Determinants of private investments in Turkey: Examining the role of democracy

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Abstract: This study investigates the determinants of private sector investments in Turkey with a focus on democracy. Using the Autoregressive Distributed Lag (ARDL) bounds testing approach and two different democracy indices along with the other determinants of private investment, we estimated a private investment function for the 1975-2014 period. Our main finding is that democracy has a profound positive impact on private investment. Moreover, the results show that: (i) public investment is a substitute to private investment; (ii) macroeconomic instability dissuades private investment; (iii) real interest is a serious impediment to private investment; (iv) financial development and GDP growth rate stimulate private investment.

Keywords: ARDL, democracy, private investment, Turkey.

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Introduction

Private sector investment, theoretically and empirically, has proven to be critical for economic growth (Solow, 1956; Khan and Reinhart, 1990; Zou, 2006). Basic macroeconomics suggests a positive relationship between investment and economic growth. By increasing aggregate demand and productive capacity of an economy, private sector investments not only contribute to capital formation and employment growth but also reduce poverty and make an economy more resilient to external shocks (White, 2005).

The Turkish government recently launched a set of ambitious targets known as "2023 Vision" in 2011.[3] The "2023 Vision" includes sixty-three economic, social, and political goals to be achieved by 2023. The economic dimension of the "2023 Vision" envisages

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[3] Political Vision of Justice and Development Party 2023. (2012).
https://www.akparti.org.tr/english/akparti/2023-political-vision (Accessed 18.01.2017).

Turkey to be in the list of the ten largest economies in the world, reaching a GDP of 2 trillion dollars, achieving a GDP per capita of 25 thousand U.S. dollars, a yearly export revenue equivalent to 500 billion U.S. dollars, and reducing unemployment rate to 5 percent. An uninterrupted economic growth performance, which depends on a high level of private investment, is required to meet these targets. In this regard, as targeted in the Tenth Development Plan (2014-2018:84), Turkey aims at increasing the private sector fixed capital investment ratio to GDP to 19.3 percent by 2018.

Accordingly, examining the main determinants of private investment is critical, because it might help Turkish policymakers to design and implement evidence-based policies. Therefore, the impetus for this study is to explore the major drivers of private investment, particularly, to assess the impact of democracy on private investment. This study adds to the extant literature in two major ways. First, by using two different democracy indices, it looks at the link between democracy and private investment and attempts to contribute to the discussion of how the level of democracy and private sector investments are related. To the best of our knowledge, no previous study has incorporated democracy into its private investment function in the Turkish context. Second, it employs the Autoregressive Distributed Lag (ARDL) bounds testing approach to co-integration developed by Pesaran et al. (2001) and uses a more recent data set.

Adopting the ARDL model (Pesaran et al. 2001) and applying time series data over the 1975-2014 period, we show that democracy has a profound positive impact on private investment in both the short and long run. Public investment crowds out private investment. Macroeconomic instability and real interest rate appear to be a serious deterrent to private investment. Financial development and GDP growth exercise a positive impact on private investment. The evidence we provided implies that since increasing private investment, which seems to be a precondition to achieve the 2023 Vision's economic goals, is one of the most pressing policy challenges facing Turkish policymakers, favourable macroeconomic and institutional environments are needed to boost private investments in Turkey.

The rest of the study is outlined as follows. Section 2 presents an overview of the trends of investment in Turkey. Section 3 explains the drivers of private investments and democracy-private investment nexus. Section 4 reviews the literature on Turkey. Section 5 frames the empirical approach. Section 6 provides the results and the last section summarizes and provides some policy implications.

Investment Trends in Turkey

Figure 1 and Table 1 shows how the ratios of private investment, public investment, and the total investment to GDP have evolved since 1975 in Turkey. Broadly speaking, over the 1975-2014 period, housing & construction, manufacturing, and transportation & communication sectors accounted for a large share of total private investment. On the other hand, transportation & communication, energy, agriculture, and education constituted a large share of total public investment.

Figure 1. Private, Public and Total Investment Trends in Turkey (% of GDP)
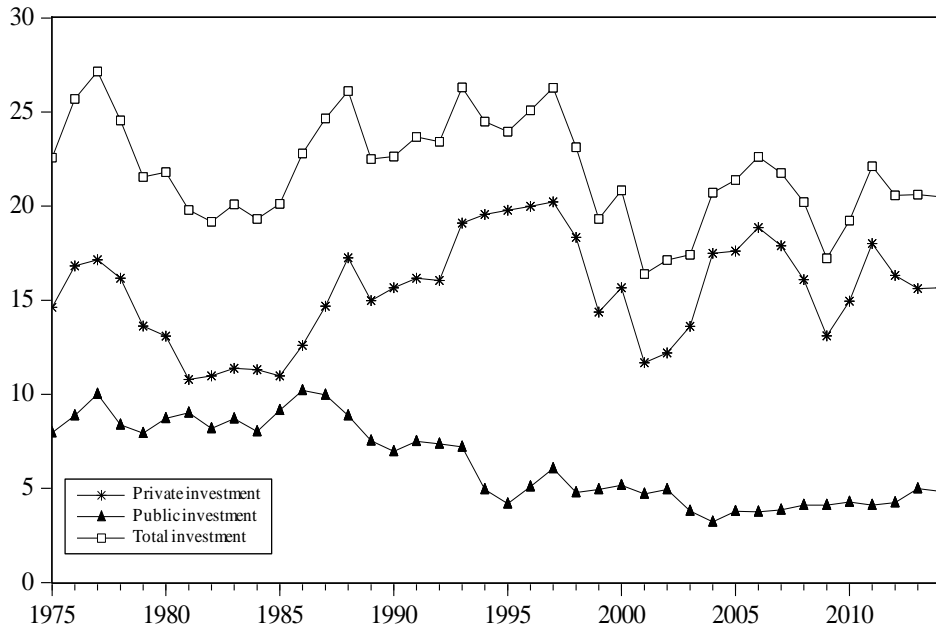
Figure 1 indicates that private investment fell during 1977-1980 and reached its lowest level (10.8%) in 1981. Two major developments, which created economic and political uncertainty, invoked this decline. First, in 1980, Turkish authorities initiated a new reform package called the "January 24 Program." With this program, Turkey replaced its import substitution industrialization strategy with an export-led growth strategy. To achieve this transition, the "January 24 Program" targeted free foreign trade regime, privatization of state-owned enterprises, liberalization of foreign capital movements, and interest rates. Second, economic chaos, political turmoil, and social strife led to a military coup that took place on September 12, 1980. The impact of the coup was immense and it caused radical changes in both political and economic institutions in Turkey (Ersel, 2013). The growth rate of private investment was sluggish during 1981-1985, then increased significantly in 1985-1996 and reached its peak (20.2%) in 1997. It seems that the "January 24 Program" had little effect on private investment during 1980-1985, but after 1986 it gave its fruit. In this regard, Günçavdı et al. (1999) argue that in the short run, the impact of the "January 24 Program" on private investment was negative, but in the long run, subsequent economic growth contributed significantly to the private investment in Turkey. During the period 1998-2000, private investment plummeted and the outburst of the financial crisis in 2001, which had been triggered by political (post-modern coup in 1997) and economic instability brought it to its second-lowest level (11.7%). Thanks to the structural reform program initiated after the crisis, private investment reached its second-highest level (18.9 %) in 2006. Finally, the financial crisis of 2009 was negatively and significantly impacted private investment.

