VOLATILE DISCRETIONARY PUBLIC SPENDING AND ECONOMIC GROWTH: A COMPARATIVE EVIDENCE OF DEVELOPED AND DEVELOPING COUNTRIES

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Abstract

Discretionary public spending has diverse implications for overall economic performance of the economies. In this study, we examine the impact of volatile discretionary public spending on economic growth for a panel of selected countries. The panel comprises 55 countries while covering a period from 1985 to 2014. By employing the Generalized Method of Moment (GMM), we find that the volatility in discretionary public spending inversely affects the economic growth in the aggregate list of our sample countries. Onwards, we decompose our sample into developing and developed countries. In case of developing countries, the results remain intact, i.e. discretionary spending volatility has severe implications for the economic growth. However, the impact appears insignificant in developed countries. This suggests that countries which are following the smooth public spending policy or operating under certain fiscal rule are immune to the adverse consequences of volatility in public spending.

Keywords: Volatility, Public Spending, Economic Growth, The Generalize Method of Moment (GMM)

JEL Classification: H 890

Introduction

The effectiveness of fiscal policy has been a highly debatable issue since the times of the Great Depression. So far, there is no general consensus with regard to the implications of instruments like taxes or public spending. It has been a challenge to both the theory and empirics to find the

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channels through which these instruments could possibly influence economic performance. Accordingly, numerous attempts have been made to find the links between fiscal instruments, particularly public spending and economic growth ⁴. Most of these studies focus on the level effects of fiscal instruments on economic performance. Recently, it has been observed that the behavior of government spending is volatile in nature. For instance, this behavior has been obvious in case of discretionary public spending. Such volatility cannot be ignored due to its wide macroeconomic implications. The volatile behavior of public spending could adversely affect the decisions of economic agents, which could have ultimate negative effects on economic growth. Especially, economic agents and investors react inversely to the uncertainties with respect to the future behavior of fiscal instruments (Ali, 2011). Hence, the predictability of economic policies and transparent rules of the game are of high importance (Pindyck, 1988). However, in certain situations, some discretionary spending volatility may be desirable. For instance, in order to smooth out fluctuations in business cycle, discretion might have positive effects on economic activities (De Castro, 2006).

There is a group of studies which find that the volatile nature of government spending harms economic performance (Afonso and Furceri 2010; Furceri 2007; Afonso and Jalls 2012; Eller et al. 2013; Fatas and Mihov, 2003; 2006). For instance, De Castro (2006) and Fatas and Mihov (2003) find that a rise in each percentage point of discretionary spending volatility decreases economic growth by a higher percentage point. As pioneers in this area, Fatas and Mihov (2003) explore the economic cost associated with the volatile nature of discretionary public spending in a big panel of advanced and emerging economies. While estimating their own developed fiscal rule model; they find that volatile discretionary spending induces output volatility, which, in turn, hampers economic expansion. In another study, Fatas and Mihov (2006) ⁵, while employing a slightly different econometric technique, reached to the same conclusion. In sharp contrast, Tenhofen et al. (2010) observes that government expenditure shocks have positive effects on output and private consumption; while it has an insignificant impact on private investment ⁶. Likewise, Edelberg et al. (1999) find that government spending shock enhances non-residential investment, employment and output while shrinks residential investment, real wage and consumption expenditure. Ismail and Husain (2012) proclaim that discretionary measures have no effects on economic outcomes.

Given these diverse opinions, in this paper, we analyze the macroeconomic consequences of volatile non-systematic discretionary public spending. We contribute on several fronts. First, we introduce the volatile behavior of those public expenditures which are not associated with business

⁴ See for instance Ram (1986); Dash and Sharma (2008); Woo (2011); and Tagkalakis (2014).

⁵ These results are also supported by Ali (2011) for a larger sample. Eller et al. (2013) also confirmed these results.

⁶ Jemec et al. (2011) also note that a government spending has a positive effect on the components of GDP (although these positive effects are in the following periods). See also Eller et al. (2013) for the negative implications of discretionary measures.

cycle fluctuations. Alternatively, we decompose the overall effect of public spending. Second, in order to extract the true non-systematic discretionary spending component, we modify the fiscal rule model of Fatas and Mihov (2003) by introducing population as an additional control variable. The sizes of population and public sector are interconnected; therefore, it is essential to control for population ⁷. Third, we do both the aggregate analysis for a panel of countries and a disaggregate analysis for panels of developed and developing countries. In this way, we are able to control for the bias that might have caused by the diversified nature of the two types of countries. Finally, we do robustness check by employing alternative panel data models; however, we rely on the results of Generalized Method of Moment (GMM) in order to avoid the problem of endogeneity in growth regression.

