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A BOOTSTRAP PANEL GRANGER CAUSALITY ANALYSIS OF RELATIONSHIPS BETWEEN POLITICAL INSTABILITY AND MACROECONOMIC VARIABLES

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Abstract

In this study, we try to analyze the causal relationship between political instability and macroeconomic variables for selected emerging markets such as Turkey, India, Russia, Mexico and Indonesia by using panel bootstrap causality tests over the period of 1992 and 2016. Selected macroeconomic variables are growth, inflation and exchange rate. Even though the results of the study differ across nations in the panel and not indicating to many causal relations, they provide the evidences of causal relations between political instability and some macroeconomic variables. Although it is hard to generalize the major findings of the study to all countries in the sample, still we can conclude that unlike the expectations, changes in most of the macroeconomic variables do cause in changes in political instability. Thus, achieving economic stability in terms of low inflation, high growth and stable exchange rate seem to be key factors to achieve political stability.

Keywords: *Political Instability, Cross-Sectional Dependence, Slope Homogeneity, Bootstrap Panel Granger Causality*

POLİTİK İSTİKRARSIZLIK VE MAKROEKONOMİK DEĞİŞKENLER ARASINDAKİ İLİŞKİLERİN BOOTSTRAP PANEL NEDENSELLİK TESTİ İLE ANALİZİ

Öz

Bu çalışmada Türkiye, Hindistan, Rusya, Meksika ve Endonezya yükselen piyasa ekonomileri için, 1992 ve 2016 dönemleri arasındaki verilerle, panel bootstrap nedensellik testini kullanarak politik istikrarsızlık ve makroekonomik değişkenler arasındaki nedensellik ilişkisini analiz etmek amaçlanmıştır. Seçilmiş makroekonomik değişkenler büyüme, enflasyon ve döviz kurudur. Çalışmanın sonuçları paneldeki ülkeler arasında farklılık gösterip çok fazla nedensellik ilişkisi olmadığını işaret etmesine rağmen, politik istikrarsızlık ve bazı makroekonomik değişkenler arasındaki nedensellik ilişkisinin kanıtlarını sunmaktadır. Çalışmanın ana bulgularını örneklemdeki tüm ülkelere genellemek zor olsa da, beklentilerden farklı olarak makroekonomik değişkenlerin çoğundaki değişikliklerin politik istikrarsızlıktaki değişikliklere neden olduğu sonucuna varabiliriz. Dolayısıyla, elde edilen bulgulara göre, düşük enflasyon, yüksek büyüme ve istikrarlı döviz kuru açısından ekonomik istikrarın sağlanması, politik istikrarın sağlanmasında kilit faktörler olarak görülmektedir.

Anahtar Kelimeler: *Politik İstikrarsızlık, Yatay Kesit Bağımlılığı, Eğim Katsayılarının Homojenliği, Bootstrap Panel Nedensellik Testi*

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1. Introduction

The possible effects of political instability on macroeconomic variables has been one of topics frequently studied in economics. Alesina et al. (1996) show that the economies of Japan and Argentina are good example of drawing attention about the relationship between political instability and economic growth. In the 1960s, the per capita income in the Argentina was much higher than the that of Japan. However, unlike Japan, the political violence, coup and instability in Argentina's political history, which began in the same years and which were not deficient in the political history of Argentina, left the economy of Argentina far behind the Japanese economy. Therefore, political stability seems as a key factor for economic growth. The effects of political instability can be explained via economic policy uncertainty channels. Since political instability creates an "uncertainty" on productive economic decisions as investment, production and labour supply, risk averse economic agents can hesitate to take economic initiatives or may pull out of the market and prefer to invest abroad (Alesina et al. 1996: 191). Political instability also shortens policymaker's horizons and this may cause more frequent switch of policies that creates volatility which negatively affects macroeconomic performance (Aisen and Veiga, 2013: 3). De Haan and Sierman (1996) argued that instability reduces the supply of both labour and capital that discourages investment due to the increased risk of capital loss. Also, political turmoil causes capital flight and brain drain and hampers the establishment of property rights. Flow of capital depreciates the local currency that damages intermediate good importers and end up with cost inflation. Moreover, Kuznets (1966) indicate that low economic growth levels can be expected in the conditions of political instabilities, especially after regime changes.

