MACROECONOMIC DETERMINANTS OF STOCK MARKET DEVELOPMENT: EVIDENCE FROM BORSA ISTANBUL

Yılmaz BAYAR, PhD[*]

Abstract

Stock markets have experienced significant improvements especially during the past 30 years, fostered economic growth and become one of the important leading indicators for the economies. Economic growth, saving rate, banking sector development, trade openness, foreign direct investments, institutional quality and stock market liquidity are found to be major determinants behind stock market development in the literature. This study investigates major macroeconomic determinants of stock market development in Turkey during the period 2005:Q1-2015:Q3 using ARDL cointegration, Toda and Yamamoto (1995) causality test and regression analysis. We also found that both economic growth and stock market liquidity had positive impact on stock market development in the long run, while inflation had negative impact on stock market development in the long run.

Keywords: Macroeconomic Variables, Banking Sector, Stock Market, Time Series Analysis, Turkey

JEL Classification: G15, G21, C22

1. Introduction

Financial and economic globalization have accelerated as of World War II, many countries gradually removed barriers on the flows of goods, services and capital among countries. There have been significant increases in world stock market capitalization widely accepted as an indicator of stock market development during financial globalization process as of 1980s. Global stock market capitalization increased to about 114% of world GDP in 2007 from about 27% world GDP in 1975 as seen in Chart 1. Global stock market capitalization

[*]*Assoc. Professor, Usak University, Department of Economics, yilmaz.bayar@usak.edu.tr*

was about 94% of world GDP as of 2014, although late financial crises led substantial contractions in global stock market capitalization.

Chart 1

World Stock Market Capitalization (% of World GDP)
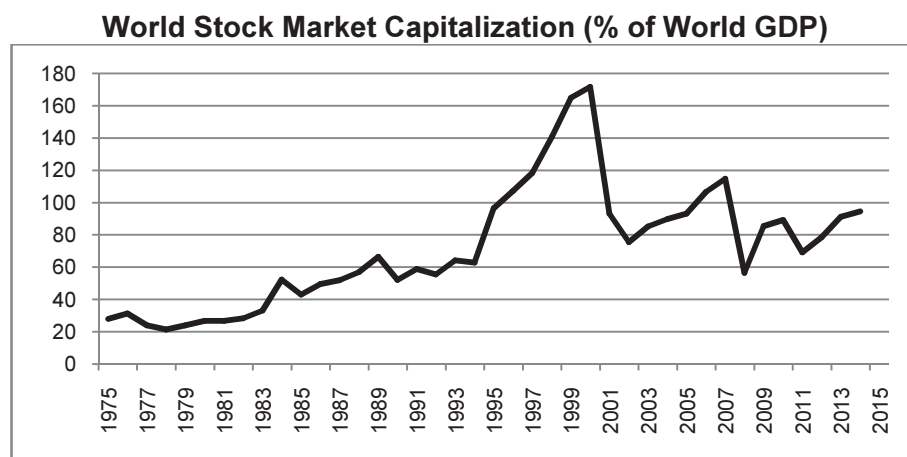
Significant increases in global stock market capitalization and trading volume directed the researchers to determine the impact of stock market development on the economy and investigated the major determinants of stock market development. The studies about the impact of stock market development on the economy traced to 1990s, while the studies about impact of financial development on the economy dated back to 1900s (See Schumpter (1911)). In one of the leading studies, Levine (1991) suggested that stock markets have potential to affect economic growth positively through making firm ownership tradable and enabling investors to diversify the unsystematic risk. On the other hand Levine and Zervos (1996) also asserted that stock markets may have impact on economic growth by contributing to the saving mobility, liquidity, risk diversification, firm control and acquisition of knowledge about firms. The empirical studies about the impact of stock market development on the economic growth generally verified that stock market development has had positive impact on the economic growth (See Levine and Zervos (1998) Ngare et al. (2014) and Pradhan et al. (2015)).

