Impact of Macro-Fiscal Determinants in Realizing Fiscal Space for Health: Empirical Evidence from Low Income and Middle Income Countries

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Abstract

The objective of this study is to examine the impact of taxation capacity, spending capacity, fiscal balance and debt services in realizing fiscal space for health across 85 low income and middle income countries from the period 2000 to 2013, using fixed effect model. We use public health expenditure as percent of GDP and public health expenditure as percent of government expenditure as proxy for assessing fiscal space for health. The empirical result shows that public health expenditure affected severely by the global financial crisis due to lower taxation capacity and higher debt burden during the period 2009-2013. While, taxation capacity and spending capacity are positively affects the growth of public health expenditure in the pre-global financial crisis period from 2000 to 2008. It finds that the impact of macro-economic condition towards health financing varies among the low income, lower middle and upper middle income countries because the assessment of fiscal space for health dependent on countries heath needs, political commitment and efficiency level to utilize the resources. These results implies that the realization of fiscal space for health are possible through generation more domestic revenue by improving tax collection, enhance tax base and efficient utilization of health funds.

Keywords: Health Expenditure, Fiscal space, Tax revenue, Domestic debt.

JEL Classification: H5, E62, H2, H6.

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1. Introduction

Heller (2006) defines the concept of 'fiscal space for health', as the ability of government to generate budgetary resources from difference sources and using these resources efficiently without compromising fiscal and debt position of the economies. The sources of budgetary resources can be determined by two ways; First, the scope for increasing public health expenditure through raising resources from tax and non-tax revenue; second, mobilize additional resources to the health sector through borrowings and grants from internal and external sources. The necessity of the creation of fiscal space for the financing health care is that, the greater the fiscal space of a country, the greater the potential for public expenditure on health. This is important for Universal Health Coverage[2] (UHC) goals because greater public expenditure on health is associated with lower dependence on out-of-pocket (OOP) expenditure as well as fewer financial barriers to the use of services and lower risk of financial protection problems (Mclntyre and Kutzin, 2016).

Health financing[3] is most important problem in low and middle income countries in order to achieve UHC. Mathauer & Carrin (2011) has systematically designed the health financing performance indicator and threshold limit for achieving UHC in low and middle income countries (Table 1). The Table 1 exhibits the fiscal space for health situation of countries over the period 2000-2014. In the year 2014-15, nearly 75 percent of low and middle income countries' public health expenditure is below 5 percent of GDP; while nearly 63 percent of low-middle income countries' public health expenditure is below 15 percent of total government expenditure. Further, the average per capita public health expenditure is 14.8 US$ in low income, 81.7 US$ in low middle and 333.8 US$ in upper middle countries in 2014-15. The low middle and upper middle income countries are achieved 86 US$ per capita but near about 70 percent of countries is below the average of per capital public health expenditure. In terms of public health expenditure as percent of total health expenditure, only 30 percent of middle income countries is

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[2] The United Nations Sustainable Development Goals that all UN Member States have agreed to try to achieve Universal Health Coverage by 2030. This includes financial risk protection, access to quality essential health-care services and access to safe, effective, quality and affordable essential medicines and vaccines for all (http://www.who.int/universal_health_coverage/en/).

[3] Health financing is concerned with how financial resources are generated, allocated and used in health systems. Health financing policy focuses on how to move closer to universal coverage with issues related to: (i) how and from where to raise sufficient funds for health; (ii) how to overcome financial barriers that exclude many poor from accessing health services; or (iii) how to provide an equitable and efficient mix of health services (http://www.who.int/topics/health_economics/en/).

above 70 percent and average share is only 50 percent. Nearly 60 percent of low income countries is below the average share of public health expenditure to total health expenditure.

In Table 1, we found that very few low and middle income countries achieved the minimum threshold limit of public health expenditure and many countries depends on out-of-pocket health expenditure for health care which may exposes the risk of impoverishment to the poor people. The reasons for the lower resource allocation towards the health expenditure are low level of economic growth, lower revenue capacity, low spending capacity, deprioritization of health sector and inefficiency in health expenditure (Durairaj and Evans, 2010; Tandon and Cashin, 2010). Tandon and Cashin (2010) argued that conducive macro-fiscal conditions may allow the government to increase its share of the total budget allocated to health and also very important in financing health care for achieving UHC goals. Further, the fiscal space assessments for health is more relevant in the light of the ongoing global economic crisis, which began in the late 2008 in the U.S.A. Its impact was hardest among the richer countries in terms of economic growth and the magnitude of the growth impact of the crisis is expected to be lower for low and middle income countries (Leach-Kemon et al., 2012). Here the key question is to what extent the countries protect expenditure in a core sector such as health and how might fiscal space for health be impacted by the macro-fiscal factors in response to the global economic crisis.

