

Impact of governance on budget deficit in developing countries

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Abstract. *Since 1980s, many fundamental changes have been experienced in many areas especially in economy and politics. Financial administration was also affected by this change. In this regard, traditional administration mentality was re-interpreted as a transparent, accountable and participant manner based on rule of law. Studies on the political determinants of budget deficits are heavily focused on political behaviours. There is a gap in the literature in the issue of relationship between budget deficits and governance which represents an administration approach based on specific principles as different from political behaviours. This study analyzes the relationship between budget deficits and governance through panel data analysis in 123 developing countries for 2002-2014 periods.*

Keywords: governance, budget deficit, institutions, developing countries, panel data.

JEL Classification: H11, H62, H68, H87.

1. Introduction

Budget deficit is one of the most important macroeconomic problems which have been debated in academic and political platform since 1970s. Budget deficits which gradually increase in many countries, especially in developed countries, are regarded as a problem which restrict the efficiency of economic policies of governments in their struggle against such macroeconomic problems as unemployment and inflation.

It is seen that studies on budget deficits and its determinants have been focused on macroeconomic indicators until 1990s. After some authors such as Roubini and Sachs (1989a, 1989b) and Alesina et al. (1989) supports the idea that macroeconomic indicators are not solely adequate in order to explain budget deficits, the interest towards the impact of political and institutional factors on budget deficits. In this regard, Roubini and Sachs (1989a, 1989b), Alesina and Drazen (1991) and Spolaore (1993) analyzed the impact of single-party governments and coalition governments on budget deficits. In addition to the studies on the relationship between political, opportunist, partisan behaviours and budget deficits, the number of studies on the relationship between budget deficits and political factors such as political stability, ideology of government parties and the number of authorities, which are effective in financial decisions, has been increasing.

It is seen that analyses on budget deficits are focused on various political behaviours. Moreover, there is an outstanding gap in the issue of analyzing the impact of existing administration/governance mentality as independent from political behaviours. There has been a change in governance mentality in almost every area from company management to state government in 1980s in some developed countries and commonly in early 1990s. This change suggests that administration will turn into a mutual process where the relevant stakeholders are included, instead of a traditional, unilateral and hierarchical structure. This fundamental change in administration mentality has also been reflected on fiscal administration and economy administration.

This study analyzes the impact of governance on budget deficits. Firstly, models which analyze political and institutional determinants that are effective in budget deficits have been handled; empirical studies have been analyzed and literature abstract has been included. Application phase of the study analyzes the relationship between budget deficits and governance regarding 123 countries which are accepted by IMF as developing countries for 2002-2012 period through panel data analysis method.

2. Political and institutional factors determining budget deficits

Budget deficit subject has been considered as one of the most important macroeconomic problems since 1970s. Therefore, it has been the subject of numerous studies. A significant part of these studies focused on political and institutional determinants of budget deficit and various models have been developed. These models have briefly been mentioned.

2.1. Tax smoothing model

Tax smoothing model⁽¹⁾, which was developed by Barron (1979) and Lucas and Stokey (1983), is assumed as an optimization process that minimizes tax collection costs by smoothing government's marginal tax rates intertemporally (Bohn, 1998: 951). In this context, to perform the level of expenditure targeted by the government is possible by fixing the tax rates, preventing expenses shocks and optimal financing. Since financial optimization protects the budget balance, budget deficit reveals only in unforeseen expense or income cases or when faced with temporary shocks (Franzese, 2001: 5). Barro (1986 and 1987), suggests that tax smoothing model is not only normative but it also has a positive side that explains the fiscal policy (Alesina and Perotti, 1994: 4). However, different from other political models this model accepts budget deficits as a normative assessment (Pinho, 2004: 4).

Tax smoothing model that makes a distinction between permanent and temporary effects of public expenditures and economic activities has been tested with various empirical studies. Bohn (1990) suggested that tax smoothing model cannot be rejected according to the trend that taxes followed in the US after World War II; Huang and Lin (1993) suggested the existence of tax smoothing hypothesis for the period between 1929 and 1988. Ghosh (1995) concluded that there is a clear relationship between intertemporal tax smoothing model and the trend of budget surplus and expected public expenditures for Canada (the period 1962-1988) and the USA (the period 1961-1988). Adler (2006) concluded that tax smoothing model cannot be rejected in Sweden for the period 1952-1999 whereas it is invalid for the period 1970-1996. Roubini and Sachs (1989a) stated that tax smoothing model does not take differences in the size of budget deficits in OECD countries into account and it is insufficient to explain the steady increase in tax rates in these countries. For Australia, Kingston and Layton (1986), who address the 1964-1995 period, support the hypothesis while Olekalns (1997), who examines the same period, stated that economy is too unstable for tax smoothing model to be valid. Roche (2001) rejected the hypothesis in Brazil for the period 1970-1994.