Turkish stock market belatedly followed the trend in global stock markets. Establishment of a modern stock market was realized

in July 1991 with Capital Market Law No. 2499 in 1981 in Turkey, while the root of Borsa Istanbul (BIST) dated back to 1866. Then, Legislative Decree no. 91 of 26 December 1985 concerning securities exchanges was issued. Finally Istanbul Stock Exchange Market went into action on 26 December 1995. Istanbul Stock Exchange Market and Istanbul Gold Exchange combined gathered under the same roof of Istanbul Stock Exchange Market on April 2003. Later, Derivatives Exchange Market and BIST Derivatives Market were combined under the umbrella of BIST in the context of struggles for transforming Istanbul to a financial center on August 2013 (BIST, 2016a). Frequently experienced financial crises and political instability during late 1980s and 1990s hindered the development of BIST. BIST capitalization as a percent of GDP raised the levels above 30% together with provision of economic and political stability in 2000s when compared to the past as seen in Chart 2.

Chart 2

BIST Capitalization (% of GDP)
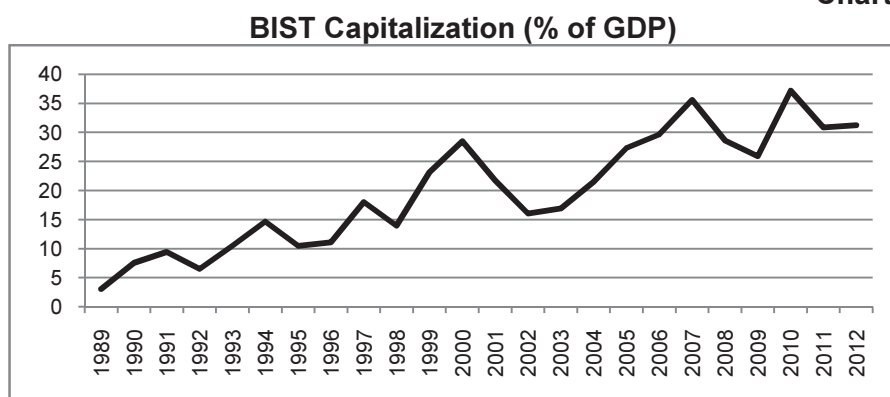
Source: Čihák et al., 2012

In this study, we examined the impact of major macroeconomic variables on BIST development by benefiting time series analysis. We evaluated that this study will be one of the pioneering studies on BIST development considering the literature and therefore, contributed to the literature by filling the gap in this area. The rest of the study is organized as follows: Section 2 discusses the empirical review about the determinants of stock market development, Section 3 gives information about data and econometric methodology used in the study and Section 4 conducts

empirical analysis and presents major findings. Finally the study is concluded with Section 5.

2. Literature Review

The positive impact of stock market development on economic growth and rapidly increasing value of stock markets forwarded the researchers to determine the fundamental determinants of stock market development. The empirical studies have generally focused on the impact of institutional and macroeconomic factors on stock market development and found that economic growth, saving rate, banking sector development, trade openness, foreign direct investments, institutional quality and stock market liquidity had positive impact on stock market development ((see Garcia and Liu (1999), Claessens et al. (2001), El-Wassal (2005), Naceur et al. (2007), Law and Habibullah (2009), Yartey (2010), Raza et al. (2015)); while government budget deficits, inflation and interest rate had negative impact on stock market development (see Naceur et al. (2007), Kurach (2010), Cherif and Gazdar (2010), Nguyen and Hanh (2012)).

Calderon-Rossell (1991) was one of the leading studies about the determinants of stock market development and suggested that economic development and stock market liquidity were major determinants of stock market development. Then extensive studies have been conducted on the determinants of stock market development by adding further institutional and macroeconomic variables to the model of Calderon-Rossell (1991).

In one of these studies, Garcia and Liu (1999) investigated the impact of major macroeconomic variables on stock market development in 15 developed and developing countries during the period 1980-1995 by using panel regression and found that real income level, saving ration, banking sector development and stock market liquidity had positive impact on stock market development. On the other hand Claessens et al. (2001) examined the relationship between foreign direct investments and stock market development in 77 countries during the period 1990-2000 using panel regression and found that foreign direct investments had positive impact on stock market development.