On the other hand, public investment fluctuated over the 1975-1985 period and peaked (10.2%) in 1986. During 1987-2003, public investment remained on a downward track and reached a record low figure (3.2%) in 2004. After 2004, public investment remained relatively stable.

To sum up, Figure 1 shows that while the private investment generally fluctuated, the public investment, particularly, after 1986 trended downward and its growth rate was stagnant after 2004. The behaviour of the total investment was largely shaped by private investment, which constituted 70.9% of the total investment during the period 1975-2014.

Table 1. Private, Public and Total Investments in Turkey (% GDP)

Periods	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04	2005-09	2010-14	1975-2014
Private Inv.	15.6739	11.5079	14.0948	17.3072	18.5413	14.1281	16.7130	16.1123	15.5098
Public Inv.	8.6314	8.5269	9.1443	6.7971	5.0151	4.3642	3.9239	4.4912	6.3617
Total Inv.	24.3053	20.0349	23.2391	24.1043	23.5565	18.4922	20.6369	20.6036	21.8716
Private Inv.*	64.4877	57.4392	60.6513	71.8013	78.71	76.400	80.9858	78.2016	70.9130
Public Inv.*	35.5123	42.5608	39.3487	28.1987	21.29	23.600	19.0142	21.7984	29.0870

*Notes: Total investment = private investment + public investment. * % of total investment.*
Source: Authors' calculation based on data from the Turkish Ministry of Development, http://www.mod.gov.tr/Pages/EconomicandSocialIndicators.aspx. *(Accessed 05.02.2017).*

Table 1 reveals several facts. First, during the period 1975-2014, in Turkey, private and public investments on average, accounted for about 15.5% and 6.36% of GDP respectively. Second, while private investment constituted on average 70.91%, public investment accounted for 29.09% of total investment. Third, private investment reached its lowest level during 1980-84, and public investment (as a share of GDP) reached its peak in 1985-89.

Drivers of Private Investment

This section begins with a brief discussion of major theories that explain private investment behaviour, then it analyses the democracy-private investment nexus considering both theory and empirical evidence.

Theory

From a theoretical perspective several models are proposed to explain private investment behaviour namely; the *accelerator, profit, neoclassical, and Tobin's Q* (Ghura and Goodwin, 2000). The *accelerator model* presumes a linear relationship between output growth and investment. According to this model, an increase in GDP through the multiplier effect leads to a significant increase in aggregate demand and private investment. The profit model, which highlights the role of the profit motive in investment behaviour, suggests that an increase in gross profits enhances internally created funds, which in turn boost private investment.

In the case of the *neoclassical model*, investment function can be generated from the optimization problem of a firm. This model maintains that investment behaviour depends on the marginal product and the real rental cost of capital, which is widely proxied by the real interest rate (Eklund, 2013).

Lastly, *Tobin's Q investment model* compares the market value of a firm's physical capital with its replacement cost. It posits that if the market value of a firm's physical capital is higher than the replacement cost; the investment can be made.

Besides the direct factors mentioned above, there are also indirect factors that might drive private investment. Indirect factors are manifold, including public investment, banking credits, financial development, liberalization, political instability, macroeconomic instability/uncertainty, foreign direct investment, economic security, development aid, regulatory/legal environment, remittances, tax system, current account deficits, real effective exchange rate, education, financial and trade openness, corruption (governance), and democracy. For a detailed discussion of the determinants of private investment, refer to Serven and Solimano (1992).

Democracy-private investment nexus: theory and evidence

As a type of regime, democracy is praised for retaining both political and economic benefits (Drury, 2006). However, the question of whether democracy can generate economic benefits remains an unsettled issue in the literature. There are three theories namely, *conflict, compatibility*, and *sceptical* concerning the way in which democracy affects private investment/economic growth.

First, the *conflict theory* claims that democracy and economic growth are contradictory due to short-sighted decisions by elected officials who want to increase their chance to win the next elections. Correspondingly, this makes elected officials to adopt policies, which encourage immediate consumption rather than investment. Further, Feng (2001:272) notes, "democracy allows the median voter to redistribute income toward the poor, reducing incentives to save and invest." Supporting this view, Tavares, and Wacziarg (2001) found that democratic countries tend to have a low level of private investment and large government expenditures. Barro (1997), for instance, claims that more political rights are not growth-enhancing. Similarly, Gerring et al. (2005:323) conclude, "the net effect of democracy on growth performance cross-nationally over the last five decades is negative or null."

Second, the followers of the *compatibility theory* believe that by promoting political stability and increasing predictability, democracy tends to create positive incentives for private investment. Sirowy and Inkeles (1990) emphasize that by increasing and protecting the basic freedoms and civil liberties, democracy produces an enabling environment for people to work, save, and invest. Democracy may trigger investment/growth by dismissing bad leaders, protecting property rights (Olson, 1993; Heo and Hahm, 2015), lowering barriers to entry, promoting competition, enhancing political stability, contributing to human capital formation, generating incentives for innovation, and efficiency (Ghardallou and Sridi, 2019). North (1993:1) argues that "well-specified and enforced property rights, a necessary condition for economic growth, are only secure when political and civil liberties are secure; otherwise, arbitrary confiscation is always a threat." In addition, Munthali (2012) notes that the accumulation of physical and capital invest-

ment can primarily be achieved in a good legal environment and where private property rights are secured. Further, Friedman (1962) points out that political and economic freedom are interdependent. If so, then improvements in political freedom reinforce economic freedom, in turn, having real effects on investment/economic growth (Knack and Keefer, 1995). Armijo and Gervasoni (2010) argue that democracies tend to have less volatile economic growth and less negative economic growth. The evidence provided by Rodrik (1999) indicates that democracies are more resilient to the adverse economic shocks than other regimes. Using data from 56 countries, Apergis (2017) demonstrates that democratic countries tend to have fewer market crashes. If the compatibility theory holds, democracy can have a significant impact on investment. To sum up, compared to an autocratic setting, a democratic setting provides a stable business environment for private investors "because the political legitimacy of a democracy depends on maintaining economic rights" (Narayan et al. 2011:901). On the empirical side, Helliwell (1994), Pastor and Sung (1995), Feng (2001), Narayan (2008), Rock (2009), Acemoglu et al. (2014), and Gründler and Krieger (2016) provide strong evidence in favor of the compatibility theory. In a recent study, Aköz et al. (2018) theoretically and empirically investigate the impact of regime types (democracy and autocracy) on private investments. They show that the level of private investment decreases when inequality rises in democracies. They also find that autocracies engender a similar level of investments to democracies when inequality is incorporated into the analysis.