Political instability cuts the average maturity of borrowing by raising the risk premium of the economy and increases interest rates and therefore costs. This situation on the one hand causes to increase in the share of debt payments in the public budget. On the other hand, by raising private sector credit costs, a crowding out effect occurs on private sector investments. All of these reasons decreases the expected returns of public-private sector investments and causes to decrease investment amount and then causes a growth rate that is under its potential rate. A growth rate that realized under its potential causes to decline in public tax revenues and higher budget deficits in the following period. This situation reveals the financing problem of public expenditures and increases high-cost public borrowing then come out with lower growth rates (Şanlısoy, 2010:199-200). On the other hand, there are some opposite views that claim political stability does not certainly cause economic growth. Olson (1982) indicates that more political stability does not mean more economic growth. Since pressure groups well know the long-standing governments, they use policymakers for their own interests. In such cases, the policies pursued by the ruling authority, monitor the interests of the pressure groups rather than maximizing social welfare. Moreover, uncertain environment that political instability creates, can increase the expected marginal return of investments which may lead to increase in investments so increase in economic growth (Aslan, 2011: 74).

The relationship between political instability and inflation also attracts attention of researchers. For example, Khan and Saqib (2011), Aisen and Vega (2006), Aisen and Vega (2008) and Telatar et al. (2010) all mostly examined the effects of political instability on inflation. There are two main approaches explaining the relationship between political instability and inflation: Fiscal Theory of Price Level (FTPL) determination, which stresses the excessive reliance of governments' seigniorage and the theories of Political Economy of

Macroeconomic Policy, mainly emphasize that the price level is unrelated to money growth rate. As argued in Aisen and Vega (2008), the unstable and social polarization inside the country along with weak institutions are always susceptible to political shocks harming to formulation and implementation of monetary and fiscal policies which leads to higher inflation.

As is mentioned in Khan and Saqib (2011), the political instability always has a potential to create adverse effects on the implementation or continuation of macroeconomic policies, mainly aiming to reduce inflation and increasing growth. It also undermines governments' ability to deal with both internal and external shocks mostly leading to macroeconomic problems such as inflation and treating the macroeconomic stability. Moreover, by hampering formulation, implementation or effectiveness of macroeconomic policies aiming to reduce inflation, the political instability can create adverse effects on inflation.

In the empirical literature, while some researchers questioned whether there is a causality from political stability to economic growth, others questioned that whether there is a causality from economic growth to political stability. Therefore, in this paper, using Konya (2006) bootstrap panel causality approach, we aim to research bidirectional causality between political stability and macroeconomic performance for 5 emerging countries of Turkey, India, Russia, Mexico and Indonesia, mostly showing high standard deviation in political stability. The study is organized as follow: Firstly, the related literature is reviewed, and then data and methodology used in the study is presented and empirical results are discussed. Finally, the paper concludes.

2. Literature

There are many theoretical and empirical studies in the literature investigating the relationship between political stability and macroeconomic variables.

Olson (1991) indicate that political instability is the cause for slower economic growth, and not vice versa. Moreover, using 76 countries' data, Edwards (1994) searched the effects of political instability on inflation for the period between 1970-1982. He concluded that countries which are more politically instable, apply to inflation tax which deteriorates price stability. Therefore, political instability lead to macroeconomic instability. Alesina and Perotti (1996) argued that socio-political instability would create an uncertain economic environment and would reduce investments by increasing risks. Alesina et al. (1996) used a data set covering 113 countries and handled the period between 1950 and 1982 then concluded that GDP growth was statistically less in countries and periods where government crises were experienced. Chen and Feng (1996) found that regime imbalance, political polarization and government repression had a negative impact on economic growth. Using cross-sectional data analysis, Devereux and Wen (1997) investigated the effects of political instability on economic growth. They reached that high political instability led to a low level of economic growth and high public spending. On the other hand, Zablotsky (1996) took the issue from different hand. He argued that slow economic growth may cause political instability. Namely, he aimed to search two-way relation and reached consistent results with his stated hypothesis.