The slower growth of public health expenditure has become a great concern for policy makers and efforts has to be made to increase fiscal space for health sector in these resource poor countries. The objective of this study is to examine the impact of macro-fiscal determinants (such as taxation capacity, spending capacity, fiscal balance and debt services in realizing fiscal space for health across 85 low and middle income countries from the period 2000 to 2013, using static fixed effect model. This study contributes to the existing literature in three important ways. First, we use an augmented fiscal space for health function to examine the relationship between fiscal capacity and public health expenditure. There are a number of studies investigating the impact of economic growth on public health expenditure, to our knowledge there are few published research work, investigates the impact of macroeconomic factors (economic growth, fiscal deficit and debt services) and the impact of fiscal capacity (taxation capacity and spending capacity) on public health expenditure.

Table 1. Fiscal space for health situation over the period from 2000-2014

	PH as percent of GDP			PH as percent of GE			PH as percent of THE			OOP as percent of THE			Per capita PH		
	≥5	< Mean	Mean	≥15	<Mean	Mean	≥70	<Mean	Mean	≤30	>Mean	Mean	≥86$	<Mean	Mean
Low															
2000	0	61.5	2.0	7.7	61.5	9.2	3.8	53.8	35.0	11.5	57.7	49.9	0.0	50.0	4.4
2005	3.8	50.0	2.5	15.4	42.3	12	3.8	50.0	41.1	19.2	61.5	44.7	0.0	53.8	8.2
2010	7.7	53.8	2.6	19.2	53.8	11.5	0.0	50.0	41.1	23.1	46.2	39.0	0.0	65.4	12.7
2014	7.7	65.4	2.6	11.5	53.8	10.2	0.0	46.2	41.7	23.1	61.5	38.4	0.0	53.8	14.8
Lower Middle															
2000	8.3	56.3	2.6	6.3	52.1	9.3	18.8	56.3	49.4	20.8	45.8	45.2	2.1	66.7	24.0
2005	10.4	56.3	3.0	18.8	54.2	10.3	18.8	52.1	50.3	25.0	52.1	44.8	10.4	62.5	39.2
2010	16.7	58.3	3.2	14.6	54.2	10.1	25.0	58.3	53.2	29.2	54.2	41.6	29.2	64.6	66.4
2014	16.7	56.3	3.3	16.7	52.1	10.1	27.1	52.1	54.0	35.4	50.0	39.1	35.4	64.6	81.7
Upper Middle															
2000	18.9	67.9	3.8	17.0	54.7	11.2	32.1	50.9	60.6	52.8	45.3	31.3	49.1	64.2	108.7
2005	22.6	62.3	3.9	15.1	50.9	11.4	34.0	52.8	60.1	45.3	54.7	31.6	73.6	64.2	167.0
2010	22.6	66.0	4.2	15.1	58.5	12	41.5	54.7	63.2	56.6	47.2	28.8	92.5	60.4	273.9
2014	26.4	62.3	4.3	18.9	56.6	12.1	32.1	50.9	63.6	58.5	45.3	28.2	100.0	69.8	333.8
High															
2000	42.4	44.1	4.4	25.4	49.2	12.1	57.6	39.0	69.2	83.1	37.3	23.1	96.6	62.7	881.2
2005	50.8	49.2	4.8	37.3	47.5	13.1	54.2	42.4	68.9	76.3	39.0	23.1	100.0	61.0	1509.6
2010	54.2	50.8	5.4	37.3	45.8	13.2	57.6	45.8	71.0	83.1	37.3	21.1	100.0	59.3	2025.0
2014	54.2	50.8	5.5	39.0	52.5	13.7	59.3	44.1	71.0	79.7	40.7	21.5	100.0	61.0	2294.2

Source: Authors Own calculation from Global health expenditure data base of WHO, accessed date on 1st August, 2016

Note: No. of counties included: Low=26, lower middle=48, upper middle= 53 and high=59; ≥5 = percent of countries more than or equal to 5 percent, ≥15 = percent of countries more than or equal to 15 percent, ≥70 = percent of countries more than or equal to 70 percent, ≤30 = percent of countries less than or equal to 30 percent, ≥86$ = percent of countries more than or equal to 86 US$ per capita, < Mean = less than mean value (average), >Mean = more than mean value (average); PH as percent of GDP = Public health expenditure as percent of GDP, PH as percent of GE = Public health expenditure as percent of general government expenditure, PH as percent of THE = Public health expenditure as percent of total health expenditure, OOP as percent of THE = Out-of-pocket health expenditure as percent of total health expenditure and Per capita PH = Per capita public health expenditure; The threshold limit of various indicators obtained from Mathauer and Carrin (2011).