Finally, proponents of the *sceptical theory* maintain that democracy and economic growth/investments are not linked. Esposto and Zaleski (1999) note that in general, compared to autocracy, democracy brings more economic freedom but this does not necessarily mean that it is optimum. In a similar vein, Przeworski et al. (2000) argue that regime type does not play an important role in determining the level of economic growth. The study by Obeng et al. (2017) reports that democracy does not exert a significant impact on private investment in Ghana. Consequently, drawing on the aforementioned arguments and empirical evidence it appears that the overall effect of democracy on private investment is ambiguous.

A Brief Literature Review for Turkey

Although the determinants of private investment are a rich field of study,[4] the research on Turkey is surprisingly scant. Moreover, previous empirical studies on Turkey have

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[4] Narayan (2004), Martinez-Lopez (2006), Zou (2006), Ahmed and Qayyum (2007), Narayan (2008), Jongwanich and Kohpaiboon (2008), Ndikumana (2008), Ang (2009), Ang (2010), Munthali (2012), Tadeu and Silva (2013) and Degiannakis et al. (2017) are the studies that used cross-section or time-series data to investigate determinants of private investment for single countries. On the other hand, Ghura and Goodwin (2000), Stasavage (2002), Le (2004), Erden and Holcombe (2005), Atukeren (2005), Escalares and Thomakos (2008), Aysan et al. (2009), Demir (2009), Fowowe (2011), Misati and Nyamongo (2011), Cavallo and Daude (2011), Lim (2014), Ho and Yeh (2014), Escalares and Kottaridi (2014), Dreger and Reimers (2016) and Afawubo and Mathey (2017) are the studies that examined the determinants of private investment for specific regions, developing and developed countries, using time series, cross-section, and panel data.

focused mainly on macroeconomic drivers of private investment and ignored institutional factors.

Using the Two-Stage Least Squares (TSLS) estimation method, Chhibber and van Wijnbergen (1992) study the determinants of private investment for the period 1970-1986 in Turkey. Their main findings can be summarized as follows: (i) real cost of borrowing exerts a significant negative effect on private investment; (ii) credits to private sector promote private investment; (iii) expected level of output enhances private investment; and (iv) non-infrastructural public investment crowds out private investment.

To single out the main drivers of private investment, Günçavdı et al. (1999) use unrestricted error correction (UECM) procedure and yearly time series data for the period 1968-1994 in Turkey. They found that: (i) GDP growth rate induces private investment; (ii) public investment crowds out private investment; (iii) financial liberalization discourages private investment.

Akkina and Celebi (2002) explore the determinants of private fixed investment in Turkey over the 1970-1996 period and they found that while output growth and credits to the private sector contribute to private investment, public investment reduces it.

Ismihan et al. (2005) find that while macroeconomic instability and public investment hamper private investment, economic growth promotes it in Turkey over the period 1963-1999. Using firm-level data, Demir (2009) investigates the impact of macroeconomic uncertainty and country risk on private investment and found that both macroeconomic uncertainty and country risk are detrimental to private sector fixed capital investment in Turkey.

Balcilar et al. (2016) explore the determinants of domestic investment in Turkey over the 1960-2008 period, using the autoregressive distributed lag (ARDL) method. They found that; (i) financial development, growth of per capita disposable income and total credit to private sector promote domestic investment; (ii) inflation and real interest rate adversely affect domestic investment; and (iii) fiscal deficit crowds-out domestic investment.

In a recent study, using firm-level data, Gezici et al. (2018) examine the determinants of investment and find that small and medium-sized firms face higher credit constraints than the large firms in Turkey.

Empirical Approach

Data

This study uses annual time series data from 1975 to 2014. Data availability constraints compelled us to choose this sample period. The ratio of private fixed investment to GDP is our dependent variable. The independent variables are the real GDP growth rate (annual %, GDP), real interest rate, the ratio of public investment to GDP, macroeconomic instability, financial development, and democracy. The data on private and public in-

vestments are obtained from the Turkish Ministry of Development.[5] GDP growth rate, real interest rate, financial development and macroeconomic instability data (consumer price index, total debt, and terms of trade) are taken from the World Development Indicators (WDI) database (World Bank, 2017).

Following Nguedam Ntouko (2016), we construct a macroeconomic instability index (*mins*) which contains a linear combination of consumer price index, total debt (as a share of exports of goods and services), and deteriorating terms of trade (inverse of the ratio of terms of trade) by using principal component analysis (PCA).[6]

Table 2 shows the eigenvalues and eigenvectors of the matrix of correlation among consumer price index, total debt, and deteriorating terms of trade. Accordingly, there are three eigenvalues, 1.3877, 0.9257, and 0.6865 respectively. There is an eigenvector for each eigenvalue. Here, *C1, C2*, and *C3* represent principal components obtained from first, second, and third eigenvectors, respectively.

Table 2. Macroeconomic instability index

Components	Eigenvalues	Proportions of Variance	Cumulative Variance
C1	1.3877	0.4626	0.4626
C2	0.9257	0.3086	0.7712
C3	0.6865	0.2288	1
Eigenvectors			
Variables	C1	C2	C3
CPI[a]	0.6684	0.0241	0.7433
Total Debt[b]	-0.5073	0.7456	0.4320
1/Terms of Trade	0.5438	0.6658	-0.5106

Notes: [a] Consumer price index, [b] % of exports of goods and services
Source: Authors' calculations based on World Development Indicators, (World Bank, 2017)

The ratio of each eigenvalue to their sum, namely, proportions of variance show that *C1, C2*, and *C3*, explain 0.4626%, 0.3086%, and 0.2286% of the standardized variance, respectively. Correspondingly, the macroeconomic instability index is specified as:

*Macroeconomic Instability Index = (0.4626/0.7712)*C1 + (0.3086/0.7712)*C2*   (1)

The macroeconomic instability index takes both negative and positive values. While a negative value indicates a worsening in economic instability, positive value shows an improvement.

Figure 2 illustrates the behaviour of the macroeconomic instability index since 1975 in Turkey. Visual inspection of Figure 2 reveals several features of the trajectory of the macroeconomic instability index. First, the index took negative values during the period 1980-2000, indicating an unstable macroeconomic environment during this period in Turkey. Second, in terms of macroeconomic instability, the years 1980 and 1994 were the worst years for the Turkish economy. The macroeconomic instability index fell from 1.71 in 1979 to -0.86 in 1980 primarily due to two major developments. First, Turkey switched from import substitution industrialization strategy to an export-led growth strategy. Second, a coup d'état staged in 1980. The index reached its lowest point (-0.98) in 1994. This is not surprising, because the Turkish economy experienced a very severe financial crisis in 1994, owing to the unsustainable current account and budget deficits, monetization, and the collapse of its credit markets. Fourth, after 2001 despite fluctuations, macroeconomic instability index took positive values suggesting a relatively stable macroeconomic environment in Turkey.

