YILMAZ BAYAR[1]
E-mail: yilmaz.bayar@usak.edu.tr

PUBLIC GOVERNANCE AND FINANCIAL DEVELOPMENT IN CENTRAL AND EASTERN EUROPEAN COUNTRIES

ABSTRACT:

Financial development has been accepted as an important component of economic growth together with the considerable improvements and expansions in financial sector during the recent years. Therefore, the determinants of financial development have gained importance. This study researches the interaction between public governance and the development of financial sector in 15 Central and Eastern European countries over the 2002-2015 period employing panel regression. The results of the paper revealed that most elements of the public governance are important factors for the development of financial sector.

> **KEY WORDS:**
> PUBLIC GOVERNANCE, FINANCIAL DEVELOPMENT, PANEL DATA ANALYSIS

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1   Faculty of Economics and Administrative Sciences, Department of Economics, Usak University.

1. INTRODUCTION

Financial development has become an important factor behind the long-run economic growth in the context of endogenous growth theories, because an improved financial sector allocates resources efficiently and thus can boost long term economic growth (e.g. see Valickova et al., 2015; Nyasha and Odhiambo, 2015; and Sehrawat and Giri, 2015). In this context, the drivers underlying the development of financial sector have gained importance in the recent years and many empirical studies have revealed that institutions, trade and financial openness, geography, economic growth, economic development, population, religious, language and ethnic characteristics have been major factors behind the development of financial sector (Huang, 2010). In this regard, the quality of public administration comes into prominence as a key determinant of financial development, because public administration is the dominant actor which designs and regulates the financial environment and the functioning of financial system.

Central and Eastern European (CEE) countries experienced significant changes in public governance during the economic transformation with transition to liberal market economies from closed centrally planned economies over the period 1990s-2010s. In the transition process, CEE countries have experienced an institutional and economic transformation in both public sector and private sector. On the other side, the integration process of some CEE countries with the EU (European Union) supported and accelerated the transformation through the existing EU criteria and financial support. As a consequence the CEE countries have come a long way in terms of good governance over time. This study researches the effects of improvements in the public administration and legal infrastructure on the development of financial sector in 15 CEE countries over 2002-2015 period employing panel regression analysis.

Our paper will be one of the early studies researching the interaction between the quality of public administration and financial development and make contribution to the relevant literature with this aspect. Within this framework, we scrutinize the relevant studies in the next part of the paper. Then we introduce the data and method employed in the study. We implement econometric analysis and discuss the findings in the section of empirical analysis. Finally the study draws to the close with the Conclusion section.

2. LITERATURE REVIEW

Three main hypotheses, law-finance hypothesis of La Porta et al. (1997), the hypotheses of endowment and economic institutions Acemoglu et al. (2001 and 2004), have been developed to explain the interaction between institutional development and development of financial sector. La Porta et al. (1997) asserted that solid legislative institutions and regulations towards the protection of the investors and creditors may affect the development of financial sector positively by way of adaptability and political. Acemoglu et al. (2001) also specified that states form different legal systems including regulations about the protection of investors and property depending on their endowments and influence development of financial sector. Lastly, Acemoglu et al. (2004) claimed that institutional

development may affect the economic activity positively by means of shaping the economic incentives such as property rights, allocation of the resources. Consequently institutional development has potential to affect financial development through increasing protection of investors and creditors, provision ownership rights and efficiently allocation of funds theoretically. Therefore we expect a positive impact of institutional quality on development of finance sector.

The empirical studies have reached the findings supporting the theoretical considerations stated above (institutional development affects the development of financial sector positively) (e.g. see La Porta et al., 1997; Chinn and Ito, 2006; Law and Demetriades, 2006;, Baltagi et al., 2007; Billmeier and Massa, 2007; Gries and Meierrieks, 2010; Huang, 2010; Le et al., 2015; Mbulawa, 2015). These empirical findings verified that regulations and environment in which financial institutions work are important determinants for development of finance sector.