In their studies, using the OLS, GARCH and GARCH-M methods, Asteriou and Price (2001) concluded that political instability had a negative impact on growth in UK. Moreover, Feng (2001) used a data set covering 42 countries for the

period 1978-1988 and reached that political instability reduces private investment and savings which then negatively affects economic growth.

To search the relationship between political stability and growth, Kirmanoglu (2003) used Granger tests for 19 countries and found no empirical relationship between instability and economic growth in 14 of the 19 countries. In two countries, he reached that political stability seemed to generate economic growth. In three remaining countries, he found that the causality was from economic growth to political stability.

Berthelemy et al. (2002) searched the direct and indirect effect of political instability on growth with using 22 African countries data for the period of 1996-2001. They reached that political instability has a direct and negative effect on economic growth. Also, political instability indirectly affects economic growth via its negative effect on private investments.

Zureiqat (2005), used data from 1985 to 2002 from 25 countries in five different regions and have found significant evidence supporting the hypothesis that political instability, measured by the lack of democracy, causes slower economic growth. Furthermore, the main finding in Jong-a-pin (2009)'s study is that high levels of political regime instability lead to less economic growth.

In a time-series study, Demirgil (2011) used Turkey's data and GARCH and E-GARCH models and found that political instability has a negative impact on economic growth and inflation, whereas the impact on foreign exchange rates is not very strong.

Aisen and Veiga (2013) used a data set covering 169 countries during the period between 1960 and 2004 to examine the relationship between political instability and growth. The estimates obtained from the system-GMM regressions show that political instability has a negative impact on total factor productivity growth which means that political instability has a negative impact on growth.

As the literature review showed, the most of the studies focused on the relationship between political stability and growth. Thus, there is an obvious need to study the effects of political instability on other macroeconomic variables, such as exchange rate and inflation, since examining these effects can provide valuable insights for formulation and implementation of macroeconomic policies in countries included in the sample. Also, most of the studies examines the effect of political stability to growth, but there can be a vice versa effect. Therefore, we aim to make a contribution to the literature by investigating bi-directional causality between political stability and macroeconomic variables. Thus, we try to provide some evidences to policy makers so that they can efficiently formulate and implement macroeconomic policies.

3. Data

In the study, the annual data for the period 1992-2016 were used. Growth, exchange rate and inflation data were obtained from the World Bank Database. As an exchange rate, the value of countries ' national currencies against the US dollar is used. Moreover, to represent prices, consumer price index (CPI) is used. Data related with political instability is obtained from the Polity IV project database. These data range from -10 and +10 that means from instability to stability. In the study, selected emerging market economies are handled such as Russia, India, Indonesia, Mexico and Turkey. Table 1. presents descriptive statistics of variables:

Table 1: Descriptive Statistics

Variables	Mean	Median	Maximum	Minimum	Std.Dev.	Observation
Growth	4.006320	5.03000	11.11000	-14.5300	4.77691	125
CPI	89.52944	62.1800	2608.800	3.770000	246.091	125
Political Instability	6.032000	8.00000	9.000000	-7.00000	3.86451	125
Exchange Rate	1628.435	28.0500	13389.41	0.008600	3588.78	125

4. Methodology

In order to investigate the causal relationships between political stability and macroeconomic variables, Bootstrap Panel Granger Causality method developed by Konya (2006), which takes into account horizontal cross-section dependency and heterogeneity, is used. As is emphasized in Konya (2006), 'the results of the bootstrap panel Granger causality method unit root test and co-integration test are all robust', there is no need to determine the degree of integration of variables; that is, no need to test for stationarity of series (Konya, 2006: 991). The generation of country-specific critical values from the bootstrapping method makes this method as robust one. Before implementing this method, we need to first determine the existence of cross-sectional dependence and then slope homogeneity, since this test requires cross-sectional dependence and slope heterogeneity. Whether the slope coefficients are homogeneous or not will be investigated by the Δ and Δadj tests which are developed by Pesaran and Yamagata (2008). In the second phase of the analysis, Konya (2006) causality test will be applied.