In another study, El-Wassal (2005) examined the impact of major macroeconomic variables on stock market development in 40 emerging market economies during the period 1980-2000 using panel

regression and found that economic growth, financial liberalization and international portfolio investments had positive impact on stock market development. Naceur et al. (2007) investigated the impact of major macroeconomic variables on stock market development in 12 Middle Eastern and North African countries benefiting from unbalanced panel data analysis and found that saving rate, banking sector development and stock market liquidity had positive impact on stock market development, but inflation had negative impact on stock market development. On the other hand, Billmeier and Massa (2007) examined the impact of institutions, remittances and natural resources on stock market development in 17 Middle Eastern and Center Asian countries during the period 1995-2005 and found that institutional quality and remittances had positive impact on stock market development and stock market capitalization was determined by oil prices in the resource-rich countries.

Law and Habibullah (2009) investigated the impact of institutional quality and openness on both banking sector development and stock market development in 27 countries including G-7, European, East Asia and Latin America during the period 1980-2001 using dynamic panel regression and found that real GDP per capita, trade and financial openness and institutional quality had positive impact on stock market development. On the other hand Adam and Tweneboah (2009) investigated the relationship between foreign direct investments and stock market development in Ghana during the period January 1991-April 2006 using Johansen cointegration and found that foreign direct investments had positive impact on stock market development. Yartey (2010) also investigated the institutional and macroeconomic determinants of stock market development in 42 emerging market economies during the period 1990-2004 using dynamic panel regression and found that GDP per capita, gross domestic investment, banking sector development, private capital inflows and stock market liquidity had positive impact on stock market development.

Kurach (2010) examined the factors affecting stock market development in 13 Central and Eastern European countries during the period 1996-2007 using panel regression and found that stock market liquidity and EU membership had positive impact on stock market development, but government budget deficits had negative impact on stock market development. Cherif and Gazdar (2010) also investigated the institutional and macroeconomic determinants of

stock market development in 14 Middle Eastern and North African countries during the period 1990-2007 using panel regression and found that saving rates, banking sector development and stock market liquidity had positive impact on stock market development, but interest rate had negative impact on stock market development.

Nguyen and Hanh (2012) examined the impact of major macroeconomic variables on stock market development in 6 South Asian countries during the period 1980-2008 using panel regression and found that economic growth, saving rate, banking sector development and stock market liquidity had positive impact on stock market development, while inflation and financial crises had negative impact on stock market development. On the other hand Aduda et al. (2012) investigated the determinants of Nairobi stock market development during the period 2005-2009 using regression analysis and found that GDP per capita, domestic savings, banking sector development, stock market liquidity and institutional quality had positive impact on stock market development. Raza and Jawaid (2012) investigated the relationship among economic growth, foreign capital inflows and stock market development in 18 Asian countries during the period 2000-2010 using cointegration test based on ARDL (autoregressive distributed lag) bounds test and Toda and Yamamoto (1995) causality test and found that economic growth had positive impact on stock market development in the long run, but foreign direct investments had negative impact on stock market development in the long run. Furthermore, the results of Toda and Yamamoto (1995) causality test indicated that there was bidirectional causality both between stock market development and foreign direct investments and between stock market development and economic growth.

El-Nader and Alraimony (2013) investigated the fundamental determinants of stock market development in Jordan during the period 1990-2011 using Johansen cointegration and variance decomposition and found that banking sector development, domestic investment, consumer price index and stock market liquidity had positive impact on stock market development, while nominal GDP and net remittances had negative impact on stock market development. On the other hand Zafar (2013) examined the impact of major macroeconomic variables on stock market development in Pakistan during the period 1988-2008 using regression analysis and found that foreign direct investments and trading volume had positive impact on stock market development, while real interest rate had

negative impact on stock market development. Evrim-Mandaci et al. (2013) also examined the impact of macroeconomic variables on stock market development in 30 developed and emerging market economies during the period 1960-2007 using panel regression and found that foreign direct investments, remittances and banking sector development had positive impact on stock market development.