2.2. Models based on government structure

Roubini and Sachs (1989a), who examined the impact of the government structure in the budget deficit, developed index of political dispersion to measure the type of government in power. This index divides the type of government into three. The first one is bipartisan parliamentary government or presidential government where there are different parties under the control of the executive and legislative; the second one is parliamentary government with three or more coalition partners; the third one is minority parliamentary governments. According to Roubini and Sachs (1989a), relatively weak governments lead to more budget deficit. In contrast, single-party majority governments are strong government structures that can control parliament in the face of opposition on budget policies subject. In theoretical model proposed by Hahm (1996), different from Roubini and Sachs (1989a), political systems are examined in three units as presidential government, stable parliamentary (one-party government) and unstable parliamentary (coalition government). Roubini-Sachs approach is valid in unstable parliamentary systems but in a stable parliamentary system, government power does not have a systematic impact on the budget deficit (De Haan et al., 1999: 166).

Alesina and Drazen (1991) developed “war of attrition model” for coalition governments. According to the model, there are impacts of policies on income distribution, that are implemented to prevent budget deficit and government partners show a resistance not costs of policies implemented to reflect on their grassroots. Thus, the stabilization process turns into a “war of attrition” in which each partner finds it rational to leave the other out. Stability can be achieved when a group imposes the burden of financial regulations on others (Alesina and Drazen, 1991: 1). In this respect, Roubini and Sachs (1989), support the weak government model. Spolaore (1993) approached political systems as majority systems that there is only one party who has veto power and coalition systems that all parties have veto power. It is emphasized that (Pinho, 2004: 19-20) there may be a trade-off between relative inaction of coalition governments for implementation of stability programs to correct budget deficit and partisan overreaction of single-party governments.

2.3. Opportunistic political behaviour models

Opportunistic behaviour models developed under public choice theory are based on the assumption that politicians prioritize political benefits rather than social benefits and voters are myopic. Opportunistic political cyclical periods model is based on Northaus’s studies. According to Northaus (1975: 174), during their term of office, ruling parties prefer policies that maximize their majority in the next elections. Until 1970s, it has been discussed that unintentional decisions of well-intentioned politicians caused macroeconomic fluctuations and it has been suggested that budget deficit was used by governments on purpose in order to ensure political supremacy in the short term (Bakırtaş, 1998: 48).

Opportunistic political model that was developed with adaptive expectations assumption was reconsidered to include rational expectations in the late 1980s by such authors as Cukierman and Meltzer (1986), Rogoff and Sibert (1988), Persson and Tabellini (1990) and rational opportunistic models have been developed. These studies accept that the basic motivation of politicians is to remain in power. Politicians implement policies of budget deficits to be re-elected especially in pre-election period.

2.4. Partisan political behaviour models

Some authors assume that politicians consider their political and ideological objectives in a strategic manner while making decisions on taxation, expenditures and monetary expansion (Edwards, 1994: 236). According to basic hypothesis of Hibbs (1977) on partisan behaviours of politicians, parties competing for votes take the priorities of those they represent and support them into account, if elected (Brauninger, 2005: 409). According to Hibbs, while left parties that socialist groups or working class support give priority to full employment in economic policies, parties that appeal centres and conservative base give place to price stability as a priority in economic policies. The reason of this is that supporters of left parties consist of mid-low income group (labour groups) who pays the cost of unemployment in the most painful way. Supporters of right-wing government are high-income class (business focused/ capital owner groups) who feels cost of inflation even worse (Farah, 2010: 158).

Based on assumptions of partisan models, “rational partisan model” including rational expectations has been developed by Alesina (1987, 1988), Chappel and Keech (1986). According to rational partisan models, political cycle causes unemployment and fluctuations in inflation if there are uncertainties regarding the outcome of future elections while wage contracts are renewed at regular intervals (Alesina, 1987; Alesina et al., 1992). In both models of Chappell-Keech and Alesina uncertainties related to elections may cause temporary fluctuations in unemployment in the presence of long-term wage contracts (Veiga and Chappell, 2002: 263-264).

2.5. Models related with budget authority

Studies focused on the effects of behaviours of politicians and voters on budget deficits have been suggested to be insufficient for explaining the differences of budget deficits between the countries and periods. This insufficiency has been tried to be covered by models that examine the impact of budget institutions (Pinho, 2004: 21). Budget institutions cover all the rules and regulations for planning, approval and implementation of the budget. In general, there are two types of budget institutions: laws stipulating numerical targets for budget and procedural rules (Farah, 2010: 158). These institutions vary from one country to other. Therefore, budget institutions may be the potential explanatory for budget deficits and the difference of debts between the countries (Alesina and Perotti, 1994: 34-35).

De Haan et al. (2013: 424) argued that effects arising from the conflict between the parties and partisan behaviours on budget deficits could be prevented through budget institutions. Budget institutions may contribute to the success of fiscal policy through ensuring fiscal discipline and determination of the rules of the game. Hallerberg et al. (2007) stated that different approaches (the contract and delegation approach) for different types of government may be preferred concerning the budget institutions. Shepsle (1979) mentioned that structures that were made by some procedural institutions might help in solving the problem of Arrow deadlock that emerged in legislation.