In one of the pioneering studies, La Porta et al. (1997) investigated the interaction between financial development and law in 49 countries and found that the countries with weaker investor protection in terms of law had less developed capital markets. On the other side Chinn and Ito (2006) investigated the interplay among financial openness, institutions and financial development in 108 countries during the period 1980-2000 and found that financial openness began to make contribution to the development of stock markets after reaching a certain threshold level of institutional quality. Law and Demetriades (2006) also examined the relationship among openness, institutions and financial development in 43 developing countries over 1980–2001 period with dynamic panel regression and revealed that institutional improvement affected the development of financial sector positively.

In another study, Baltagi et al. (2007) investigated the relationship among financial development including banking sector development and capital market development, openness and institutions in different groups of countries during changing time periods employing dynamic panel regression and revealed that institutional development influenced development of banking sector and capital markets positively. On the other side, Billmeier and Massa (2007) researched the factors behind the development of stock markets in 17 countries from Middle East and Central Asia over 1995 and 2005 period with panel regression and revealed a positive interaction between stock market development and institutional progress. Zoli (2007) also investigated the determinants of financial development in emerging European countries over 1995-2006 period with panel regression and revealed that institutional improvement affected the development of financial sector positively.

Huang (2010) researched the interaction between institutional development and development of financial sector in 90 non-transition economies over 1960–1999 period employing panel regression and revealed that institutional development affected financial development positively. Gries and Meierrieks (2010) also examined the factors behind the development of financial sector in 19 African countries during the period 1984-2007 and revealed that institutional improvements influenced the development of financial sector positively. In another study, Law and Azman-Saini (2012) researched the influence of institutional development on the capital market development and banking sector de-

velopment in 94 countries consisting of developed and developing countries over 1996-2004 period employing dynamic panel regression and discovered that high institutional development was important especially for the development of banking sector, but the nexus between institutional improvement and capital market progress was contingent.

In another study, Cherif and Dreger (2014) examined the determinants underlying the development of banking sector and capital market in MENA states for the period of 1990-2007 period employing panel regression and revealed that institutional development influenced the development of banking sector and capital market positively. Le et al. (2015) also investigated the factors behind the development of financial sector in 26 Asia and the Pacific states over 1995-2011 period with regression analysis and revealed that public governance and institutional improvement had positive influence on financial development in developing countries. Finally, Mbulawa (2015) investigated the major determinants of financial development in 11 Southern Africa Development Community states over the period 1996-2010 employing panel regression and discovered that improvements in the public administration affected the development of financial sector positively.

3. DATA AND METHOD

We researched the interaction between various indicators representing public governance and the development of financial sector in 15 CEE countries including (Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Macedonia FYR, Poland, Romania, Serbia, Slovak Republic, and Slovenia) during 2002-2015 period with panel regression analysis. The existence of data formed our sample and the time dimension of the all cross-sections were the same in the panel, in other words we used a balanced panel in the study.

3.1. Data

Financial development was represented by domestic credit to private sector (% of GDP) in the paper extracted from World Bank (2017a), because it was used by most of studies about the financial development (e.g., see Lane and McQuade, 2013; Petrovski and Kjosevski, 2014) and the share of banking sector in the whole financial system. On the other side, six components of public governance indicators of World Bank (2017b) were employed as proxy for quality of public administration. The components of public governance and their symbols are displayed in Table 1 and each indicator shows the political stability, functioning of the public sector and legal system with a scale changing from -2.5 (weak) and 2.5 (strong) (see World Bank (2017b) and Kaufmann et al. (2010) for the detailed information about definitions and calculation of six public governance indicators).

▶ TABLE 1. DATASET DESCRIPTION

Variables	SYMBOL	SOURCE
DCRD	Domestic credit to private sector (% of GDP)	World Bank (2017a)
VAA	Voice and accountability	World Bank (2017b)
PS	Political stability and absence of violence/terrorism	World Bank (2017b)
GE	Government effectiveness	World Bank (2017b)
RQ	Regulatory quality	World Bank (2017b)
ROL	Rule of law	World Bank (2017b)
COC	Control of corruption	World Bank (2017b)

Source: Authors' own elaboration.