Ayaydın et al. (2013) examined the impact of institutional and macroeconomic factors on stock market development in 39 developing countries during the period 2000-2011 using panel regression and found that institutional development, GDP, banking sector development and foreign direct investments had positive impact on stock market development, while inflation had negative impact on stock market development. On the other hand Yemelyanova (2013) examined the impact of major macroeconomic and institutional factors on stock market development in 8 Central and Eastern European countries during the period 2002-2011 using panel regression and found that domestic investment, stock market liquidity and institutional quality had positive impact on stock market development, but inflation had negative impact on stock market development. Malik and Amjad (2013) investigated the impact of foreign direct investments on stock market development in Pakistan during the period 1985-2011 using Johansen cointegration and Granger causality test and regression analysis and found that foreign direct investments had positive impact on stock market development

Şükrüoğlu and Temel-Nalin (2014) investigated the impact of major macroeconomic variables on stock market development in 19 European countries during the period 1995-2011 using dynamic panel regression and found that income, saving rate and stock market liquidity had positive impact on stock market development, while inflation and monetarization rate had negative impact on stock market development. On the other hand Raza et al. (2015) examined the impact of foreign direct investments and economic growth on stock market development in Pakistan during the period 1976-2011 using cointegration test based on ARDL bounds test and error correction model and rolling window estimation method and found that foreign direct investments, remittances and economic growth had positive impact on stock market development in short and long run. Finally Zhou et al. (2015) investigated the impact of major macroeconomic variables on stock market development in Cameroon during the period 2006-2011 using regression method and found that foreign

direct investments, private capital flows and stock market liquidity had positive impact on stock market development.

3. Data and Econometric Methodology

We will examine the impact of economic growth, inflation, trade openness, banking sector development and stock market liquidity on stock market development in Turkey during the period 2005:Q1-2015:Q3 period using cointegration test based on ARDL bounds test, Toda and Yamamoto (1995) causality test and regression analysis.

3.1. Data

Empirical studies generally have used real GDP, real GDP per capita, growth rate of real GDP per capita, domestic investments, domestic saving rate, inflation, real interest rate, financial crises, trade and financial openness, foreign direct investment inflows, international portfolio investments, remittances, banking sector development and stock market liquidity as major macroeconomic determinants of stock market development in the literature. However, some studies also have used political stability and institutional development as determinants of stock market development. This study investigates the impact of economic performance, macroeconomic stability, banking sector development, trade openness and stock market liquidity on stock market development in Turkey. Therefore, we used stock market capitalization as a proxy for stock market development. On the other hand we took growth rate of real GDP as a proxy for economic performance, consumer inflation rate as a proxy for macroeconomic stability, sum of export and import as a percent of GDP as a proxy for trade openness, domestic credits provided to private sector by the banks as a proxy for banking sector development and stock market turnover ratio as a proxy for stock market liquidity. The variables used in the study, their symbols and data sources were presented in Table 1.

Table 1

Variables Used in the Study, Their Symbols and Sources

Variables	Symbols	Source
BIST Capitalization (% of GDP)	SMC	BIST (2016b)
Growth Rate of Real GDP (%)	GRW	TSI (2016a)
Consumer inflation rate (%)	INF	TSI (2016b)
Trade Openness (Sum of Export and Import as % of GDP)	TOPEN	TSI (2016c)
Domestic credits to private sector by deposit banks, development and investment banks and participation banks (% of GDP)	DCRD	CBRT (2016)
Stock Market Turnover Ratio (%)	TRNV	BIST (2016b)

We benefited from Eviews 9 and Gauss 10 software packages for econometric analyses.

3.2. Econometric Methodology

We benefited from time series and regression analysis to investigate the relationship between major macroeconomic variables and stock market development. The series should be stationary to reflect a significant and real relationship among the variables in time series analyses. Furthermore, integration level of the variables is important for selection of cointegration and causality tests. So first we analyzed the stationarity of the variables by ADF (Augmented Dickey Fuller) unit root test developed by Dickey and Fuller (1981) and the unit root test by Phillips vePerron (PP) (1988). The results of unit root tests indicated that some variable were I(0) and the others were I(1) (see the results of unit root test in Empirical Analysis section). Widely used cointegration tests such as Engle and Granger (1987), Johansen (1988) and Johansen and Juselius (1990) cointegration tests in the literature require that all the variables have the same integration level. But cointegration test based ARDL bounds test developed by Pesaran and Shin (1995) and Pesaran et al. (2001) enables us to investigate the long run relationship among the variables with different integration levels. Therefore, we examined the long run relationship among the variables by cointegration test based on ARDL bounds test. Another advantage of this cointgeration test is that it yields statistically more reliable results relative to the traditional