Figure 2. Time plot of macroeconomic instability index (*mins*), 1975-2014
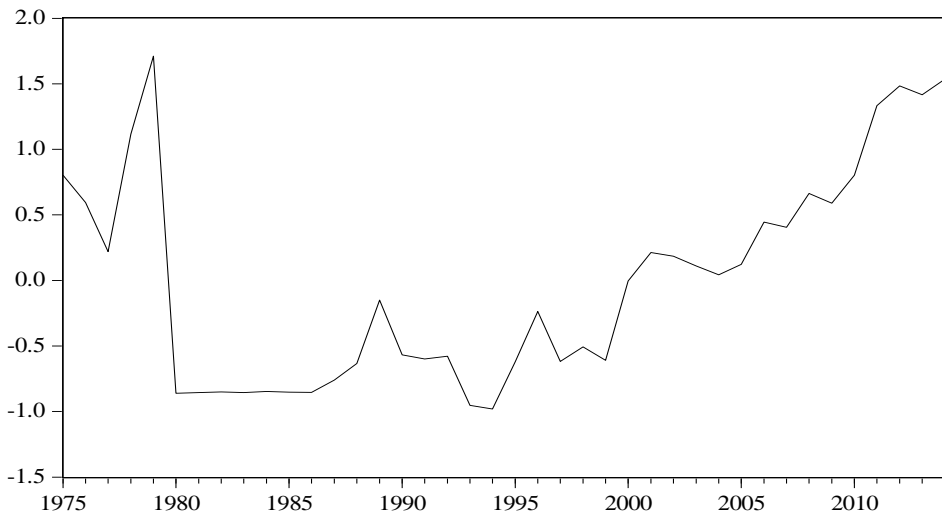
Source: Authors' calculation

In the empirical analysis, we use two different measures for democracy. The first democracy variable (*dem1*) uses the Freedom House indicators, namely political rights and civil liberties. Being active in politics requires political rights. Rights to vote, rights to be elected and elect representatives who have the decisive vote on public policies are the major political rights. On the other hand, civil liberties contain the freedom of press, association, religion, and speech. Both political rights and civil liberties range from 1 to 7. In other words, while 1 represents more freedom 7 represents less freedom. According to the Freedom House classification, countries with scores 1 to 2.5 are free, 3 to 5.5 are partly free, and 5 to 5-7 are not free. Considering both political rights and civil liber-

ties, following Helliwell (1994), we construct a democracy index (*dem1*), using the following transformation:

$$dem1 = \frac{14 - (Political\ rights\ +\ Civil\ liberties)}{12} \tag{2}$$

The democracy score obtained from this specification varies between 0 (no democracy) and 1 (full democracy). Data related to both political rights and civil liberties are retrieved from Freedom House (2016).

The second democracy indicator (*dem2*) we use is the "*Electoral democracy index (v2x_polyarchy)*" that is constructed by Coppedge et al. (2017a). At its core, *dem2* attempts to measure whether the ideal of electoral democracy is achieved in its fullest extent.[7] This index is also utilized by Rossignoli (2017) to measure democracy. The index (*dem2*) is calculated by averaging two components; the first component is the five-way multiplicative interaction (*MI*) of five indices that measure freedom of association (*a*), clean elections (*b*), freedom of expression (*c*), elected executive (*d*), and suffrage (*e*). On the other hand, the second component is the weighted average (*WA*) of these five indices. Mathematically, how *dem2* is aggregated can be shown in the following equation (Coppedge et al., 2017b:49):

$$dem2=0.5*MI+0.5*WA=0.5*(a*b*c*d*e) + 0.5*(d/8+b/4+a/4+e/8+c/4) \tag{3}$$

The minimum value for *dem2* is 0, whereas the maximum value for it is 1.

Figure 3 presents the evolution of democracy over the period 1975-2014, in Turkey. During this period, Turkey's democratic practice (multi-party regime/democracy) is interrupted by two military coups, namely the 1980 coup and the post-modern coup of 1997. Several features of Figure 2 are worth noting. First, both democracy indices indicate that the year 1981 was the worst year for Turkish democracy. Second, of the two indices of democracy, dem1 is more volatile than *dem2*. Third, compared to *dem1*, *dem2* appears to have fluctuated less after 1984.

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[7] "The electoral principle of democracy seeks to embody the core value of making rulers responsive to citizens, achieved through electoral competition for the electorate's approval under circumstances when suffrage is extensive; political and civil society organizations can operate freely; elections are clean and not marred by fraud or systematic irregularities; and elections affect the composition of the chief executive of the country. In between elections, there is freedom of expression and an independent media capable of presenting alternative views on matters of political relevance" Coppedge et al. (2017b:49).

Figure 3. Democracy Indices for Turkey
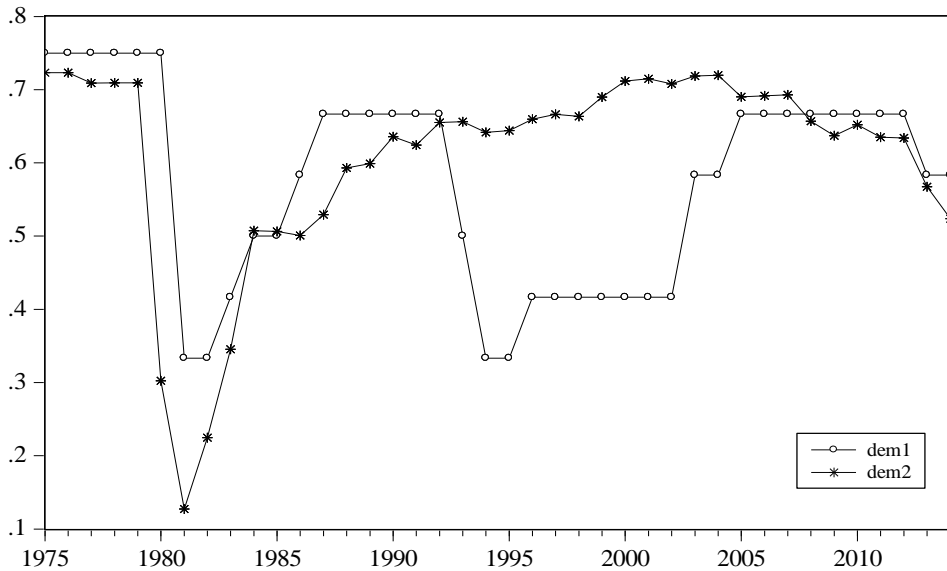
Source: Data on dem1 is from Freedom House (2016) and dem2 is from Coppedge et al. (2017a).