Gauss 11.0, WinRATS Pro. 8.0, and Stata 14.0, programs were utilized for implementation of econometric analysis. The summary and correlation matrix of the dataset were presented in Table 2 in Appendix and the correlation matrix indicated that there were no multicollinearity problems among the explanatory variables.

3.2. Econometric model and method

The econometric model seeks to research the effect of public governance or public administration quality on financial development. In this regard, the model is established as follows:

$$DCRD_{it} = \beta_{0i} + \beta_{1i}VAA_{it} + \beta_{2i}PS_{it} + \beta_{3i}GE_{it} + \beta_{4i}RQ_{it} + \beta_{5i}ROL_{it} + \beta_{6i}COC_{it} + D1_{it} + D2_{it} + \mu_i + \varepsilon_{it} \tag{1}$$

The subscripts i and t index in Equation 1 symbolize the countries and time respectively. Two dummy variables (respectively D1 and D2) representing the EU membership and recent financial crises were included in the model to see the impact of EU membership and the crises on the development of financial sector. Furthermore, μ indicates unobservable country specific effects in the model, while ε shows the error term in the model.

First, cross-sectional dependency was investigated within the scope of econometric analysis, because the results of the cross-sectional independency test give an idea to us about the selection of proper unit root tests. The first generation unit root tests (e.g. Maddala and Wu (1999), Hadri (2000), Levin et al. (2002), Im et al. (2003)) do not take notice of cross-section dependence probably causing low power and size distortions, while second generation unit root tests (e.g. Bai and Ng (2004) and Pesaran (2007)) consider the cross-section dependence (Hurlin and Mignon, 2007). In this paper Pesaran (2004) LM CD (Lagrange Multiplier Cross-sectional Dependency) test and LM adj. test of Pesaran et al. (2008) were employed to investigate the existence of cross-sectional dependency, because time dimension of the (T=14) was found to be lower than cross-section dimension (N=15). CIPS (Cross-sectionally augmented IPS (Im, Pesaran and Shin (2003)) test

was implemented to analyze the integration levels of the series considering the results of cross-sectional dependency.

In the next stage of the study, Chow (F)(1960), Hausman (1978) and Breusch and Pagan (1980) tests were implemented for the determination of FEM (fixed effects model) or REM (random effects model) to be estimated. Finally, serial correlation problem was tested with Wooldridge (2002) test, while heteroskedasticity problem was tested with Greene (2003) test.

4. EMPIRICAL ANALYSIS

4.1. Cross-sectional Dependency Test

The existence of cross-sectional dependency among the series was investigated with LM CD test of Pesaran (2004) and LM adj. test of Pesaran et al. (2008) and the test results were displayed in Table 3. The null hypothesis (there is cross-sectional independency) was declined at 5% significance level, since the probability values were found to be lower than 0.05. So we concluded that there was cross-sectional dependency among the series. Furthermore, the homogeneity of the slope coefficients were investigated by the adjusted delta tilde test of Pesaran and Yamaga (2008) and the results showed that there was heterogeneity among the slope coefficients (Table 3, Appendix).

4.2. CIPS Unit Root Test

Pesaran (2007) CIPS panel unit root test dependent on CADF (covariate-augmented Dickey-Fuller) test was implemented to analyze the stationarity level of the series considering the cross-sectional dependency among the series and the results were displayed in Table 4 in Appendix. CIPS statistics are attained with averaging the CADF statistics of each series. All the variables were found to not be stationary at the level, since the CADF and CIPS statistics were higher than the critical values, but they became stationary after first-differencing.

4.3. Model Selection

First Chow (1960), Breusch and Pagan (1980) and Hausman (1978) pretests were implemented to decide whether REM or FEM model and the results of pretests were displayed in Table 5. The result of BP model suggests the REM, while the result of Chow test suggests the FEM. Lastly, the result of Hausman test offered the use of REM between FEM and REM.