4.1. Testing Cross Sectional Dependence

If there is a cross-section dependency between the series, it affects the accuracy and reliability of the results (Breusch - Pagan, 1980; Pesaran). As Peseran (2006) indicates ignoring cross-section dependence, which means that a shock that affects any of the units that make up the panel can affect other units, can cause biased results. Therefore, in this study, the LM_{BP} test developed by Breush Pagan (1980), the CD_{LM} and CD test of Peseran (2004), and the LM_{BC} test were used to test the cross sectional dependency among selected countries. Breusch-Pagan (1980) LM test is used when time dimension is too large than the cross-section dimension (T>N). Pesaran (2004) CD_{LM} test is used when the time dimension is greater than the cross section dimension (T>N) but the difference between the two dimensions should not be too much. Pesaran (2004) CD test is used when cross-section dimension is greater than the time dimension (N>T). Baltagi, Feng, And Kao's (2012) bias-corrected scaled lm test is used as a recent one. The test statistics can be calculated with using the following panel data model:

$yit = \alpha i + \beta i'.xit + \mu it$ for i=1,2,...,N; t=1,2,...,T

The hypothesis for testing cross-sectional dependence are as follows:

$H_0: Cov(\mu_{it}, \mu_{jt}) = 0 \; for \; all \; t \; and \; i \neq j$

$H_1: Cov(\mu_{it}, \mu_{jt}) \neq 0 \; for \; at \; least \; some \; i \neq j$

The test statistics, developed by Breusch and Pagan (1980), Pesaran (2004) and Baltagi, Feng and Kao (2012) are presented in Table 2:

Table 2: Tests for Cross-Sectional Dependence

Test	**Statistic**
LM_{BP}(BP,1980)	$LM = \sum_{i=1}^{N-1}\sum_{j=i+1}^{N} T_{ij}\hat{p}_{ij}^2 \rightarrow X^2 \frac{N(N-1)}{2}$
CD_{LM} (Pesaran, 2004)	$CD_{LM} = \sqrt{\frac{1}{N(N-1)}}\sum_{i=1}^{N-1}\sum_{j=i+1}^{N}(T_{ij}\hat{p}_{ij}^2 - 1) \rightarrow N(0,1)$
LM_{BC} (2012)	$LM_{BC} = \sqrt{\frac{1}{N(N-1)}}\sum_{i=1}^{N-1}\sum_{j=i+1}^{N}(T_{ij}\hat{p}_{ij}^2 - 1) - \frac{N}{2(T-1)} \rightarrow N(0,1)$
CD(Peseran, 2004)	$CD_P = \sqrt{\frac{2}{N(N-1)}}\sum_{i=1}^{N-1}\sum_{j=i+1}^{N} T_{ij}\hat{p}_{ij} \rightarrow N(0,1)$

Table 3 shows the results of cross-section dependence test:

Table 3: Cross-Section Dependence Test

Fixed Model	**Statistics**	**P-Value**
Tests		
LM_{BP}(BP,1980)	23.59856	0.0087
CD_{lm} (Pesaran, 2004)	3.040730	0.0024
LM_{BC} (2012)	2.936563	0.0033
CD (Peseran, 2004)	-3.789177	0.0002

Since our time dimension is larger than cross section dimension, we can look at LM_{BP} and CD_{lm} test's results. Since p-values are less than 0.01, for all models we reject the null hypothesis of no cross-sectional dependence at 1% significance level and conclude that there is cross sectional dependency between variables. These findings imply that a shock occurred in one emerging country can be transmitted to other emerging countries.