2.6. Models based on the strategic use of loan

According to Persson and Svensson (1989: 325) the ruling parties may use loan as a strategic tool, if they foresee that they will lose elections and a new government with different goals will be established. The ruling party tends to loan by taking the level of debt that future government will take over into account and increase the budget deficit. Thus, as a result of increased interest payments of future public debt and aims to reduce the amount of public revenue dedicated to the provision of public goods.

According to Tabellini and Alesina (1990: 37), a social choice between the current and future power problem occurs through the reduction in support for the ruling party. Time inconsistency caused by this problem determines the size of the budget deficit or surplus. If future power demonstrates different choices, policies required by current majority cannot be executed in the future. This situation encourages current majority to select a loan policy that is not optimal for whole society. Deviation from optimality may reveal as excessive budget deficit or surplus.

Although loan is a financing tool that is used to cover public expenditures, it is also a fiscal policy tool that makes economic intervention possible for the state (Çiçek et al., 2010: 142). Governments that stipulate to lose elections may seek to strategically increase budget deficit to restrict the economic opportunities of future government or resources that can be used for undesired policies. This situation shows that economic intervention will be possible through budget deficit even in the future.

2.7. Intergenerational income distribution related models

Cukierman and Meltzer (1989: 713) focused on the effects of public loan on income distribution through budget deficit and surplus by stating that public expenditures have functions of provision of public goods and redistribution of income. They divided the society into two sections as riches and poors and assumed that there are differences between the policies of governments that both sides support. While riches are indifferent about loan, poors support loan and thus budget deficit policies. If the majority of society is composed of poors or a government supported by poors is in power, budget deficit may increase because public expenditures will be financed with more loans (Güvel and Koç, 2011: 239).

According to Alesina and Perotti (1995b), the fact that next generation does not have a choice has an extremely powerful effect in the implementation of public debt that transfer income from next generation to the current generation. Tabellini (1991: 340) stated that budget deficit is not only a tool of between generations; it is also an income transfer tool from the rich to the poor. In budget deficit policies (in financing transfer expenditures through loans) that increase social transfers and applied by politicians supported by poors, income transfer is carried out both between generations and from the rich to the poor.

3. Budget deficits and governance

There has been a rapid and fundamental change in many areas, especially in economy and politics in the world since the 1980s. This change has led to the emergence of new discussions on the role of government, economic policies and public financial administration systems (Eroğlu, 2013: 141). It has been raised to restructure the hierarchical only one-way structure of the current government approach from top to down as double-sided based on reciprocity. In the early 1980s new insights for the public administration and governance reform have been adopted, which is known as "new public management" especially in Australia, New Zealand, UK, USA and some other countries (Rondinelli, 2007: 4). In this regard, as a model that the citizens, private sector and civil society organizations are all included in the traditional decision-making process, the public sector is more efficient, transparent and is open to inspection, governance approach has gained acceptance in many countries. With this approach, it has attempted to develop a governance approach that sections affected by public decisions are incorporated into the decision-making process and the quality of public services increased by improving productivity.

The concept of governance as it has its scope today started to be treated as a popular issue in entire world by being in the agenda first in northern Europe (Gaudin, 1998: 47) and then by the World Bank (1989) 's report. In Sub-Saharan African countries report⁽²⁾, World Bank showed a new development approach which is based on the idea that economic development cannot be achieved unless governance, rule of law and democracy did not reach a certain level (Bovaird and Löffler, 2009: 216). After World Bank identified the current situation in Africa as a "governance crisis", the term "governance" has become a part of development policies especially in the least developed countries (Pagdem, 1998: 7).

Politicians and academics broadly discuss governance concept and there is not a specific definition for that on which there is a strong a consensus (Kaufmann et. al., 2011: 222). Despite the lack of generally accepted definition of the governance concept, some principles are determined to measure and strengthen governance. In this context, the most commonly used principles are participation, rule of law, transparency and openness in decision-making, accountability, predictability or consistency and effectiveness. International organizations are united in the idea that these are the principles for the basis of sustainable development (Caluser and Salagean, 2007: 12). In addition, governance indices have been developed by various international organizations for measurement of governance, monitoring the development of it and making comparisons between countries. In this study, Global Governance Indicators indexes, which have been developed by World Bank, are used. These indicators are very attractive for researchers since they are prepared extremely carefully and meticulously, have global coverage area and achieved with maximum precision (Thomas, 2010: 33).

Worldwide governance indicators consist of six indexes. Voice and accountability index covers perceptions on such as freely participating of citizens in political elections in a country without exposing to pressure, citizen's freedom of expression and association and freedom of the press. Political stability and absence of violence index measures the perceptions on some possibilities, such as destabilization of the government in power through unconstitutional means or terrorism and/or violent means. In the scope of government effectiveness index, some data are combined, related to the subjects such as the quality of public service delivery and bureaucracy, the quality of the civil service and independence of these services from political pressures and confidence in the policy that the government commits. Regulatory quality index measures the ability of government to develop and implement healthy policies and regulations that allow and encourage the development of private sector. Rule of law index shows the perceptions on subjects, such as confidence of citizens in society rules, implementation quality of contracts, property rights, the quality of the police and the courts and possibility of crime and violence. Control of corruption index shows the perceptions on subjects, such as the use of public power to ensure private interests from the biggest to the smallest form of corruption and the use of state possibilities for elites and special interest groups (Kaufmann et al., 2004: 2; Kaufmann et al., 2011: 223).