cointegration tests, because this approach uses unconstrained error correction model. However the critical values of the test were determined only for variables with I(0) or I(1). So ARDL cointegration test cannot be used in case that there is a variable with I(2) among the variables (Pesaran et al., 2001). Then we investigated the causality among the variables using Toda and Yamamoto (1995) causality test, a modified version of Granger (1969) causality test. Finally, we examined the impact of major macroeconomic variables on the stock market development by using regression analysis.

4. Empirical Analysis

4.1. Results of Unit Root Tests

The stationarity of the variables were tested by ADF (1981) and PP (1988) unit root tests and the results were presented in Table 2. The results of unit root tests indicated that INF and TRNV were stationary at the level, while SMC, GRW, TOPEN and DCRD were not stationary at the level. However, SMC, GRW, TOPEN and DCRD became stationary after first-differencing.

Table 2

Results of ADF (1981) and PP (1988) Unit Root Tests

Variable	ADF (1981)		PP (1988)	
	Cons.	Cons.+Trend	Cons.	Cons.+Trend
SMC	-2.597747 (0.1014)	-2.990718 (0.1468)	-2.597747 (0.1014)	-3.133611 (0.1120)
d(SMC)	-6.010778 (0.0000)***	-5.937951 (0.0001)***	-5.995209 (0.0000)***	-5.919127 (0.0001)***
GRW	-3.128458 (0.0322)**	-3.092632 (0.1215)	-2.381942 (0.1528)	-2.332128 (0.4083)
D(GRW)	-5.096416 (0.0001)***	-5.036844 (0.0010)***	-5.050705 (0.0002)***	-4.987464 (0.0012)***
INF	-6.676511 (0.0000)***	-6.863443 (0.0000)***	-10.00027 (0.0000)***	-11.43239 (0.0000)***
D(INF)	-6.924382 (0.0000)***	-6.827510 (0.0000)***	-22.39924 (0.0001)***	-21.92212 (0.0000)***

Variable	ADF (1981)		PP (1988)	
	Cons.	Cons.+Trend	Cons.	Cons.+Trend
TOPEN	-2.507874 (0.1208)	-3.279154 (0.0837)*	-2.389788 (0.1506)	-3.220229 (0.0944)*
d(TOPEN)	-7.106275 (0.0000)***	-7.033628 (0.0000)***	-11.39183 (0.0000)***	-11.33890 (0.0000)***
DCRD	2.452962 (1.0000)	0.703454 (0.9995)	3.366074 (1.0000)	1.726709 (1.0000)
d(DCRD)	-5.335725 (0.0001)***	-5.981391 (0.0001)***	-5.329710 (0.0001)***	-5.967918 (0.0001)***
TRNV	-4.722258 (0.0004)***	-4.691867 (0.0026)***	-4.736817 (0.0004)***	-4.698959 (0.0026)***
d(TRNV)	-6.643457 (0.0000)***	-6.573285 (0.0000)***	-13.28951 (0.0000)***	-12.99296 (0.0000)***

4.2. ARDL Cointegration Test

We used ARDL cointegration test to investigate the long run relationship among the variables, because some variables were I(0) and the others were I(1). First optimal lag length was found to be 4 considering the information criteria. Then ARDL bounds test was conducted and we found there was serial correlation in our model. So we re-estimated the model one more time with the first differenced values of the variables and the results were presented in Table 3. The results of bounds test indicated that F statistics was higher than upper bound critical values. So we rejected the null hypothesis (there was no cointegration relationship among the variables) and we concluded that there was cointegrating relationship among the variables. Moreover, there was no serial correlation and heteroscedasticity problems and our error term exhibited a normal distribution with regard to the results of diagnostic tests.