4.2. Slope Homogeneity Test

Another important issue in the bootstrap panel causality approach is testing the presence of cross-country heterogeneity. In order to test the slope homogeneity, we used Pesaran and Yamagata's (2008) Δ and Δadj tests. This test is a standardized version of Swamy(1970)'s test of slope homogeneity. The delta test for slope homogeneity expressed as:

$$\Delta = \sqrt{N}\left(\frac{N^{-1}\hat{S}-p}{\sqrt{2p}}\right) \rightarrow N(0,1), (N,T) \rightarrow \infty \text{ , } \frac{\sqrt{N}}{T^2} \rightarrow 0$$

For the small samples, they proposed the following mean and variance bias adjusted version of Δ test.

$$\Delta_{adj} = \sqrt{N}\left(\frac{N^{-1}\hat{S}-E(Z_{iT})}{\sqrt{var(Z_{iT})}}\right) where\ E(Z_{iT}) = p, var(Z_{iT} = \frac{2p(T-p-1)}{T+1}$$

Pesaran and Yamagata (2008) take into account the following panel data model with fixed effects and heterogeneous slopes:

$yit = \alpha i + \beta i'.xit + \varepsilon it$ for i=1,2,…,N; t=1,2,…,T

The hypothesis for testing slope homogeneity are as follows:

$H_0: \beta_i = \beta\ for\ all\ i$

$H_1: \beta_i \neq \beta_j\ for\ a\ nonzero\ fraction\ of\ pairwise\ slopes\ for\ i = j.$

The results of the slope homogeneity tests are presented in Table 4:

Table 4: Slope Homogeneity Test Results

Test	Statistic	P-Value
Δ test	4.603	0.000
Δadj	4.894	0.000

Results show that since prob. values are less than 0.01, null hypothesis of slope homogeneity is rejected at 1% significance level. Therefore, these results show that we have to apply a causality test which take into consider both cross-sectional dependence and slope heterogeneity.

4.3. Konya (2006) Panel Bootstrap Causality Test

Although there are different panel causality approaches in practice, bootstrap causality test developed by Konya (2006) has an important advantage in terms of cross-section dependency and country heterogeneity. The bootstrap causality test of Konya (2006) is based on the seemingly unrelated regression system (SUR) and the bootstrap critical values for each country. Since bootstrap critical values specific to each country is used, variables do not have to be stationary. Therefore, regardless of the unit root or cointegration properties of variables, level values are used. Granger causality test can be performed for each cross section on the panel. The equation system for panel causality analysis includes following sets of equations:

$$GRW_{1,t} = \alpha_{1,1} + \sum_{k=1}^{ly1} \beta_{1,1,k}\, GRW_{1,t-k} + \sum_{k=1}^{lx1} \theta_{1,1,k}\, POL_{1,t-k} + e_{1,1,t}$$

$$GRW_{2,t} = \alpha_{1,2} + \sum_{k=1}^{ly1} \beta_{1,2,k}\, GRW_{2,t-k} + \sum_{k=1}^{lx1} \theta_{1,2,k}\, POL_{2,t-k} + e_{1,2,t}$$

$$\vdots$$

$$GRW_{N,t} = \alpha_{1,N} + \sum_{k=1}^{ly1} \beta_{1,N,k}\, GRW_{N,t-k} + \sum_{k=1}^{lx1} \theta_{1,N,k}\, POL_{N,t-k} + e_{1,N,t} \quad (1)$$

$$POL_{1,t} = \alpha_{2,1} + \sum_{k=1}^{ly2} \theta_{2,1,k}\, POL_{1,t-k} + \sum_{k=1}^{lx2} \beta_{2,1,k}\, GRW_{1,t-k} + e_{2,1,t}$$

$$POL_{2,t} = \alpha_{2,2} + \sum_{k=1}^{ly2} \theta_{2,2,k}\, POL_{1,t-k} + \sum_{k=1}^{lx2} \beta_{2,2,k}\, GRW_{2,t-k} + e_{2,2,t}$$