Governance is also used as a special term that explains the change in the nature and role of the state by reforms carried out in public (Bevir, 2009: 3). With this aspect, as a management approach that shapes political behaviors beyond the political motivation, it

is an issue that concerns public policies deeply. While economy political analysis made on budget deficits are focusing on political behaviors, an important lack of effect of governance reflects in the literature.

It is observed that empirical studies examining the relationship between governance indicators and economic performance focused especially on the subjects, such as economic growth (Barro, 1996; Gani, 2011; Yarrabati and Hawkes, 2015; Omoteso and Mobolaji, 2014; Olson et al. 2014; Alfaro et al. 2008; Huynh and Chavez, 2009; Butkiewicz and Yenikkaya, 2006), development (Bulte et al. 2005; Swapoop and Rajkumar, 2002), foreign trade (Baier and Bergstrand, 2007), direct foreign investments (Globerman and Shapiro, 2003; Jansen, 2003; Lambsdorff, 2003), domestic investments (Aysan et al., 2006; Aysan et al., 2007; Tanzi and Davodi, 1997) and income distribution (Alesina and Perotti, 1996; Belletini, 1998). The studies that examine the relationship between these indicators and budget deficits are very limited.

4. Summary of literature

In recent years, there has been a widespread opinion in the literature on budget deficits that political and institutional determinants should also be taken into consideration and included in the analysis besides the economic determinants of budget deficit. Political economy theories suggest that political and institutional factors may be important for budget deficits.

Authors start with Roubini and Sachs (1989a) and Grilli et al. (1991) and the followings examined the relationships between political variables and budget deficits (Romer, 2006: 598). These are considered as the pioneer works in this area. Some of the empirical studies carried out on the political and institutional determinants of budget deficits are covered in the appendix of this study. In these studies, such subjects have been examined as government structure with budget deficits, power time, the ideology of the ruling party, the presence of opportunistic and partisan political cyclical waves. Unlike before, the effect of management approach on budget deficits has been examined in this study. This study is expected to contribute to fill the conspicuous gap in the literature on the relationship between governance and budget deficits. A summary of the literature on empirical studies on political and institutional determinants of budget deficits is presented in the Table 1.

Table 1. *Empirical studies related with political and institutional determinants of budget deficits*

Author	Publication Year	Basic Results
Roubini and Sachs	1989a	Political factors affect budget deficits. Budget deficits are smaller in powerful governments while they are bigger in weak governments (short-lived and coalition governments).
Roubini and Sachs	1989b	The size of the public deficits is related with economic and political characteristics of the countries. Political consensus is required to reduce public deficits. Debt/GDP ratio is increasing much faster in countries with coalition governments.
Grilli, Masciandaro and Tabellini	1991	Proportional electoral system and short government terms have effect on fiscal indiscipline. There is a higher public debt stock in the countries with minority governments and coalition governments.
Edwards and Tabellini	1991	Unstable political environment (seigniorage) were determined to be more prone to inflation tax. No evidence could be found relating to the same conclusion about weak governments. Political instability is one of the reasons of public deficit.

Author	Publication Year	Basic Results
Cukierman, Edwards and Tabellini	1991	Political instability is one of the most important factors affecting seigniorage income. Seigniorage income of governments increases as political instability increases.
Crain and Tollison	1993	Political instability has negative impact on variability (volatility) of budget balance. The volatility of public deficit is higher in provinces with a greater change frequency of governments. As a result political stability is important for fiscal policy.
Edwards	1994	Ideological differences may have significant effects on economic policy in developing countries. Political budget cycle is valid in Chile in the analysed period.
De Haan and Sturm	1994	Increase in public debt is positively related with the frequency of government changes whereas it is negatively related with strong budget procedures. Besides, increase in public expenditures wave higher during leftist governments in these countries.
Alesina and Perotti	1995a	Single-party governments are more successful than coalition governments in the area of financial regulations.
Alesina and Perotti	1995b	Government types show different degrees of success in financial compliance applications and coalition governments are their most unsuccessful ones. There is no difference between the right and left parties in single-party governments in terms of the success of financial regulations.
Haan, Sturm and Beekhuis	1999	The number of political parties in government (coalition government) affects the increase in public debt. No effect of political variables on budget deficits was encountered.
Kontopoulos and Perotti	1999	While the number of parties in the government increases a looser fiscal policy is applied. There is a significant presence of relationship between the number of parties in the coalition and budget deficits & expenditures.
Schuknecht	2000	Weak institutional structures in developing countries facilitate the election-oriented fiscal policies. To prevent opportunistic policies toward elections, discretionary spending policies and institutional mechanisms strengthening financial control are important.
Bussiere and Mulder	2000	Political stability has a strong influence on economic fragility in countries with weak economic fundamentals and low reserves. Coalition governments are less successful than single-party governments in achieving desired financial reforms due to long duration of reconciliation between partners.
Tutar and Tansel	2000	According to annual data: - Budget deficit increases as the number of parties in the coalition and financial authorities increases. - There is no impact of the elections. - Coalitions, military coups, oil crisis, the Cyprus Peace Operation and the fight against terrorism has significant and negative impact on budget deficits According to quarterly data: - Elections, the number of parties in the coalition and the number of fiscal authorities partly affect budget deficits. According to monthly data: Elections have a significant and negative effect on budget deficits (all budget lines except investment).
Telatar	2000	Manipulative (opportunist) and political surf hypothesis have not been confirmed. This is shown as because data used by the peculiar structure of Turkey's economy are chosen as policy objectives (inflation target) and not including in the analysis the variables that governments can directly control such as public expenditures, transfer expenditures.
Freitag and Sciarini	2001	A very small part of the political and institutional factors affect the budgetary performance of the EU countries in this period. There is a strong correlation between political stability (the number of government changes) and budget deficits.
Bradbury and Crain	2001	The lower parliament volume has an increasing effect on public expenditures whereas the higher parliament volume has a decreasing effect on it.
Acosta and Coppedge	2001	Governments tend to increase public deficits in election years. Political institutions have an impact on economic performance.
Tepe	2001	Ricardian equivalence hypothesis was rejected due to missing money markets, liquidity constraints and differential loan rates.
Acemoglu et al.	2002	Politicians eye unsustainable policies with the interests of different groups to stay in power in societies with weak institutions and economic problems emerge as a result of these policies.
Keefer and Knack	2002	Social polarization decreases country's creditworthiness (credibility). Increase in income inequality among groups (ethnic or social) living in the country may lead to face difficulties in payment of debts.