Descriptive statistics and correlation matrix are reported in Table 3. On average, private and public investments account for about 15.5% and 6.36% of GDP, respectively. As an indicator of volatility, the standard deviations reveal that financial development and real GDP growth rate exhibit the highest fluctuations in comparison to other variables. Moreover, compared to *dem1, dem2* does not exhibit a normal distribution. There is also evidence that private investment has a higher variation compared to public investment. The macroeconomic instability index varies in the range between -0.980 and 1.710. The mean of the real interest rate is -0.04, which shows that actual inflation was higher than the nominal interest rate over the period 1975-2014, in Turkey. In addition, private investment is negatively correlated with public investment, but it is positively correlated with output growth rate, financial development, and democracy indices. The macroeconomic instability index is negatively correlated with output growth. Both democracy indices are positively associated with output growth.

Table 3. Descriptive statistics and correlation matrix

	pri	*y*	*r*	*pub*	*mins*	*fd*	*dem1*	*dem2*
Mean	15.509	4.191	-0.043	6.361	7.50E-08	24.835	0.572	0.607
Median	15.664	4.913	0.032	5.613	-0.077	18.303	0.625	0.653
Maximum	20.228	10.461	0.944	10.202	1.710	74.603	0.750	0.723
Minimum	10.781	-5.697	-2.513	3.215	-0.980	13.588	0.333	0.127
Std. Dev.	2.743	4.288	0.793	2.166	0.814	15.089	0.138	0.138
Jarque-Bera	1.567	3.615	18.732	3.773	3.498	48.182	3.630	44.141
Probability	0.456	0.163	0.000	0.151	0.173	0.000	0.162	0.000
Observations	40	40	40	40	40	40	40	40

Correlation Matrix

	pri	*y*	*r*	*pub*	*mins*	*fd*	*dem1*	*dem2*
pri	1							
y	0.239	1						
r	0.069	0.166	1					
pub	-0.404	0.051	-0.614	1				
mins	0.114	-0.033	0.052	-0.390	1			
fd	0.143	0.049	0.449	-0.390	0.659	1		
dem1	0.088	0.061	-0.303	0.169	0.512	0.192	1	
dem2	0.550	0.064	0.064	-0.468	0.421	0.005	0.311	1

Model

Based on the theoretical and the empirical literature (Ang, 2010; Cavallo and Daude, 2011; Lim, 2014) our baseline model is characterized as follows:

$$pri_t = \beta_0 + \beta_1 y_t + \beta_2 r_t + \beta_3 \text{pub}_t + \beta_4 \text{mins}_t + \beta_5 fd_t + \beta_6 dem_t + \varepsilon_t \qquad (4)$$

In the model, pri_t stands for the ratio of private investment to GDP, y_t for real GDP growth rate, r_t for real interest rate,[8] $mins_t$ for macroeconomic instability, pub_t for the ratio of public investment to GDP, fd_t for the ratio of domestic credits to the private sector to GDP (a proxy for financial development), dem_t for democracy indices, and ε_t for residual, respectively.

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[8] Since the primary funding source for firms in Turkey is the banks, the "appropriate" interest rate should be the bank lending rate. However, time-series data for the bank lending rate is not available for Turkey. Accordingly, following Jongwanich (2010), the real interest rate (r) is computed as r=ln[(1+i)/(1+inf)]; here, ln denotes the natural logarithm, i denotes the nominal deposit rate, and inf represents the inflation rate.

Besides the aforementioned variables, other variables might affect private investment. To avoid the loss of degrees of freedom, due to the small sample size, some other potential macroeconomic determinants of private investment are excluded from the model.

According to the neoclassical model, a strong economic activity-a high level of real GDP-promotes private investment, therefore the coefficient of GDP growth rate is expected a priori to be positive.

Theoretically, the real interest rate may either be positively or negatively associated with private investment. By stimulating saving, according to the McKinnon-Shaw hypothesis, the real interest rate exerts a positive influence on investment. On the other hand, the user cost of capital theory posits that the impact of real interest rate on a firm's investment decision is negative. Correspondingly, the influence of the real interest rate on private investment appears to be ambiguous.

Public investment may influence private investment in two opposing ways: either by crowding-in or crowding-out. If the crowding-in effect holds, an increase in public investment raises private investment. This is because public investment might provide a better infrastructure, which facilitates and stimulates private investment. Therefore, public investment is complementary to private investment. The occurrence of the crowding-in effect depends on "the presence of economic slack, accommodative financial conditions, sizable investment needs, well-developed institutions, and a sufficiently skilled labour force" (Vashakmadze et al. 2017: 8). In the crowding-out effect, by competing for the available resources, public investment displaces private investment. Mankiw (2012) notes that the occurrence of the crowding-out effect is mainly due to the fiscal deficit caused by an increase in public investment in an environment of the limited economic slack, large government debt, and tight monetary policy. Moreover, according to Cavallo and Daude (2011:78) crowding out effect primarily prevails "in countries with poor institutions, binding financing constraints, insufficient integration into world capital markets, and insufficient openness to international trade." If so, public investment is a substitute for private investment. Accordingly, the coefficient of public investment is expected to be negative or positive.

According to World Bank (2005:95), macroeconomic instability refers to a situation in which "the domestic macroeconomic environment is less predictable and it is of concern because unpredictability hampers resource allocation decisions, investment, and growth." From this definition, three key features of macroeconomic instability prevail: the basic macroeconomic variables are volatile and unsustainable, and the business environment is highly uncertain. An economic agent's present decision about consumption or investment depends on the anticipation of a future outcome. In fact, the expectations about future economic conditions come out as a driving factor in the investment decision. Pindyck (1989) notes that investment expenditures are more likely to be affected by various forms of uncertainties over exchange rates, future prices, tariff structure, interest rates, cash flows, and timing and cost of investment. For instance, high price surges and exchange rate volatilities can hurt creditors and hence reduce credit availa-

bility. Further, due to the irreversibility property of investment,[9] firms may defer or quit investment projects in a highly unpredictable and unstable business environment. Therefore, one can hypothesize that macroeconomic instability exerts a negative influence on private investment.

Domestic credit to the private sector (% GDP) that shows the size of the banking system is commonly used as an indicator of financial development in empirical studies (Levine, 2005). Since the private sector finances their investment primarily by banking credits, while greater availability of and access to funds may boost private investment, a low level of credits may be a significant deterrent to private investment. Thus, the coefficient of financial development is expected to be positive. Finally, as explained in Section 3, the coefficient of democracy is ambiguous.

During 1975-2014, the Turkish economy has faced important exogenous shocks such as the economic crises of 1980, 1989, 1994, 1997, 2001, and 2009. Thus, to gauge the effect of these crises on private investment, a dummy variable (dum) which takes one for the crisis years and zero for other years, is included in the model. It is expected that the crises hamper private investment.