$$\vdots$$

$$POL_{N,t} = \alpha_{2,N} + \sum_{k=1}^{ly2} \theta_{2,N,k}\, POL_{1,t-k} + \sum_{k=1}^{lx2} \beta_{2,N,k}\, GRW_{N,t-k} + e_{2,N,t} \quad (2)$$

$$EXC_{1,t} = \alpha_{3,1} + \sum_{k=1}^{ly3} \delta_{3,1,k}\, EXC_{1,t-k} + \sum_{k=1}^{lx3} \theta_{3,1,k}\, POL_{1,t-k} + e_{3,1,t}$$

$$EXC_{2,t} = \alpha_{3,2} + \sum_{k=1}^{ly3} \delta_{3,2,k}\, EXC_{2,t-k} + \sum_{k=1}^{lx3} \theta_{3,2,k}\, POL_{2,t-k} + e_{3,2,t}$$

$$\vdots$$

$$EXC_{N,t} = \alpha_{3,N} + \sum_{k=1}^{ly3} \delta_{3,N,k}\, EXC_{N,t-k} + \sum_{k=1}^{lx3} \theta_{3,N,k}\, POL_{N,t-k} + e_{3,N,t} \quad (3)$$

$$POL_{1,t} = \alpha_{4,1} + \sum_{k=1}^{ly4} \theta_{4,1,k}\, POL_{1,t-k} + \sum_{k=1}^{lx4} \delta_{4,1,k}\, EXC_{1,t-k} + e_{4,1,t}$$

$$POL_{2,t} = \alpha_{4,1} + \sum_{k=1}^{ly4} \theta_{4,1,k}\, POL_{2,t-k} + \sum_{k=1}^{lx4} \delta_{4,1,k}\, EXC_{2,t-k} + e_{4,2,t}$$

$$\vdots$$

$$POL_{N,t} = \alpha_{4,N} + \sum_{k=1}^{ly4} \theta_{4,N,k}\, POL_{N,t-k} + \sum_{k=1}^{lx4} \delta_{4,N,k}\, EXC_{N,t-k} + e_{4,N,t} \qquad (4)$$

$$CPI_{1,t} = \alpha_{5,1} + \sum_{k=1}^{ly5} \varphi_{5,1,k}\, CPI_{1,t-k} + \sum_{k=1}^{lx5} \theta_{5,1,k}\, POL_{1,t-k} + e_{5,1,t}$$

$$CPI_{2,t} = \alpha_{5,2} + \sum_{k=1}^{ly5} \varphi_{5,2,k}\, CPI_{2,t-k} + \sum_{k=1}^{lx5} \theta_{5,2,k}\, POL_{2,t-k} + e_{5,2,t}$$

$$\vdots$$

$$CPI_{N,t} = \alpha_{5,N} + \sum_{k=1}^{ly5} \varphi_{5,N,k}\, CPI_{N,t-k} + \sum_{k=1}^{lx5} \theta_{5,N,k}\, POL_{N,t-k} + e_{5,N,t} \qquad (5)$$

$$POL_{1,t} = \alpha_{6,1} + \sum_{k=1}^{ly6} \theta_{6,1,k}\, POL_{1,t-k} + \sum_{k=1}^{lx6} \varphi_{6,1,k}\, CPI_{1,t-k} + e_{6,1,t}$$

$$POL_{2,t} = \alpha_{6,1} + \sum_{k=1}^{ly6} \theta_{6,1,k}\, POL_{1,t-k} + \sum_{k=1}^{lx6} \varphi_{6,2,k}\, CPI_{2,t-k} + e_{6,2,t}$$

$$\vdots$$

$$POL_{N,t} = \alpha_{6,1} + \sum_{k=1}^{ly6} \theta_{6,1,k}\, POL_{1,t-k} + \sum_{k=1}^{lx6} \varphi_{6,1,k}\, CPI_{N,t-k} + e_{6,N,t} \qquad (6)$$

Where GRW represents the growth rate; POL represents the political instability index; EXC represents the exchange rate and CPI represents the inflation rate. In addition, N shows the number of countries (I=1,2,3,4,5), t shows time interval (1992-2016), l indicates lag length and $e_{1,1,t}, e_{1,2,t} \dots e_{1,N,t}, e_{2,1,t}, e_{2,2,t} \dots e_{2,N,t}, e_{3,1,t}, e_{3,2,t} \dots e_{3,N,t}$ are the error terms which are supposed to be white noises. In this system, each equation has different predetermined variables. Therefore, there might be cross sectional dependency. Since country specific bootstrap critical values are used, there is not stationary condition for the variables (Kónya, 2006, 979). Therefore, level forms of the variables are used.