Our analysis shows that economic growth is deteriorated by the volatility in discretionary public spending. In the decomposed analysis, we find that developing countries are more affected as compared to the developed economies. Alternatively, volatility in discretionary public spending is higher in developing countries as compared to the developed economies. Our findings suggest that, in order to be immune from the adverse consequences of volatility in public spending, policy makers should pursue smooth fiscal rules. The rest of the paper is organized in three sections. In section 2, we provide the methodology, the estimation procedure and the information about the data. Section 3 discusses the empirical findings of the study. Section 4 concludes the paper.

Theoretical Framework, Methodology and Data

Here, we provide the theoretical framework of our analysis. Besides, we discuss here the estimation methodology and data.

Framework of the Study

In order to extract the discretionary part of fiscal policy, i.e. a part of government expenditures which is not associated with cyclical fluctuations of the economy, we rely on the literature of fiscal rule. We augment Fatas and Mihov (2003) proposed fiscal rule equation by including population as an additional explanatory variable ⁸.

Equation 1 is the general government expenditure equation where 'i' and 't' denote the indexes of country and time period, respectively. g_it stands for the general government expenditure of country

⁷ Fatas and Mihov (2003), actually, neglected population. See also Zhang and Zhou (1998) for the discussion on population with regard to public spending.

⁸ It is generally perceived that besides traditional determinants, population and area are important determinants of public spending. However, we prefer population to area as both are scale variables.

i, in period t, with g_{it-1} as its lagged value. Likewise, y _it denotes GDP per capita. w_it includes the two control variables, consumer price index (cpi_{ii}) and population (n_{ii}). The residual term, ε_{ii} , of equation 1 is interpreted as discretionary changes in fiscal policy. Alternatively, discretionary changes are those changes which are not related to cyclical fluctuations of the economy. In order to calculate the volatility of the discretionary part (δ_{ii}) of the fiscal policy, we follow the approach of moving average standard deviation ⁹. To examine the effect of the volatile discretionary spending on growth, we incorporate the volatility component, δ_{ii} in the growth model ¹⁰.

As is stated earlier, y_{it} is GDP per capita with y_{it-1} as its lagged value. In the same way, k_it is gross fixed capital formation; h_{it} is human capital; δ_{it} is the aggressive discretionary component; and Z_it is the set of control variables, which include variables like trade openness (to_{it}), population (n_{it})) and government expenditure (g_{it}). e_{it} is the corresponding error term.

Sample Size and Data

We use a panel which comprise 55 countries, including both the under-developed and the developed countries of the world. Selection of the countries is simply based on accessibility of the data. The time period covered is from 1985 to 2014. Panel data has many advantages as compared to the traditional cross-section and time-series data. For instance, panel data provides a large number of data points; thereby providing adequate number of the degree of freedom; and, also, it reduces the likelihood of multicollinearity among the explanatory variables. Thereby, it enhances the efficiency of the estimates. Besides, we can control for the effect of unobservable and immeasurable factors. Alternatively, individual heterogeneity and the problem of omitted variable could be easily tackled in case of panel data. As is stated earlier, the data used in this study comprises data on government expenditure, total population, GDP per capita, trade openness, gross fixed capital formation, human capital, consumer price index and discretionary fiscal policy. The data of the gross fixed capital formation, government expenditure, consumer price index, GDP per capita, total population and trade openness are taken from the World Development Indicators (WDI) while the data of Human capital is used from the Penn World Table (PWT).

Estimation Methodology

Both of our models, i.e. the fiscal rule model as well as the growth model, given in equations 1 and 2 respectively, have the problem of reverse causality which is regarded as one of the potential

⁹ This approach is common in the literature as is employed by other studies like Fatas and Mihov (2003; 2006), Ismail and Husain (2012) and Ali (2011).