Author	Publication Year	Basic Results
Annett	2002	The electoral system / method, legislation and degree of fragmentation in government and governmental stability has a strong influence on fiscal policy. There is a clear relationship between political system and expenditures & taxation preferences.
Mulas-Granados	2003	Besides economic conditions, coalition governments (divided decision makers), the ideology of the government party and the proximity in the elections have effect on adaptation strategies if usually fiscal policy is in particular.
Woo	2003	Financial depth, income inequality, assassinations, cabinet size and centralization of authority in budget decisions are important and robust determinants of public deficits. Public deficits tend to increase in countries with frequent government changes. This positive relationship between government changes and budget deficits supports political business cycle hypothesis. Social and political instabilities have a very strong impact on budget deficits. Budget and government institutions have effect on fiscal discipline generally.
Baldacci et al.	2004	Fiscal consolidations based on expenditure cuts increase the possibility of providing financial sustainability. The possibility of fiscal consolidation to be implemented decisively decreases in election years. IMF-supported fiscal consolidation programs are more likely to be successful.
Asutay	2004	In order to increase their votes to be re-elected (through monetary and fiscal policy), governments in power in Turkey constitute political business cycles.
Akçaoğlu and Yurdakul	2004	It is observed that there is an increase in budget deficits in Turkey in general elections period. Election periods have no significant impact on inflation and economic growth. Opportunistic model was verified for Turkey while partisan model was rejected. The fact that parties forming the government represent different ideologies (of being on the right or left wing) has no significant effect on budget deficit (growth and inflation).
Lavigne	2006	Political factors has a significant impact on the success and sustainability of economic and financial regulations.
Sezgin	2007	In order to maximize their votes, political parties in Turkey manipulate the economy during the election periods.
Aslan and Bilge	2009	Deviations occurring in budget expenditures in the coalition periods of Turkey are significantly greater than the periods of single-party and this is not supposed to be random but systematic.
Hatunoğlu and Tekeli	2013	Governments implement policies of increasing expenditures in pre-election periods in order to be re-elected.
Karakaş	2013	Political cyclical fluctuations are apparently valid for Turkey. Politicians in Turkey manipulate economy through financial instruments before elections and they try to fix the economy by applying strict fiscal policies after the election period.
Altun	2014	Political cyclical fluctuations are valid in Turkey. Opportunistic and partisan behaviour models for the political parties in power in Turkey between 1950 and 2000 are valid.

5. Data set

Data with annual frequency that belongs to 123 countries which are agreed by IMF that they are developing countries in 2002-2012 periods is used in the study. Governance indicators, of which effect on budget deficit was examined and World Bank has been publishing since 1996, was published every two years until 2002 and annually for the following years. Therefore, 2002 has been chosen as starting year in that governance indicators started to be published annually. The end year is 2014 based on the scope of the latest release of worldwide governance indicators.

In the analysis in which it is aimed at measuring the impact of worldwide governance indicators on budget deficits, economic growth and inflation (consumer price index) variables were used as control variables since they are likely to affect budget deficits. Since they have a direct and indirect effect on budget deficits independent from

governance, these variables are widely used in analysis of budget deficits in the literature. Data sets that belong to the variables used in the study were obtained from database of World Bank and IMF. Explanations for these variables are presented in Table 1. Worldwide governance indicators consist of six sub-indexes. These are; voice and accountability, political stability and absence of violence, government effectiveness, regulatory quality, rule of law, control of corruption. These indexes are comprised of values between -2.5 and +2.5 points. When the score of a country on the related index is close to -2.5 it shows that it fails whereas it shows that it is more successful when it is close to + 2.5.