The alternative causal relations can be found as:

If not all $\theta_{1,I,k}s$ are zero, but all $\beta_{2,I,k}s$ are zero there is one way granger causality from political instability to growth. If not all $\beta_{2,I,k}s$ are zero, but all $\theta_{1,I,k}s$ are zero there is one way granger causality from growth to political instability. If all $\theta_{1,I,k}s$ and $\beta_{2,I,k}s$ are zero, there is not causality relationship between political instability and growth. If neither $\theta_{1,I,k}s$ nor $\beta_{2,I,k}s$ are zero there is two way granger causality. Similarly, If not all $\theta_{3,I,k}s$ are zero, but all $\delta_{4,I,k}$s are zero there is one way granger causality from political instability to exchange rate. If not all $\theta_{5,I,k}s$ are zero, but all $\varphi_{6,I,k}$s are zero there is one way granger causality from political instability to CPI.

The implementation of tests first requires estimating the described system by seemingly unrelated regressions (SUR) to impose zero restrictions for causality by the Wald principle, and then requires generating bootstrap critical values.

5. Estimation Results

Following Konya's (2006) approach, we obtained country specific bootstrap critical values to implement Granger causality. As indicated above, in this approach y and x does not have to be stationary. The results of the causality test between political instability and growth is presented at Table 5:

Table 5: Causality between Growth and Political Instability

H_0: Political instability does not granger cause growth				
Countries	**Statistics**	**Bootstrap Critical Values**		
		%1	**%5**	**%10**
India	0.55593336	12.21285	6.74548	4.73858
Indonesia	1.2273591	13.91882	7.29646	5.35987
Mexico	4.5405263**	14.03055	6.49903	4.33167
Russia	0.59937118	14.54949	8.05592	5.66881
Turkey	0.40900869	13.73027	6.80992	4.69590
H_0: Growth does not granger cause political instability				
Countries	**Statistics**	**Bootstrap Critical Values**		
		%1	**%5**	**%10**
India	0.61421507	10.19554	6.02577	4.19581
Indonesia	302.47880*	127.53188	10.50733	3.83107
Mexico	2.4422435	13.30518	6.53096	4.19637
Russia	13.052918*	16.17816	8.37903	5.59673
Turkey	0.41305082	12.60720	6.86401	4.50405

Note: ***, **, * indicate rejection of the null hypothesis at the 1, 5, and 10 percent levels of significance, respectively. Critical values are based on 10,000 bootstrap replications.

Results show that there is statistically significant causation from political instability to growth only in Mexico. On the other hand, growth causes political instability in Indonesia and Russia.

The results in Table 6 indicate that while there is a significant causality running from political instability to exchange rate only for Turkey, causality from

Exchange rate to political instability is significant for Indonesia, Mexico, Russia and Turkey.

Table 6: Causality between Exchange Rate and Political Instability

H_0: Political instability does not granger cause exchange rate				
Countries	**Statistics**	**Bootstrap Critical Values**		
		%1	**%5**	**%10**
India	0.76928678	14.15517	7.55136	5.06933
Indonesia	1.5673715	20.50868	10.44857	7.23813
Mexico	0.36755926	16.69306	9.35688	6.45091
Russia	1.2576433	16.97049	8.43313	5.66493
Turkey	15.328500*	14.69122	7.15146	4.67310
H_0: Exchange rate does not granger cause political instability				
Countries	**Statistics**	**Bootstrap Critical Values**		
		%1	**%5**	**%10**
India	0.97043845E-01	17.02445	8.47007	5.25454
Indonesia	59.806889*	24.91047	10.44134	6.71780
Mexico	2.4746211	16.91110	8.93989	6.32126
Russia	4.8547742**	18.17014	9.40762	6.37535
Turkey	3.3860407***	9.30729	5.51547	4.00271

Note: ***, **, * indicate rejection of the null hypothesis at the 1, 5, and 10 percent levels of significance, respectively. Critical values are based on 10,000 bootstrap replications.