¹⁰ The results of fiscal rule model is available from the authors on demand

sources of endogeneity ¹¹. In the presence of simultaneity bias, it becomes difficult to draw conclusions about the causal relationships and inferences. Consequently, the conventional econometric methods like the pooled OLS, fixed effect or random effect produces biased estimates ¹². Thus, we resort to the Generalized Method of Moment (GMM) which is one of the prominent econometric techniques to avoid the problems of potential endogeneity and reverse causality. In addition, GMM, which is the extension of Instrumental Variable (IV) approach is immune to the problems of hetroskedasticity and serial dependence (Arellano and Bond, 1991; Arellano and Bover, 1996; Blundell and Bond, 1999). ¹³ In particular, we employ the system GMM. The basic prerequisite for using the system GMM is that the number of time series (T) points should be smaller than the number of cross section (N) units. In our case, the number of cross section units is 55 while the number of time series points is 28; so, this condition is satisfied ¹⁴.

Empirical Results

Here, we provide the empirical results of our analysis. First, we discuss the aggregate level results. Onwards, we discuss the results of the decomposed sample.

Aggregated Analysis

In order to examine the effect of volatile discretionary spending on growth, firstly, we check the adequacy of the model. In this regard, we employ Arellano-Bond AR test and Hansen test in order to check for over-identifying restrictions. The null hypothesis of both tests are accepted which implies that instruments employed in the growth regression are valid and exogenous. Onwards, we employ

¹¹ As suggested by the Wagner's law, higher level of GDP leads to higher level of government spending while, in reverse, higher level of government spending leads to higher GDP as predicted by the Keynesian approach. So in fiscal rule regression government expenditure is caused by GDP per capita while at the same time government expenditure causes GDP per capita. Thus the problem of simultaneity bias exists. Similar is the case with the growth regression.

¹² This study employ different methods like pooled OLS, random effect, fixed effect and instrumental variable fixed effect but results discussion is based on GMM approach due to the problem of reverse causality and endogeneity.

¹³ For instance, according to Perera and Lee (2013), GMM produces efficient and consistent estimates even in the presence of heteroskedasticity.

¹⁴ System GMM estimates a set of two equations, one in difference form that utilizes lagged first difference as an instrument and the other one in level form which uses suitable lag level as an instrument. System GMM combines both sets of moment conditions as a linear GMM estimator that cover both the difference and level equations.

five different methodologies in order to estimate the growth equations ¹⁵. The corresponding results are shown in table 1. We can observe from the table that volatile discretionary public spending inversely affects economic growth in all of the cases. Alternatively, the negative implications of volatile discretionary public spending for economic growth are robust to alternative methodologies.

Table 1

Influence	of Volatile	Discretionary	Public S	Spending	and	Other	Factors	on	Economic	growth	(Full
Sample):	Dependent	Variable is GE	P per Ca	apita							

(1) OLS	(2) FE	(3) RE	(4) IVFE	(5) GMM
				0.944*** (0.0261)
0.0553***	0.164***	0.0694***	0.197***	0.0635*
(0.00177)	(0.0498)	(0.0235)	(0.0177)	(0.0366)
0.183***	0.869***	0.739***	0.845***	0.0442**
(0.0507)	(0.2990)	(0.2141)	(0.0978)	(0.0187)
0.832***	0.600***	0.664***	0.617***	0.0407*
(0.00599)	(0.0780)	(0.0590)	(0.0196)	(0.0228)
-0.0983*	-0.0661**	-0.0698*	-0.0536*	-0.0627**
(0.0555)	(0.0324)	(0.0405)	(0.0293)	(0.0302)
-0.825***	-0.645***	-0.666***	-0.613***	-0.0435*
(0.00692)	(0.188)	(0.0677)	(0.0912)	(0.0218)
0.0348*	0.148***	0.140***	0.0942***	0.0421***
(0.0203)	(0.0445)	(0.0420)	(0.0186)	(0.00836)
2.587***	3.459	2.751***	2.603***	-0.0714
(0.151)	(2.662)	(0.972)	(0.735)	(0.0735)
1,539	1,539	1,539	1,063	1,016
0.972	0.804			
55	55	55	55	55
				0.330
				1.000
	(1) OLS 0.0553*** (0.00177) 0.183*** (0.0507) 0.832*** (0.0555) -0.0983* (0.0555) -0.0983* (0.0555) -0.0825*** (0.00692) 0.0348* (0.0203) 2.587*** (0.151) 1.539 0.972 55	$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$

¹⁵ For instance, we employ Pooled Ordinary Least Squares (OLS) in the first column, Fixed Effect (FE) in the second column, Random Effect (RE) in the third column, Instrumental Variable Fixed Effect (IVFE) in the fourth column and the Generalize Method of Moment (GMM) in the fifth column.