▶❯ TABLE 5. MODEL SELECTION PRETEST RESULTS

TEST	P VALUE	DECISION
Chow (F) test (H_0: Pooled OLS is effective)	0.001	FEM
BP (χ^2) test (H_0: OLS is effective)	0.028	REM
Hausman test (H_0: REM is efficient)	0.174	REM

Source: Authors' own elaboration based on the results of the pre-tests.

4.4. Model Estimation

We employed different algorithms in the context of the regression analysis and implemented the estimation using the algorithm of white cross-section having the minimum sum of the squared errors; the outcomes of the estimated model were displayed in Table 6. The outcomes indicate that all the public governance indicators except voice and accountability (VAA) had positive impact on financial development. Our explanatory variables explained 59% of the changes in the dependent variable and the coefficients indicated that rule of law (ROL) and political stability and absence of violence/terrorism (PS) had the largest influence on the financial sector development. Finally, the coefficients of the dummy variables representing the EU membership and the recent financial crises (global financial crisis and Eurozone sovereign debt crisis) revealed that the EU membership affected the development of financial sector positively, while the recent crises affected the development of financial sector negatively.

▶〉TABLE 6. PANEL REGRESSION RESULTS

Dependent variable: DCRD	COEFFICIENT	STD. ERROR	T-STATISTIC	PROB.
DVAA	8.653939	6.470423	1.337461	0.1826
DPS	0.239977	0.033702	7.120622	0.0000
DGE	0.089908	0.048648	1.848131	0.0270
DRQ	0.133173	0.044318	3.004930	0.0040
DROL	0.258527	0.048739	5.304283	0.0000
DCOC	0.104502	0.035696	2.927534	0.0039
D1	6.117016	2.203266	-2.776340	0.0060
D2	-6.325827	2.226916	-2.840622	0.0050
C	43.81498	5.224054	8.387160	0.0000
Effects Specification				
	S.D.	Rho		
Cross-section random	10.20685	0.5543		
Period random	5.507364	0.1614		
Idiosyncratic random	7.309075	0.2843		
Weighted Statistics				
R-squared	0.596159	Mean dependent var	7.686105	
Adjusted R-squared	0.564165	S.D. dependent var	8.397499	
S.E. of regression	7.677332	Sum squared resid	11847.23	
F-statistic	36.13163	Durbin-Watson stat	2.922233	
Prob (F-statistic)	0.000000			

4.5. Diagnostic Tests

The heteroskedasticity and autocorrelation problems, which are major assumptions behind the regression, were investigated for the reliability of the findings. We investigated autocorrelation problem with autocorrelation test of Wooldridge (2002) and investigated heteroskedasticity problem with Greene (2003) test and results were presented in Table 7. Given the findings of the test, no autocorrelation and heteroskedasticity problems were revealed in the model.

▶〉TABLE 7. RESULTS OF DIAGNOSTIC TESTS

Test	P VALUE
Wooldridge test	0.261
Greene heteroskedasticity test	0.195

Source: Authors' own elaboration based on test results.

4.6. Discussion of the Results

The relevant theoretical literature (law-finance hypothesis of La Porta et al. (1997), the hypotheses of endowment and economic institutions of Acemoglu et al. (2001 and 2004)) asserted that institutional development affects the development of financial sector positively, because the quality of public administration and rule of law have direct impact on the designing, regulating, and the functioning of the financial system. On the other hand the findings of the relevant empirical literature (e.g. see La Porta et al., 1997; Chinn and Ito, 2006; Law and Demetriades, 2006;, Baltagi et al., 2007; Billmeier and Massa, 2007; Gries and Meierrieks, 2010; Huang, 2010; Le et al., 2015; Mbulawa, 2015) were found to be consistent with the theoretical expectations.