Table 2. Variables used in the model

Variables		*	Definition		Source
Budget Balance	BB		General government net	%	IMF
Ekonomik Büyüme	G	+	GDP growth (annual)	%	WB
Enflasyon	INF	-	Inflation average consumer prices	%	IMF
Voice and accountability	VA	+	Worldwide governance indicators (WGI)	index	WB
Political stability and absence of	PS	+	WGI	index	WB
Government effectiveness	GE	+	WGI	index	WB
Regulatory quality	RQ	+	WGI	index	WB
Rule of law	RI	+	WGI	index	WB
Control of corruption	CC	+	WGI	index	WB

* Estimate of relationship between budget deficit and variables.

Budget deficit, which is used as the dependent variable in the model, is represented as a ratio of public net debt-receivable balance to GDP. This ratio shows the budget balance. Percentage change in real GDP is used as an indicator of economic growth. Annual inflation rate is also included in the analysis.

6. Econometric method

Panel data analysis method was used in the study. Panel data analysis is a method that estimates economic relations by using section (horizontal or vertical) data that has time dimension (Pazarlıoğlu and Gürler, 2007: 37). Panel data analysis is widely used in recent years in studies regarding economic variables. Panel data analysis is a method that estimates economic relations by using section (horizontal or vertical) data that has time dimension (Pazarlıoğlu and Gürler, 2007: 37). Therefore in this method a data set is generated which covers both dimensions by using both time series and horizontal section data.

6.1. Panel unit root test

Since data used in panel data analysis has time series, stability must be determined. If the series is stable it means that average and variance are constant over time and common variance between two periods depend on only the length between the two periods, not on the period that this common variance is calculated. If the series are not stable, t, F, and chi-square limitations and similar traditional test processes remain questionable (Gujarati, 1999: 708, 713). One of the widely used methods for this is panel unit root tests. Following the studies of Levin and Lin (1992, 1993), unit root tests started to be used quite widely in the studies that panel data method is used (Maddala and Wo, 1999: 631). Also in the literature, panel unit root tests, which are recommended by Im, Pesaran and Shin (IPS) (2003), Maddala and Wu (MW) (1999) and Hadri (2000) are used.

6.2. Panel regression models

In general, linear panel data model with panel data, which is generated by dealing N number of units and T number of observations for each unit together:

$$Y_{it} = \beta_{0it} + \beta_{1it}X_{1it} + \beta_{2it}X_{2it} + \dots + \beta_{kit}X_{kit} + u_{it} \quad (1)$$

$i = 1, 2, 3, \dots, N, \quad t = 1, 2, 3, \dots, T$

can be as expressed. Among the sub-indices in equation (1), i represents section dimension, such units as household, individuals, countries; t represents time dimension, such as month, year., shows value of dependent variable for i unit at time t ; β_{0it} , constant term; β_{kit} , $K \times 1$ dimension parameters vector; X_{kit} , value of explanatory variable k at time t for i unit.

In the model expressed by equation (1) in panel data analysis, coefficients β take different values for different units in different periods. Therefore, some assumptions related to constant term of model, slope coefficients and error term are made while the model is estimated. These models obtained with these assumptions are "fixed effects" and "random effects" models. Both in fixed effects and random effects models, error terms u_{it} are assumed to distribute independent and as $N(0, \sigma_e^2)$ for all periods and all individuals (Tatoğlu, 2013: 37).

6.3. Fixed effects models

One of the panel regression models is fixed effect model. This is a model that slope coefficients are equal ($\beta_1 = \beta$) for time and section units whereas constant coefficient varies based on horizontal cross-sectional units because it has unit effect (Greene, 1993:466). Constant term takes different values for each horizontal section unit; differences between units are expressed by differences in the constant term. Also in this model, unit effect and independent variables are allowed to be correlated by assuming that independent variable has no correlation with error term. When a general panel data model is addressed (Tatoğlu, 2013: 80):

$$Y_{it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \dots + \beta_k X_{kit} + v_{it} \quad (2)$$

In fixed effect model:

$$\beta_{0it} = \beta_{0i} = \bar{\beta} + e\mu_i; \quad \beta_{1it} = \beta_1 \quad \beta_{2it} = \beta_2, \dots, \dots, \beta_{kit} = \beta_k$$

is assumed. β_{0it} represents constant term including unit effect, μ_i unit effects; u_{it} error term. Slope parameters are assumed to remain constant depending on units and time. In the model, constant term varies depending on units but constant that is generated for units is fixed through time. Therefore, time effect on constant term is considered as invalid (Gujarati, 1999).

6.4. Random effects models

In panel data usage, individual effects that cannot be observed in each unit may emerge. If these individual effects are treated as a random variable like error term, these are "random effects", if they are treated as a parameter that is estimated for each horizontal cross-section observation, these are "fixed effects" (Tatoğlu, 2013: 79).