The results of columns 1-4 might be suspected due to the problems of reverse causality and endogeneity. However, controlling for these problems in column 5 through the approach of GMM, the results remain intact and significant. As we can see that one percent increase in discretionary spending's volatility decline economic growth by more than 6 percent. In other words, the countries that don't exercise the use of aggressive discretionary policy would have 6% higher growth rate. This result and the results of Fatas and Mihov (2003) are in line with each other. The justification for this negative impact is that discretionary spending volatility creates uncertainty among investors and economic agents which adversely affects their future investment decisions ¹⁶. Despite this negative impact of discretionary part, the coefficient associated with overall government spending is positive and significant. It implies that the positive effect of overall government spending is offsetting the negative effect associated with the volatile discretionary spending ¹⁷. This fact is further justified by the relatively smaller value of the coefficient of overall spending as one percent increase in government spending stimulate economic growth by 4 percent. So, if the public authority is not involved in politically motivated public spending, then public spending could stimulate growth by a higher magnitude.

Disaggregated Analysis

It is generally believed that the diversified nature of under-developed and developed economies in a panel set may create bias in the results ¹⁸. For instance, different governments face different restrictions in making decisions regarding public spending. Alternatively, fiscal rule or the level of discretion might be significantly different for different countries which, in turn, may create bias in the aggregate level results. Figure 1 displays country-wise discretionary fiscal volatility. As is evident from the figure, we have quite diversity in our data, in particular with regard to the discretion in fiscal policy. For instance, countries like Botswana, Bangladesh, China, Cameroon, Gabon, Dominican, EI Salvador, Pakistan, Peru, Zambia and Panama etc., which are developing countries are using more volatile discretionary policy as compared to the advanced economies like Austria, Japan, Australia, Norway, France, Belgium, the United Kingdom and the United State etc. Alternatively, developed economies follow certain fixed fiscal rules, so they are not be able to use aggressive fiscal policy. On the other hand, governments in developing countries face minimum constraints and, thereby; they use the discretionary part of fiscal policy more aggressively ¹⁹. Given this diversity, it is essential to exam

¹⁹ For detailed discussion see Fatas and Mihov (2003, 2006).

be higher in developing countries as compared to developed economies.

ine the effects of discretionary fiscal volatility separately for the two set of countries. We conjecture

¹⁶ The coefficient of the remaining all variables are in accordance with economic theory and earlier studies.

¹⁷ As the discretionary public spending is one of the components of overall government expenditure.

¹⁸The diversity may be either caused by exogenous factors like geography, culture or natural resources etc. or may be caused by different policies or policy restrictions on governments.

that the negative implications of volatility in the discretionary spending for economic growth could be higher in developing countries as compared to developed economies.



Figure 1: Country Wise Discretionary Fiscal Volatility

Note: Author's own calculation based on the standard deviation of discretionary expenditure.

Developing Countries

In order to see the implications of volatility in discretionary spending in developing countries, we use the same set of control variables. Again, the validity and exogeneity of instruments have been verified by the tests of Arellano-Bond AR and Hansen for over-identifying restrictions. The corresponding results for the developing countries are shown in table 2. As can be seen, the coefficient of discretionary spending volatility is negative in case of all methodologies employed. However, from column 1 to column 4, the results are insignificant which the indication of potential endogeneity or reverse causality. In column 5, the coefficient of discretionary public spending volatility becomes significant when the problem of endogeneity is controlled for through employing GMM. Moreover, the results obtained from GMM show that the volatile nature of discretionary public spending harms economic growth by a higher magnitude in case of developing economies. For instance, one percent increase in the discretionary public spending volatility reduces economic growth by almost 9% as compared to 6% in the overall sample. The reason for this higher impact is that, in developing countries, there have been abrupt changes in discretionary part of government spending which creates larger uncertainty among economic agents. This uncertainty reverses the investment decisions of agents and, thereby, obstructs economic growth. This finding supports the view of those which suggest numerical limits (Fiscal Rules) on public expenditure to restrain discretionary spending. Here, like the full sample, the overall government spending has positive and significant effect; yet, its coefficient is small in magnitude. As is evident, a one percent increase in government spending stimulates economic growth by three percent. Therefore, if an efficient fiscal rule could restrict the behavior of political structure from the use of aggressive discretionary spending; then, public spending could stimulate growth by a higher magnitude.