Table 7 shows the results of causality test between inflation and political instability.

Table 7: Causality between Inflation and Political Instability

H_0: Political instability does not granger cause inflation				
Countries	**Statistics**	**Bootstrap Critical Values**		
		%1	**%5**	**%10**
India	0.34726903	12.81535	7.10326	4.86615
Indonesia	0.56545936E-01	11.97408	6.36420	4.39068
Mexico	2.1434602	13.10359	6.40550	4.48912
Russia	0.33001106	11.73848	6.33545	4.50063
Turkey	0.38551395E-03	13.23448	6.72307	4.40328
H_0: Inflation does not granger cause political instability				
Countries	**Statistics**	**Bootstrap Critical Values**		
		%1	**%5**	**%10**
India	0.10613709E-01	11.15644	6.50850	4.57249
Indonesia	0.30785267	34.91678	13.24251	9.33381
Mexico	0.83155526	18.05094	9.42290	6.54812
Russia	4.0908849**	41.20185	10.15371	4.99241
Turkey	0.25225307	9.71009	5.78645	4.18570

Note: ***, **, * indicate rejection of the null hypothesis at the 1, 5, and 10 percent levels of significance, respectively. Critical values are based on 10,000 bootstrap replications.

According to results, while there is no significant causality relationship running from political instability to inflation for any of the countries, there is statistically significant causality relationship running from inflation to political instability only for Russia. This means that higher inflation is contributing to political instability, considering the economic, political and social consequences of high inflation, particularly, creating adverse effects on income distribution and causing tension within the different fractions of the society. Therefore, the Russian authorities and the policymakers should consider an anti-inflationary policy as a policies contributing to reduce the political instability.

6. Conclusion

Political instability affects macroeconomic variables via many channels. First, it affects consumer and investor decision-making processes by increasing uncertainty in economic policies. Foreign investors may also suspend their direct investment decisions due to political instability, political uncertainty and social conflicts. In addition to direct investments, political instability can also cause capital outflow from the country. Capital outflow affects the exchange rate adversely and this also affects the production of firms that import intermediate goods and may causes cost inflation in the country. In the end, consumption and investment preferences will be postponed and total demand will reduce and economic growth will be negatively affected. On the other hand, political stability can be effected by macroeconomic performance of a country.

In this paper we aim to research causal relationship between political instability and macroeconomic variables for 5 emerging countries: Turkey, India, Russia, Mexico and Indonesia. Selected macroeconomic variables are economic growth rate, exchange rate and inflation. To conduct a causality test first, we test cross section dependency and slope homogeneity. After seeing cross section dependency and slope heterogeneity results, we used Konya (2006) panel bootstrap granger causality test.

According to results of the study, political instability only granger causes to growth in Mexico; but, economic growth granger causes to political stability in Indonesia and Russia. The results also indicate that there are no evidences of causality running from political instability to inflation; but, inflation does cause political instability in Russia. Moreover, while changes in political instability only causes exchange rates in Turkey, changes in exchange rates cause political instability in all countries in the sample except India. Although it is hard to generalize the major findings of the study to all countries in the sample, still we can conclude that unlike the expectations, changes in most of the macroeconomic variables do cause in changes in political instability. Thus, achieving economic stability in terms of low inflation, high growth and stable exchange rate seem to be key factors to achieve political stability, since the political instability can both affect and be affected by macroeconomic stability. Obviously, the study can be extended by including more countries and more observations in the sample.

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