In random effects model the differences in horizontal section unit are assumed to be random like error term (Greene, 1993: 469). In these models, changes that occur in horizontal section units or based on units and time are included in the model as a component of error term. The most important reason for that is to prevent loss of freedom degree experienced in fixed effects model (Baltagi, 2005: 13).

$$Y_{it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \dots + \beta_k X_{kit} + v_{it} \quad (3)$$

When a panel data model as in Equation 3 is discussed, it is not included in constant parameter because unit effect is not constant in random effects model. It is included in error term because it is random (Tatoğlu, 2013: 104). So here error term can be represented as below;

$$v_{it} = u_{it} + \mu_i$$

u_{it} now represents errors, μ_i is unit error that represents unit differences and the variations between units by time.

7. Analysis model

The model that examines the impacts of worldwide governance indicators on budget deficits was formed on the basis of Roubin and Sachs (1989a) model which is considered the basis of the studies done on the political and institutional determinants of budget deficits.

$$BB_{it} = \beta_0 + \beta_1 G_{it} + \beta_2 INF + \beta_3 VA_{it} + \beta_4 PS_{it} + \beta_5 GE_{it} + \beta_6 RQ_{it} + \beta_7 RL_{it} + \beta_8 CC_{it} + u_{it} \quad (4)$$

The dependent variable used in the model is BB_{it} , which represents budget deficit of country i in year t as a share of GDP. Of the independent variables used as economic variables G_{it} , represents economic growth of country i in year t , GDD_{it} represents inflation rate of country i in year t . Of the global governance indicators in the model, VA_{it} represents voice and accountability index of country i in year t , PS_{it} represents the index of political stability and absence of violence of country i in year t , GE_{it} represents government effectiveness index of country i in year t , RQ_{it} represents regulatory quality index of country i in year t , RL_{it} represents rule of law index of country i in year t and CC_{it} represents the control of corruption index of country i in year t . u_{it} is error term. Estimates have been made for this model and research findings are given in the following chapter.

8. Analysis results

For the data set of this study, panel unit root test which was developed by Breitung (2000) was applied. The main reason to prefer this test is its success in small samples. Breitung (2000) showed with Monte Carlo Experiences that in small samples this test is more powerful than the other panel unit root tests (Tatoğlu, 2013: 207).

H_0 : Panels contain unit roots.

H_A : Panels are stable.

Breitung unit root test results, of which test hypothesis mentioned above are presented in Table 2. Looking at these results, it is seen that null hypothesis was rejected for all series so that the series are stable in level.

Table 3. *Breitung panel unit root test results*

Variables	t	p
LB	-8.7156*	0.0000
G	-11.5616*	0.0000
INF	-9.0331*	0.0000
VA	-1.3470***	0.0857
PS	-2.5991*	0.0047
GE	-1.9403**	0.0262
RQ	-1.7212**	0.0336
RL	-1.4263***	0.0765
CC	-1.3834***	0.0883

Note: *, **, *** show that null hypothesis was rejected for significance levels 1%, 5% and 10%, respectively.

ANOVA F test results that were proposed by Moulton and Randolph (1989) were examined to test the presence of individual effects that could not be observed in the early stages of analysis. Null hypothesis that all individual effects are equal to zero ($H_0: \mu_i=0$) was rejected. (see Table 3). This result indicates that data vary according to individuals so the classical model (pooled LS-Least Squares) is not valid. In addition, likelihood ratio test (Likelihood Ratio: LR) is used to test the classic model against random effects model. H_0 hypothesis is “The classic model is correct”. According to test results H_0 is rejected, so it is understood that the classical model where there are unit effects is not appropriate. The presence of individual effects was tested with Breusch- Pagan (1980) test. The hypothesis that variances of unit effects are equal to zero ($H_0: \sigma_\mu^2 = 0$) was tested with this test. According to results H_0 hypothesis is rejected and it is seen that the classical model is not appropriate (Table 3).

Hausman test was used for the selection of estimator. The main hypothesis of the test is “there is no correlation between the explanatory variables and individual effects”. In this case, estimator of both the fixed effects and random effects is consistent. Thus, the difference among the estimators will be very small. The alternative hypothesis is “there is a correlation between explanatory variables and individual effects”. In this case, random effects estimator is biased whereas fixed effects estimator is consistent. Hausman test results applied to the model are presented in Table 3. According to Chi-square statistics obtained, null hypothesis cannot be rejected. In summary, dependent variables and individual effects are not correlated and random effects GLS estimator is active. However, autocorrelation and heteroscedasticity problems should be tested.

To test the presence of autocorrelation, Durbin-Watson test, which was proposed by Bhargava, Franzini and Narendranathan, and local best invariant test statistics, which was proposed by Baltagi-Wu were used. A comment is made that autocorrelation is significant if test statistics are less than two (Tatoğlu, 2013: 214). Test statistics belong to both tests and presented in Table 3 are less than two. These results indicate that there is an autocorrelation problem. In addition, Lagrange (LM), and adjusted lagrange multipliers (ALM) tests were used to test for the presence of autocorrelation in random

effects model. The null hypothesis of these tests are autocorrelation coefficient (λ) is equal to zero. In both tests the null hypothesis were rejected, so there's autocorrelation.