Table 2

VARIABLES	(1) OLS	(2) FE	(3) RE	(4) IVFE	(5) GMM
\tilde{v}_{it-1}					0.943***
<i>vii</i> -1					(0.0264)
k _{it}	0.0730	0.146***	0.138***	0.149***	0.0252*
	(0.0453)	(0.0532)	(0.0497)	(0.0267)	(0.0138)
h _{it}	0.0518	1.173***	0.916***	1.150***	0.0768**
	(0.0640)	(0.346)	(0.189)	(0.160)	(0.0370)
<i>q</i> _{it}	0.843***	0.576***	0.605***	0.660***	0.0313**
011	(0.0117)	(0.0841)	(0.0796)	(0.0320)	(0.0132)
δ_{it}	-0.00672	-0.00303	-0.00307	-0.0008**	-0.0948***
- 22	(0.00739)	(0.00458)	(0.00466)	(0.00491)	(0.00436)
nit	-0.842***	-0.781***	-0.676***	-0.826***	-0.0366*
	(0.0124)	(0.224)	(0.0979)	(0.0622)	(0.0214)
t a	0.0949**	0.107**	0.0992**	0.0339	0.0243
to _{it}	*	(0.0521)	(0.0489)	(0.0261)	(0.0150)
	(0.0200)	6.1991*	3.933***	5.263***	-0.229
Constant	2.313*** (0.193)	(3.168)	(1.069)	(1.117)	(0.0793)
Observations	951	951	951	655	627
R-squared	0.916	0.795			
Number of cross- sections	34	34	34	34	34
Arellano-Bond test for AR(2) P-Value					0.584
Hansen test of overid: restrictions					1.000

Influence of the Volatile Discretionary Public Spending and Other Factors on Economic growth (Developing Economies): Dependent Variable is GDP per Capita.

Robust standard errors in parentheses, ***, ** and * represent 1%, 5% and 10% significance level respectively.

Developed Countries

Likewise, we separately examine the effect of discretionary spending volatility on economic growth for advanced economies. Again, after checking the validity or exogeneity of instruments, we employ the same set of control variables. The corresponding results are shown in table 3. As is evident, in case of all methodologies, the impact of discretionary spending volatility appears to be negative; however, in all of the cases, it is insignificant. This means that, in advanced economies, the discretionary spending volatility has no harmful effect on growth. It is justified by the fact that advanced economies operate under certain fiscal rule, so they could not make aggressive use of discretionary spending ²⁰. Alternatively, economic agents can predict the future behavior of the fiscal instruments; hence their economic decisions are not affected.

Table 3

VARIABLES	(1) OLS	(2) FE	(3) RE	(4) IVFE	(5) GMM
ν					0.993***
Jit-1					(0.00671)
kit	0.00391*	0.00128	0.00262	-0.0155***	0.00101**
	(0.00222)	(0.00554)	(0.00516)	(0.00416)	(0.000427)
hit	0.457***	0.818**	0.689***	1.844***	0.0532***
ii.	(0.0506)	(0.305)	(0.218)	(0.218)	(0.0167)
<i>q</i> _{it}	0.748***	0.685***	0.711***	0.204**	0.0412**
311	(0.0169)	(0.0852)	(0.0664)	(0.0864)	(0.0205)
διι	-0.763	-0.137	-0.234	-0.150	-0.0146
-11	(0.486)	(0.422)	(0.460)	(0.210)	(0.0264)
	-0.00575	0.0346	0.0189***	0.0209	0.0199**
to _{it}	(0.0151)	(0.0780)	(0.0628)	(0.0420)	(0.00795)
	0.29169	0.05541	0.0869**	0.06128	0.0111***
n _{it}	(0.05879)	(0.0466)	(0.0441)	(0.0493)	(0.00223)
Constant	-3.311***	-0.354	-1.261	5.826***	-0.101
	(0.702)	(1.153)	(1.339)	(1.245)	(0.122)
Observations	588	588	588	505	454
R-squared	0.808	0.796			
Number of cross- sections	22	22	22	22	22
Arellano-Bond test for					0.126
Ar(2) r - value					1.000
Hansen test of overid: restrictions					

Influence of the Volatile Discretionary Public Spending and Other Factors on Economic growth (Developed Economies): Dependent Variable is GDP per Capita.