Methodology

The empirical method adopted in this paper is the ARDL bounds testing approach. Several characteristics of the ARDL differentiate it from other conventional cointegration tests. First, in the ARDL procedure, variables can have a mixed order of integration (I(0) or I(1)). Second, it allows variables under consideration to have different optimal lag lengths. Third, it estimates short-and long-run coefficients simultaneously. Fourth, it renders robust results for small samples. Finally, it addresses endogeneity problems. This last characteristic of the ARDL procedure is noteworthy because it allows researchers to predict models even when having endogenous regressors (Peseran and Shin, 1999). This point is also pertinent for our study because possible reverse causality between private investment and some of its determinants (such as GDP growth and financial development)[10] might lead to the endogeneity problem, which cannot be tackled with standard regression models.

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[9] It refers to the sunk cost that cannot be recovered when the undertaken investment is an unprofitable one.

[10] The problem of endogeneity arises because of the reverse causality relationship between private investment and GDP growth. That is to say, GDP growth has an impact on private investments, but at the same time, private investment has an impact on the GDP growth rate. Similarly, there is a reverse causality relationship between private investment and financial development. In other words, private investments and financial development mutually influence each other. For the bidirectional causality relationship between private investment and financial development see Huang (2011).

In ARDL form, Eq. (4) can be specified as:

$$\Delta pri_t = \alpha_0 + \alpha_1 dum + \sum_{i=1}^{p} \alpha_{2i} \Delta pri_{t-i} + \sum_{i=1}^{p} \alpha_{3i} \Delta y_{t-i} + \sum_{i=1}^{p} \alpha_{4i} \Delta r_{t-i}$$

$$+ \sum_{i=1}^{p} \alpha_{5i} \Delta pub_{t-i} + \sum_{i=1}^{p} \alpha_{6i} \Delta mins_{t-i} + \sum_{i=1}^{p} \alpha_{7i} \Delta fd_{t-i}$$

$$+ \sum_{i=1}^{p} \alpha_{8i} \Delta dem_{t-i} + \alpha_9 pri_{t-1} + \alpha_{10} y_{t-1} + \alpha_{11} r_{t-1}$$

$$+ \alpha_{12} pub_{t-1} + \alpha_{13} mins_{t-1} + \alpha_{14} fd_{t-1} + \alpha_{15} dem_{t-1} + v_t$$

(5)

F-test is employed to establish co-integration among variables that are I(0) or I(1). Pesaran et al. (2001) generated two different sets of asymptotic critical values for I(0) and I(1) variables.[11] Provided that the computed F-statistic exceeds the upper critical value, H_0 can be refuted. When the F-statistic lays between the lower and the upper bound critical values, the result is inconclusive.

To unveil the long-run equilibrium relationship among the variables in Eq. (4), the null hypothesis of no cointegration ($H_0 : \alpha_9 = \ldots = \alpha_{15} = 0$) among the variables is conducted against the alternative hypothesis ($H_1 : \alpha_9 \neq \ldots \neq \alpha_{15} \neq 0$).

The ARDL model specified in Equation (5) can be represented in terms of error correction as:

$$\Delta pri_t = \alpha_0 + \alpha_1 dum + \sum_{i=1}^{p} \alpha_{2i} \Delta pri_{t-i} + \sum_{i=1}^{p} \alpha_{3i} \Delta y_{t-i} + \sum_{i=1}^{p} \alpha_{4i} \Delta r_{t-i}$$

$$+ \sum_{i=1}^{p} \alpha_{5i} \Delta pub_{t-i} + \sum_{i=1}^{p} \alpha_{6i} \Delta mins_{t-i} + \sum_{i=1}^{p} \alpha_{7i} \Delta fd_{t-i}$$

$$+ \sum_{i=1}^{p} \alpha_{8i} \Delta dem_{t-i} + \alpha_{9i} ecm_{t-i} + u_t$$

(6)

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[11] Pesaran et al. (2001) provide two critical values to test cointegration. While the lower critical values assume all the variables are I(0) indicating lack of cointegration, the upper critical values assume that all the variables are I(1) suggesting the existence of long-run equilibrium relationship between the variables under consideration.

Results and Discussion

In the ARDL framework, the variables under consideration must be integrated order of zero I(0) or one I(1). Therefore, the stationary tests should be conducted to assure that no variable is I(2). Since the critical values in Pesaran et al. (2001) are based on the assumption that the variables are either I(0) or I(1), having a variable that is I(2) in the model leads to spurious F test result. Results of Augmented Dickey-Fuller (ADF) (1981) and Phillips-Perron (PP) (1988) unit root tests which are reported in Table 4 show that *pri, r, pub, mins, fd*, and *dem1,2* are I(1), while *y* is I(0).

Having explored the integration characteristics of the variables, we can now conduct the ARDL bounds test to detect the co-integration between private investment and its determinants. Estimating Equation (2) by the OLS is the first step of the ARDL procedure. Due to the small sample size and yearly data, we take the maximum lag length of two. Schwarz Bayesian Information Criterion (SBC) is used for the selected ARDL models. Afterward, to establish a long-run equilibrium relationship, the bounds F-test is applied to Eq. (4) and the results are reported in Table 5.

Table 4. Unit Root Analysis

	ADF Unit Root Test		PP Unit Root Test		Order of Integ.
Variables	Level	First Dif.	Level	First Dif.	I(.)
pri	-2.209	-5.439***	-2.209	-5.445***	I(1)
y	-6.137***	-	-6.279***	-	I(0)
r	-2.977	-5.929***	-2.887	-6.501***	I(1)
pub	-3.041	-6.367***	-2.940	-9.389***	I(1)
mins	-2.454	-6.831***	-2.140	-7.194***	I(1)
fd	1.298	-3.509**	1.240	-3.515**	I(1)
dem1	-2.617	-5.069***	-2.297	-5.001***	I(1)
dem2	-1.923	-5.586***	-2.175	-3.814***	I(1)

*Notes: The lag length selection was based on Schwarz Information Criterion (SIC) for the ADF Test and the bandwidth selection was based on Newey-West using Bartlett kernel for the PP Tests. ** and *** indicate significance at 5% and 1% levels, respectively.*

Table 5. Bounds *F*-test for co-integration

Models	k	m	*F*-Statistics	Outcome
F(pri | y, r, pub, mins, fd, dem1)	6	2	8.466***	Co-integration
F(pri | y, r, pub, mins, fd, dem2)	6	2	7.880***	Co-integration

*Notes: The critical values are from Pesaran et al. (2001). (k=6: 3.15-4.43). ** * denotes the significance level for 1%. k and m denote the number of independent variables and the optimal lag length, respectively.*

We estimate two models where Model 1 incorporates *dem1*, and Model 2 includes *dem2*. The parameters of Eq. (4) are estimated with the ARDL approach. Based on the SBC, the optimum orders of the ARDL are determined as (1,1,1,0,1,0,1) and (2,2,0,2,1,2,2) in Models 1 and 2, respectively. The long-run and short-run results are reported in Table 6.