Heteroscedasticity problem in econometric analyses is encountered when working with horizontal sectional data rather than with time series. Therefore, tests of Levene, Brown and Forsythe's were used to test the presence of heteroscedasticity in random effects model. Null hypothesis "variances of the units are equal" was rejected, so there is heteroscedasticity. White correction was made in model estimation to obtain resistant standard errors in the presence of heteroskedasticity and autocorrelation. F-statistic values (Table 3) show that model is significant as a whole.

According to the results of the analysis presented in Table 3, of the global governance indicators they are statistically significant with significance levels for voice and accountability (VA) 1%, political stability (PS) 5% and regulatory quality (RQ) 10% whereas government effectiveness (GE), rule of law (RL) and control of corruption (CC) variables are statistically insignificant. Of the economic variables used in the model, they are statistically significant with significance levels for the increase in real GDP, means economic growth (G) 1% and inflation 5%.

Table 4. Panel regression estimations (random effects GLS estimator, dependent variable: BB)

Variables	Coefficient	t-Statistic	P Statistic
G	0.273*	(5,73)	0,000
INF	0.086**	(1,98)	0,048
VA	-2.964*	(-3,19)	0,001
PS	1.836**	(2,27)	0,023
GE	-1.148	(-1,37)	0,170
RQ	1.794***	(1,87)	0,062
RL	-0.558	(0,37)	0,711
CC	0.888	(1,01)	0,310
C (sabit)	-3.200	(-5,79)	0,000
Test Results			
ANOVA F	7.97		Prob (0.000)
Hausman	12.71		Prob (0.122)
W0 (Levene/BrownForsythe)	6.326		Prob (0.000)
Breusch-Pagan	1092.80		Prob (0.000)
Likelihood-ratio	423.81		Prob (0.000)
Durbin-Watson	1.585		
Baltagi-Wu	1.698		
LM ($\lambda = 0$)	424.62		Prob (0.000)
ALM ($\lambda = 0$)	68.99		Prob (0.000)
R ²	0.0861		
F	39.44		Prob (0.000)
Number of obs.	1599		

Note: *, **, ***, show that estimated coefficients are statistically significant for significance levels 1%, 5% and 10%, respectively.

According to findings of panel regression analysis, one unit increase in political stability (PS) index increases budget balance 1.83 points. One unit increase in Regulatory Quality (RQ) index has positive effect of 1.79 points on budget balance. On the other hand, increase in voice and accountability (VA) index in the countries included in the analysis has negative effect on budget balance. Budget balance that was used in the analysis to represent budget deficits shows the ratio of budget deficit to GDP. Recovery or increase of budget balance means a decrease in budget deficit.

9. Conclusions

Budget deficit is one of the major economic problems of many developed and developing countries. While budget deficit is used as a fiscal policy tool, it may cause various economic problems in some cases, especially inflation. With this aspect, it is a subject that sometimes limits governments and affects their economic decisions.

Many theoretical and empirical studies have been made on the causes of budget deficit since 1970s. An important part of these studies focused on political and institutional determinants of budget deficits. In these studies, subjects such as opportunistic and partisan political behaviors, government structure and term of office have been examined. In this study, different from political behaviors, effect of management approach on budget deficits was examined.

Since the late 1980s, the traditional management approach has undergone some criticism. It was defended that realization of a management that has a single-way hierarchical structure to a certain extent in a mutual manner between relevant stakeholders will be more effective. Therefore, some principles such as transparency, accountability, rule of law, voice and accountability were determined and recognized as the important elements of management. There is a conspicuous gap in the literature for effect of governance on budget deficit. In this study, the effect of governance on budget deficit in 123 emerging countries in the period 2002-2014 period was examined. World Governance Indicators (WGI) which was developed by World Bank, consisting of six indexes and often preferred in academic studies were used as governance indicators. Also independent from these indexes, economic growth and inflation rates which has relationship with budget deficit were included in the analysis as control variables.

According to analysis results, of the global governance indicators voice and accountability, political stability and regulatory quality have statistically significant relationship with budget deficits. Improvements in political stability and regulatory quality indexes lead to a certain decrease in budget deficits. In contrast, it was concluded that the increase in voice and accountability index increases budget deficits. A significant relation could not be determined between government effectiveness, rule of law, control of corruption and budget deficits. There is a significant relationship between budget deficits and increase in real GDP (growth) and inflation, which are included in the analysis as control variables.

In the countries that budget deficit is an important problem and fighting with it, providing some political improvements besides implemented economic measures will increase the success of policies. Therefore, it is important to ensure political stability first in terms of budget balance. In addition, the economic and political regulations, which encourage the development of private sector, protect property rights and entrepreneurship, are expected to have a positive impact on policies applied for budget deficits.

Notes

- (1) For detail information about Tax Smoothing Hypothesis see: Alesina and Perotti (1994), Karakas, M., Taner, T. and Yanikkaya, H. (2014).
- (2) World Bank (1989), *Sub-Saharan Africa; From Crisis to Sustainable Development*, The World Bank Publication, Washington, D.C.

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