Table 3

Results of ARDL Bounds Test

Estimated equation =$SMC = f(GRW, INF, TOPEN, DCRD, TRNV)$		
F-statistics	11,4317	
Optimal lag length	[4, 2, 4, 3, 4, 3]	
Significance level	Critical values	
	Lower bound	Upper bound
1%	3.41	4.68
5%	2.62	3.79
10%	2.26	3.35
Diagnostic Tests	**Statistics**	
R^2	0.957508	
Adjusted R^2	0.857072	
F-statistics	9.533546 (0.000200)	
Breusch-Godfrey Serial Correlation LM Test	1.793162 (0.4080)	
Breusch-Pagan Godfrey Heteroscedasticity Test	20.55732 (0.7170)	
Jarque-Bera Normality	2,371459 (0,305523)	

We also estimated long run coefficients of the model after we found a long run relationship among the variables and the results were presented in Table 4. The long run coefficients showed that economic growth and stock market liquidity had positive impact on stock market development, while inflation had negative impact on stock market development.

Table 4

Long Run Coefficients of ARDL (4,2,4,3,4,3) Model

Dependent variable: DSMC		
Variables	**Coefficient**	**t statistics (Prob.)**
DGRW	**0.590500**	**4.474731 (0.0008)**
DINF	**-3.538513**	**-3.412340 (0.0052)**
DDCRD	-0.271973	-1.533639 (0.1511)

DTOPEN	0.066856	0.055113 (0.9570)
DTRNV	**0.7489731**	**3.425186 (0.0050)**
Constant	0.593799	1.993387 (0.0695)

We also estimated short run coefficient of ARDL model and the results were presented in Table 5. The coefficient of error correction model was found to be negative and statistically significant. The coefficient indicated that 27% of long run disequilibrium was corrected in one period (3 months).

Table 5

Short Run Coefficients of ARDL (4,2,4,3,4,3) Model

Variable	Coefficient	t-Statistic	Prob.
D(DSMC(-1))	1.109933	3.554934	0.0040
D(DSMC(-2))	0.813818	3.084216	0.0095
D(DSMC(-3))	0.557935	2.638279	0.0216
D(DGRW)	1.015057	3.337673	0.0059
D(DGRW(-1))	-0.764131	-3.124938	0.0088
D(DINF)	-1.697989	-3.200387	0.0076
D(DINF(-1))	2.095047	3.071151	0.0097
D(DINF(-2))	2.384259	3.499635	0.0044
D(DINF(-3))	0.962602	1.842124	0.0903
D(DDCRD)	0.527391	3.140846	0.0085
D(DDCRD(-1))	-0.125645	-0.546005	0.5951
D(DDCRD(-2))	0.923500	2.495049	0.0282
D(DTOPEN)	-1.087743	-1.241951	0.2380
D(DTOPEN(-1))	2.173151	2.860158	0.0143
D(DTOPEN(-2))	0.707699	0.712051	0.4900
D(DTOPEN(-3))	-2.444642	-2.379796	0.0348
D(DTRNV)	-2.076767	-4.094949	0.0015
D(DTRNV(-1))	0.956726	3.163827	0.0082
D(DTRNV(-2))	0.425690	1.399551	0.1870
ECM(-1)	**-0.270759**	**-6.630004**	**0.0000**

4.3. Toda and Yamamoto (1995) Causality Test

We used Toda and Yamamoto (1995) causality test to analyze the causality among the variables and the results were presented in Table 6. The results of causality test showed that there was unidirectional causality from both TOPEN and DCRD to SMC. On the other hand there was unidirectional causality from SMC and TOPEN to GRW and from INF to TRNV. So trade openness and banking sector development had significant impact on the explanation of stock market development.

Table 6
Results of Toda and Yamamoto (1995) Causality Test

Null hypothesis	Prob.
GRW does not Granger cause of SMC	0.1184
INF does not Granger cause of SMC	0.4448
TOPEN does not Granger cause of SMC	**0.0366**
DCRD does not Granger cause of SMC	**0.0064**
TRNV does not Granger cause of SMC	0.5630
SMC does not Granger cause of GRW	**0.0614**
INF does not Granger cause of GRW	0.3639
TOPEN does not Granger cause of **GRW**	**0.0341**
DCRD does not Granger cause of GRW	0.2182
TRNV does not Granger cause of GRW	0.7093
SMC does not Granger cause of INF	0.8342
GRW does not Granger cause of INF	0.6768
TOPEN does not Granger cause of INF	0.2854
DCRD does not Granger cause of INF	0.3509
TRNV does not Granger cause of INF	0.9011
SMC does not Granger cause of TOPEN	0.5075
GRW does not Granger cause of TOPEN	0.2669
INF does not Granger cause of TOPEN	0.7640
DCRD does not Granger cause of TOPEN	0.1427