In both models, in the long-run, the real GDP growth rate appears to influence private investment positively and significantly. The lagged real GDP growth rate (accelerator variable) stimulates private investment, in both models, in the short run validating the accelerator hypothesis. These results imply that a strong economic activity breeds private investment in both the short and long run in Turkey. Other things remaining the same, a one percentage point increase in the real GDP growth rate translates into 1.11 (Model 1) and 0.77 (Model 2) percentage points increase in private investment as a percentage of GDP in the long run respectively. Our results are in line with the findings of Ghura and Goodwin (2000), Jongwanich and Kohpaiboon (2008), Aysan et al. (2009), Ang (2010), Munthali (2012), Balcilar et al. (2016), and Afawubo and Mathey (2017).

The real interest rate has a strong adverse consequence on private investment in the long-run in both models. Quantitatively, a one percentage point increase in real interest rate reduces private investment by 3.03 (Model 1) and by 2.84 (Model 2) percentage points respectively. This result invalidates the McKinnon-Shaw proposition, but it corroborates the cost of capital hypothesis in both short (Model 1) and long run. Moreover, this finding is consistent with the results of Martinez-Lopez (2006), Ndikumana (2008) Escaleras and Thomakos (2008), Aysan et al. (2009), Ang (2010), Balcilar et al. (2016), and Afawubo and Mathey (2017), but it is inconsistent with the evidence of Misati and Nyamongo (2011), and Tadeu and Silva (2013).

Our short-run results indicate that public investment crowds-out private investment in Model 2. On the other hand, in the long run, public investment crowds-out private investment only in Model 1. Other things remaining the same, for instance, a 1 percentage point increase in public investment as a percentage of GDP impedes private investment as a percentage of GDP by 1.49 percentage point in the long run. These results confirm that public investment displaces private investment, suggesting that public investment is a substitute for private investment. One possible explanation for this negative relationship is that when the government finances its debt from the public via selling bonds, the interest rate rises. Accordingly, rather than investing in stocks, people invest in bonds, which leads to a decrease in private investment. Günçavdı et al. (1999), Fowowe (2011) and Dash (2016) also confirmed a negative association between public and private investment. Our results, however, contrast with the findings of Narayan (2004), Martinez-Lopez (2006), Erden and Holcombe (2006), Jongwanich and Kohpaiboon (2008), Ang (2009), and Ang (2010).

Macroeconomic instability appears to exert a strong negative and significant impact on private investment in both the short and long run in both models. For instance, a one-unit increase in the macroeconomic instability index holds back private investment by 3.705(Model 1) and by 4.240 (Model 2), percentage points, respectively, in the long-run. Given this result, it seems that an enabling investment and business climate are crucial for private investment. Further, this result coincides with the findings of Jongwanich

and Kohpaiboon (2008), Aysan et al. (2009), Ang (2009), Demir (2009), and Escaleras and Kottaridi (2014).

Table 6. ARDL model long-run and short-run results

	Model 1			Model 2		
A) Long-run	ARDL (1,1,1,0,1,0,1)			ARDL (2,2,0,2,1,2,2)		
Regressors	Coefficient	t-statistic	p-value	Coefficient	t-statistic	p-value
y	1.112***	4.035	0.000	0.776***	4.262	0.000
r	-3.026**	-2.769	0.010	-2.836***	-4.984	0.000
pub	-1.490***	-4.633	0.000	-0.333	-1.360	0.189
mins	-3.705***	-2.784	0.009	-4.240***	-8.157	0.000
fd	0.098*	1.818	0.080	0.086**	2.848	0.010
dem1	7.821*	1.763	0.089	-	-	-
dem2	-	-	-	18.683***	6.005	0.000
B) Short-run						
Regressors	Coefficient	t-statistic	p-value	Coefficient	t-statistic	p-value
Δpri_{t-1}	-	-	-	-0.261**	-2.843	0.010
Δy_t	0.314***	7.919	0.000	0.180***	5.949	0.000
Δy_{t-1}	-	-	-	-0.108	-3.040	0.006
Δr_t	-2.879***	-6.132	0.000	-	-	-
Δpub_t	-	-	-	-1.046***	-5.038	0.000
Δpub_{t-1}	-	-	-	-0.936***	-3.820	0.001
$\Delta mins_t$	-0.610*	-2.035	0.052	-1.648***	-5.133	0.000
Δfd_t	-	-	-	0.294***	5.588	0.000
Δfd_{t-1}	-	-	-	0.323***	4.716	0.000
$\Delta dem1_t$	-4.044*	-1.952	0.061	-	-	-
$\Delta dem2_t$	-	-	-	4.137*	1.986	0.061
$\Delta dem2_{t-1}$	-	-	-	-6.258**	-2.602	0.017
dum	0.417	0.725	0.474	-0.064	-0.125	0.901
constant	6.011***	8.990	0.000	-0.379**	-2.447	0.024
ecm_{t-1}	-0.454***	-8.540	0.000	-0.736***	-8.519	0.000
C) Diagnostic Tests	Value	p-value		Value		p-value
R^2	0.81	-		0.91		-
Adjusted R^2	0.77	-		0.87		-
F-Statistics	23.259	0.000		22.361		0.000
Serial correlation	0.413	0.660		2.289		0.131
Functional form	0.026	0.873		0.034		0.854
Normality	4.191	0.122		0.446		0.799
Heteroscedasticity	0.928	0.341		1.089		0.303

Notes: For serial correlation, functional form, and heteroscedasticity (ARCH) tests, the F version is used. ***, ** and * denote 1%, 5% and 10% significance levels, respectively.

Financial development seems to affect private investment positively in the short-run only in Model 2. On the other hand, financial development promotes private investment in both models in the long run. For instance, a 1 percentage point increase in financial development would raise private investment by 0.098 (Model 1) and by 0.086 (Model 2) percentage points, respectively. These findings suggest that financial development is conducive to private investment in Turkey. Similar evidence is also reported by Jong-wanich and Kohpaiboon (2008), Aysan et al. (2009), Ang (2010), Luca and Spatafora (2012), and Balcilar et al. (2016).

The long-run coefficients on democracy indices are positive and statistically significant in both models, suggesting that democracy promotes private investment by creating a conducive environment in which the private sector can flourish and operate with confidence. Controlling for other factors, for instance, with each point increase in democracy indices, the level of private investment increases by 7.821 (Model 1) and by 18.683 (Model 2) units in the long-run respectively. This evidence confirms that a democratic environment does matter for private investment and corroborates the compatibility theory. While supporting the findings of Pastor and Sung (1995), Narayan (2008), Rock (2009), Acemoglu et al. (2014), and Gründler and Krieger (2016), our results contradict the findings of Tavares and Wacziarg (2001), and Gerring et al. (2005).