²⁰ See figure 1.

Conclusion and Policy Implications

The paper is motivated by the previous literature that has emphasized the importance of volatility in fiscal policy. In this study, we examine the economic cost associated with volatility in discretionary spending. We do this analysis for the overall sample of the world as well as for the samples of developed and developing economies. Our results show that volatile discretionary public spending has a negative impact on economic growth. However, in the disaggregated sample, this negative impact is larger in developing countries as compared to advanced countries. The theoretical justification for these results is that developed countries, usually, operate under certain fiscal rules; so it is not possible for the policy makers to use aggressive discretionary policy. Second, the developed economies have efficient domestic stabilizer system, which is capable of being absorbing the volatility of discretionary public spending. In contrast, in developing economics, the governments face fewer constraints; and, thereby, they can use discretion in fiscal policy. Such discretion creates volatility and uncertainty which have severe implications for private investment and economic growth in those countries. As a policy recommendation, it is suggested that prudent policies should be devised in order to constraint the governments from the use of volatile discretionary fiscal policy. For instance, one such restriction could be the introduction of effective government spending rules as the introduction of such rules would reduce the ability of governments to use aggressive discretionary policy. Also, political constraints can bar governments from the use of aggressive discretionary policy. However, future research in this regard is certainly needed in order to provide clear guidelines with regard to the application of fiscal policy.

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Annexure

Table A1List of Countries included in the Sample

1	Australia	29	Japan
2	Austria	30	Kenya
3	Bangladesh	31	Korea
4	Belgium	32	Mexico
5	Bolivia	33	Morocco
6	Botswana	34	Netherland
7	Brazil	35	New Zealand
8	Cameroon	36	Norway
9	Canada	37	Pakistan
10	China	38	Panama
11	Colombia	39	Peru
12	Costa Rica	40	Philippines
13	Denmark	41	Portugal
14	Dominican Republic	42	Senegal
15	Ecuador	43	Singapore
16	Egypt	44	South Africa
17	EI Salvador	45	Spain
18	Finland	46	Sri Lanka
19	France	47	Sweden
20	Gabon	48	Switzerland
21	Greece	49	Thailand
22	Guatemala	50	Togo
23	Honduras	51	Turkey
24	Iceland	52	United Kingdom
25	India	53	United States
26	Indonesia	54	Uruguay
27	Ireland	55	Zambia
28	Italy		

Table A2Definition of Variables

Variable	Definition
General government final consumption expenditure	General government final consumption expenditure (formerly general government consumption) includes all government current expenditures for purchases of goods and services (including compensation of employees). It also includes most expenditures on national defense and security, but excludes government military expenditures that are part of government capital formation. Data are in constant 2005 U.S. dollars.
GDP per capita	GDP per capita is gross domestic product divided by midyear population. GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources. Data are in constant 2005 U.S. dollars.
Consumer price index	Consumer price index reflects changes in the cost to the average consumer of acquiring a basket of goods and services that may be fixed or changed at specified intervals, such as yearly.
Trade openness	Trade is the sum of exports and imports of goods and services measured as a share of gross domestic product.
Gross fixed capital	Gross fixed capital formation (formerly gross domestic fixed investment) includes land improvements (fences, ditches, drains, and so on); plant, machinery, and equipment purchases; and the construction of roads, railways, and the like, including schools, offices, hospitals, private residential dwellings, and commercial and industrial buildings. Net acquisitions of valuables are also considered capital formation. Data are in constant 2005 U.S. dollars.
Population, total	Total population is based on the de facto definition of population, which counts all residents regardless of legal status or citizenship-except for refugees not permanently settled in the country of asylum, who are generally considered part of the population of their country of origin. The values shown are midyear estimates.
Human capital	Index of human capital per person, based on years of schooling and returns to education
Discretionary fiscal policy	Part of the fiscal policy which is not associated with the business cycle fluctuations. It is calculated through standard deviation after estimating fiscal rule equation.