic relationship between democracy, tax revenues, and economic growth.

To further examine the potential causal relationships between the series, the Toda-Yamamoto causality test was employed. The findings of this test are presented in Table 15.

As shown in Table 15, no causal relationship was identified between income tax, total tax burden, and democracy. However, a two-way causal relationship was observed between corporate, direct tax burden, indirect tax burden, and democracy at a 1% significance level. While no causal relationship was detected between the total tax burden and democracy, the presence of a causal relationship in indirect and direct tax burdens may be attributed to the aggregation problem.

6. CONCLUSION

The debate surrounding the impact of democracy on economic growth and tax revenues has been a longstanding one. Since tax revenues are a crucial component of a country's economic activity, democracy's influence on tax revenues is often argued to significantly affect economic growth. Three competing approaches exist in explaining the role of democracy in economic growth and taxation: the compatibility approach, the conflict approach, and the skeptical approach. The compatibility approach suggests that democracy facilitates economic growth and positively impacts tax revenues. Conversely, the conflict approach argues that democracy, especially in developing countries, may hinder economic growth as interest groups leverage it as a political bargaining tool, leading to negative outcomes for economic performance. Lastly, the skeptical approach posits that no systematic association exists between democracy, economic growth, and taxation.

This study contributes to the economic literature by examining the role of democracy on various tax revenue types in Turkiye. The analysis utilized annual data spanning 2006-2023. However, the availability of democracy index data starting from 2006 is noted as a limitation. The study employed the Pesaran bounds test and the Toda-Yamamoto causality test to explore the relationship between total taxes, indirect taxes, direct taxes, corporate tax, income tax, inflation rate, gross domestic product (growth), and the democracy index.

The ARDL bounds test results revealed the presence of cointegration indicating a long-run relationship among variables across all models. In the DE-V1 and DE-V2 ARDL models, the democracy index had negative short- and long-run coefficients, reflecting an inverse relationship between democracy, income tax, corporate tax, growth, and inflation. These findings align with the "conflict approach" for these tax types in Turkiye. In contrast, the DE-V3 and DE-V4 ARDL models demonstrated positive short- and long-run coefficients for the democracy

index, highlighting a direct relationship between democracy, direct tax revenues, indirect tax revenues, growth, and inflation, consistent with the "compatibility approach." Lastly, in the DE-V5 ARDL model, no significant relationship was found between democracy and total tax revenues, supporting the "skepticism approach." Furthermore, a bidirectional causality relationship was identified between institutions, direct and indirect tax burdens, and democracy at the 1% significance level.

To the best of our knowledge, this study is among the first to examine the two-way causal relationship between tax revenue types and democracy. Previously, most studies either focused on how taxation impacts political regimes or how democracy influences taxation. By incorporating traditional control variables and evaluating their effects on Turkey's democracy index and tax revenue types, this study adds to the literature on the relationship between taxation and democracy. The methodology and findings offer potential implications for political, economic, and tax policy development in Turkey's evolving economy.

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