The short-run results, further, reveal that the dummy (*dum*) variable is not significant in both models, suggesting that crises do not deter private investment in Turkey.

In both models, the signs of the estimated coefficients of the error correction terms (ecmt-1) are negative and statistically significant. For instance, Model 2 has a coefficient for the error correction term, which is equal to -0.74, suggesting that around 74 percent of adjustment is achieved in a year in Turkey. Further, a variety of diagnostic tests such as heteroscedasticity, serial autocorrelation, non-normal errors, and functional form are conducted. And, the results illustrated in Table 6 also show that the estimated models pass all the diagnostic tests. Lastly, the stability of the parameters in all models is checked by the cumulative sum (CUSUM) and the cumulative sum of squares (CUSUMQ) tests. The graphs of the CUSUM and the CUSUMQ presented in Figure 4 affirm the stability of the parameters.

Figure 4. Plots of CUSUM and CUSUMSQ Tests for Models (1-2)
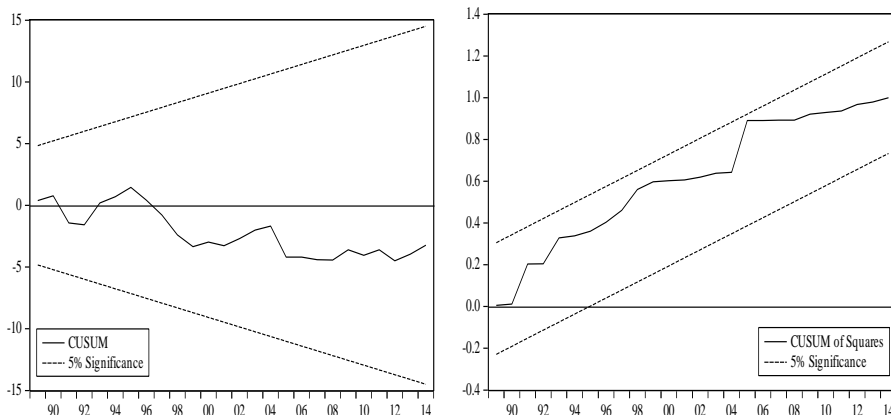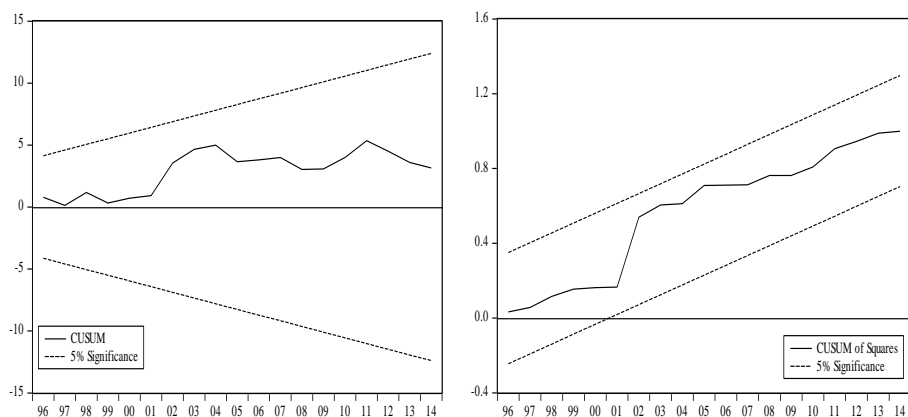
Conclusion and Recommendation

Researchers have identified several ways in which democracy might help or hinder private investment/economic growth. Much of the explanation for low levels of private investment is to be found in unfavourable investment climate. While democracy can influence economic growth/investment in a variety of ways, the most direct factor is by influencing the investment climate.

This study examined the determinants of private investment for the period 1975-2014 in Turkey with a special emphasis on the role of democracy. The empirical analysis is conducted through the ARDL approach to examine the long-run and short-run dynamics of private investment in Turkey. The ARDL test provides strong evidence of the co-integration relationship between private investment and its major determinants.

Several conclusions emerge from the analysis. The relationship between democracy and private investment is positive and robust in Turkey. Output growth and financial development contribute positively to private investment. On the other hand, the real interest rate, macroeconomic instability, and public investment pose obstacles to private investment. Our general conclusion is that a favourable macroeconomic and institutional environment is needed to boost private investment in Turkey.

These results offer several policy implications. As output growth rate influences private investment significantly and positively, policies aimed at boosting economic growth and structural reforms should be implemented. A recent Enterprise Survey conducted by World Bank (2013) reports that the investors perceive tax rates, informal competitions, political instability, and access to finance as the top four challenges to doing business in Turkey. Further, a recent report published by World Economic Forum (2016) documents that inadequately educated workforce, access to financing, inefficient government bureaucracy, policy instability, and tax rates are seen by the investors as the most unfavourable factors to doing business in Turkey. To have a thriving and dynamic private sector, Turkish authorities should continue to improve the business regulatory environment in Turkey. Further, the Coordination Council for Improvement of Investment

Environment (YOIKK) founded in 2001 with the mandate to rationalize regulations on investment, should continue its efforts to develop policies that will promote the competitiveness of the business environment in Turkey.

Real interest rate drags down private investment, therefore real interest rate should be kept low by appropriate policies. As public investment contracts private investment, policies aimed at increasing the marginal product of capital should be pursued to mitigate the crowding-out effect. Moreover, Turkey should continue to direct its public investments - through Public-Private Partnership (PPP) projects - primarily towards education, health, and physical infrastructure investments. Because, as argued by IMF (2018), these investments act as a strong complement to private investment by enhancing marginal products of private capital and labour.

Financial development exerts a positive impact on private investment. Findings of Mutluer Kurul and Tiryaki (2016) and Gezici et al. (2018) revealed that small firms face higher credit constraints than large firms in Turkey. Thereby, policies aimed at promoting financial widening and deepening should be designed and implemented. Since macroeconomic instability and private investment are negatively associated, the necessary measures should be taken to create a predictable and stable investment climate for investors.

Democracy positively correlates with private investment. Given this relationship, policies should be prioritized to improve the quality of democracy in Turkey. In other words, Turkish authorities should continue to improve and empower political rights and civil liberties in Turkey. Further, Turkey is a European Union (EU) candidate, in this regard, Turkish policymakers should additionally adopt the EU standards. Adopting such standards and enforcing them would not only increase the quality of democracy in the country but also create a more investment-friendly environment in Turkey.

In this study, we investigated democracy and private investment nexus employing aggregate private investment time series data. Use of sector-specific private investment, firm-level data, and panel data econometrics techniques remain an important area for future research. Moreover, given the fact that the EU is under socio-political pressure, and the liberal democracy's quality is possibly under threat in some emerging European countries, similar studies may also be conducted to explore the impact of democracy on private investment in these countries.

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