The regression coefficients of the study denoted that political stability and absence of violence/terrorism, government effectiveness, regulatory quality, control of corruption, and rule of law had positive impact on the development of financial sector, but voice and accountability did not have significant impacts on the financial development. So our results were found to be consistent with the findings of both theoretical and empirical studies. Furthermore, the coefficients of the dummy variables representing the EU membership and the recent financial crises (global financial crisis and Eurozone sovereign debt crisis) revealed that the EU membership affected the development of financial sector positively, while the recent crises affected the development of financial sector negatively. The EU membership is expected to influence the development of financial sector positively through making contribution to the development of institutions and legal infrastructure. On the other hand the financial crises can block the development of financial sector negatively by affecting both demand and supply sides of financial markets through leading loss of confidence and increasing the bankruptcies of financial institutions.

5. CONCLUSION

Financial sector has become an important factor behind the economic expansion by mobilizing the funds and directing the funds to the most productive ventures in the economy. Therefore, many researches have focused on the factors underlying the development of financial sector during the past three decades. In the paper, we researched the interaction between various dimensions of public governance and the development of financial sector in 15 CEE economies over the period 2002-2015 employing panel regression. We discovered that all the components of public governance including political stability, quality of governing institutions and regulatory environment (government effectiveness, regulatory quality, and control of corruption), and rule of law except voice and accountability had positive influence on the development of financial sector. We also revealed that a dummy variable representing the recent financial crises had negative impact on financial development, while the dummy variable representing the EU membership affected the development of financial sector positively. The EU membership made a positive contribution to the development of financial sector with raising the development level of institutions, while the financial crises affect the development of financial sector negatively through loss of confidence and increasing the bankruptcies of financial institutions

Consequently, the results of the study are consistent with the predictions of the theoretical literature and the relevant empirical findings and suggest that improvements in the quality of both public administration and legal infrastructure will contribute to the development of financial sector.

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APPENDIX

▶❯ TABLE 2. DATASET SUMMARY

Variables	OBS.	MEAN	STD. DEV.	MIN	MAX	
DCRD	210	46.6375	18.5541	0.1858704	101.2876	
VAA	210	0.6105	0.4090	-0.2229555	1.171905	
PS	210	0.3866	0.5622	-1.1809	1.202154	
GE	210	0.3855	0.5587	-0.9707849	1.200911	
RQ	210	0.6398	0.5262	-0.6475093	1.674902	
ROL	210	0.2830	0.5887	-0.9704201	1.364578	
COC	210	0.1145	0.45977	-0.6475093	1.26802	
	VAA	PS	GE	RQ	ROL	COC
VAA	1.0000	0.118431	0.145538	0.161553	0.162784	0.145065
PS	0.1184	1.000000	0.265097	0.157332	0.276615	0.162485
GE	0.1455	0.265097	1.000000	0.379314	0.491370	0.258150
RQ	0.1616	0.157332	0.379314	1.000000	0.496248	0.158233
ROL	0.1628	0.276615	0.491370	0.496248	1.000000	0.366012
COC	0.1451	0.162485	0.258150	0.158233	0.366012	1.000000

▶❯ TABLE 3. RESULTS OF CROSS-SECTIONAL DEPENDENCE AND HOMOGENEITY TESTS

Cross-sectional dependency tests		
Test	Statistic	p-value
LM (Breusch and Pagan (1980))	76.78	0.002
LM adj* (Pesaran et al. (2008))	54.91	0.013
LM CD* (Pesaran (2004))	35.28	0.005
Homogeneity tests		
Test	Statistic	p-value
Delta_tilde	39.671	0.001
Delta_tilde_adj	28.442	0.004

*two-sided test

▶❯ TABLE 4. UNIT ROOT TEST RESULTS

Test	DCRD	VAA	PS	GE	RQ	ROL	COC
CADF	-5.823	-6.048	-5.112	-9.564	-8.739	-7.033	-5.379
CIPS	-5.104	-5.982	-4.977	-8.203	-8.037	-6.826	-4.831

Maximum lag length for CADF was taken as 4 and optimal lag length was determined considering Schwarz information criterion.

Critical values for trend and intercept were provided from Pesaran (2007).

The critical values at 1, 5, and 10% level of significance for CADF are -5.46, -4.17, and -3.63 respectively.

The critical values at 1, 5, and 10% level of significance for CIPS are -3.09, -2.83 and -2.69 respectively.