Null hypothesis	Prob.
TRNV does not Granger cause of TOPEN	0.5745
SMC does not Granger cause of DCRD	0.9326
GRW does not Granger cause of DCRD	0.6631
INF does not Granger cause of DCRD	0.2583
TOPEN does not Granger cause of DCRD	0.8600
TRNV does not Granger cause of DCRD	0.4849
SMC does not Granger cause of TRNV	0.5864
GRW does not Granger cause of TRNV	0.2273
INF does not Granger cause of TRNV	**0.0449**
TOPEN does not Granger cause of TRNV	0.3709
DCRD does not Granger cause of TRNV	0.1986

4.4. Regression Analysis

Finally, we conducted regression analysis to see the impact of major macroeconomic variables on stock market development. We estimated the regression equation with first differenced values of the variables, because estimated regression equation with level values of the variables was found to include serial correlation. Furthermore, we used a dummy variable to see the impact of 2008 global financial crisis and 2009 Eurozone sovereign debt crisis on stock market development. The results of regression analysis were presented in Table 7. We reached similar findings with results of causality test. According to the results, banking sector development and trade openness had positive impact on stock market development and financial crises had no significant impact on stock market development. Furthermore, there was no serial correlation and heteroscedasticity problems and our error term exhibited a normal distribution with regard to the results of diagnostic tests.

Table 7

Results of Regression Analysis

Dependent Variable: DSMC		
Variable	**Coefficient**	**t statistics (Prob.)**
DGRW	0.115100	0.580540 (0.5653)
DINF	-0.153998	-0.453817 (0.6528)
DDCRD	**0.385097**	**2.033630 (0.0496)**
DTOPEN	**1.879174**	**2.325616 (0.0260)**
DTRNV	-0.142483	-0.497443 (0.6220)
DUMMY	3.006565	1.428557 (0.1620)
C	-0.713520	-0.979220 (0.3342)
Diagnostic Tests		**Statistics**
R^2		0.306073
Adjusted R^2		0.187114
F-statistics		2.572926 (0.035963)
Breusch-Godfrey serial correlation LM test		0.313904 (0.8547)
Breusch-Pagan Godfrey heteroskedasticity test		6.950778 (0.3254)
Jarque-Bera Normality test		5,587528 (0,061190)
Ramsey Reset Test		0.160009 (0.6917)

5. Conclusion

In this study, we investigated major macroeconomic determinants of stock market development in Turkey. In this context, we benefited from cointegration test based on ARDL bounds test, Toda and Yamamoto (1995) causality test and regression analysis to see the impact of major macroeconomic determinants on stock market development in Turkey during the period 2005:Q1-2015:Q3. Our findings indicated that there was long run relationship among the variables. The long run cointegrating coefficients indicated that economic growth and stock market liquidity had positive impact on stock market development, while inflation had negative impact on stock market development. Moreover, both causality test and regression analysis showed that trade openness and banking sector

development had significant impact on stock market development in the short run. Our empirical findings are consistent with the general trend in the empirical literature and expected signs considering the predictions of theoretical literature. Therefore, our findings implied that banking sector development and stock market development are complementary in the short run, while macroeconomic stability, economic growth and stock market liquidity have positive impact on stock market development in the long run.

Stock markets have potential to affect economic growth positively by providing long run capital for the productive investments and contributing to saving mobility, liquidity and risk diversification. Our finding, causality from stock market development to economic growth, also verified this prediction. On the other hand extensive empirical studies have found that economic growth also has had positive impact on stock market development. Therefore, stock market development and economic growth feedback each other. Policymakers should follow or implement policies which raise macroeconomic stability, banking sector development, stock market liquidity considering the interaction between economic growth and stock market development. Further empirical studies can be focused on interaction channels between stock market development and economic growth to see how these two variables affect each other in detail.

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