Secondly, we divided our sample into six groups such as full sample, pre-global financial crisis period (2000-2008), post-global financial crisis period (2009-2013), low income, lower middle and upper middle. The classification of countries would give clear insight regarding the macro-fiscal policies behavior towards health financing. Because, countries are heterogeneous in terms of macro-economic condition and requirement of resources for achieving health related sustainable development goals also differ among countries. Thirdly, included two dependent variables such as public health expenditure as percent of GDP and public health expenditure as percent of general government expenditure as proxy for the assessment of fiscal space for health. These two variables reflects the fiscal capacity of the government and its commitment (prioritization) to health relative to other uses of public spending. It would measure the health financing performance and universal health coverage of low and middle income countries as suggested by Mathauer and Carrin (2011) and McIntyre and Kutzin (2016). Our empirical analysis shows that debt services and per capita GDP negatively affects public health expenditure as percent of GDP while debt services and per capita GDP positively affects public heath expenditure as percent of general government expenditure. The most of public health expenditure as percent of GDP contributes by taxation capacity and most of the prioritization of health spending contributes by spending capacity of countries.

The remainder of the paper is structured as follows. Section 2 discusses the related literature review. Section 3 analyzes the theoretical framework and model construction used in the analysis. Section 4 discusses the empirical results. Section 5 summarizes the findings and provides policy oriented directions for future research.

2. Literature review

This study has divided the literature section into three parts. First, the importance of tax revenue in realization of fiscal space for health for the implication of universal health coverage. Second, the impact of global financial crisis on health system and factor associated with it. Third, review the empirical literature that finds the relationships between health expenditure and macro-fiscal variables by taking country level studies.

2.1. Fiscal space for health and universal health coverage

McIntyre and Kutzin (2016) suggests various measures to generate additional domestic revenues in an economy such as more taxation on personal income and corporate profits; taxes

on VAT and custom duties; non-tax revenue from natural resources such as oil, gas and minerals; earmark revenue from taxation on tobacco and alcohol; and payroll taxes. McCoy (2009) suggests some innovative sources of finance for creating fiscal space for health such as voluntary levies on the purchase of airline tickets and mobile phone minutes, levies on the purchase of tobacco and currency transactions, scheme to earmark a share of VAT receipts from the business agreement, secure private investment in health system through establishing capital risk mitigation funds etc. McIntyre et al. (2014) analyses the improvement in tax revenue collection through different tax policy and administrative reform generates the addition resources for financing health care in the case South Africa. Rabi (2014) finds that Nepal increased its budgetary resources from 2010 to 2014 through strong improvement in revenue growth in terms of higher tax collection from payroll tax, VAT and excise duty. As a consequence, improvement in budgetary resources leads to higher public health expenditure, reduced the level of public debt as ratio of GDP from 60 percent to 29.70 percent and improves fiscal balance. Basrin (2013) explains that Indonesia has initiated some new reforms in the expenditure and taxation policy to realize the fiscal space for infrastructure and human capital development in the recent past. The reforms were cutting high energy (fuel) subsidy, reduce personal expenditure (pensions and defense services), expand tax base through tax administration reform by minimizing tax evasion and generate the sources of non-tax revenue through exploitation of natural resources.

Reich et al. (2016) analyses the health financing strategy towards UHC by taking 11 countries case study. It suggests that economic growth provides fiscal space for implementation of UHC but it is not a necessary condition for the policy adoption of UHC. The policy adoption depends on the political commitment in terms of imposing earmark taxes on income, profit and high prioritization of health in the national budget. The health financing is provided to the countries such as Ghana and Brazil through earmark VAT and social security contribution and through high priority in the budget in the countries such as Japan, Thailand, Turkey Vietnam, Bangladesh, Ethiopia, Indonesia and Peru. Bitran (2012) explains the achievement of UHC in four developing countries such as Colombia, Ghana, Vietnam and the Philippines by adopting prepayment mechanism through social insurance schemes, resulting these counties able to reduced out-of-pocket health expenditure and achieve near to UHC. Jha et al. (2012) explains that increasing cigarette prices through imposing higher tobacco would generate additional revenue taxes. The case studies from the highly tobacco consume Asian countries such as China,

India, Philippines, Thailand and Viet Nam, found that a 50 percent price rise of cigarette correspondingly increase tax rate of about 70-122 percent and it reduced tobacco death by over 27 million as well as reduced smoker by nearly 67 million in the future.

2.2. Effects of global economic crisis on health care/health system

Simou and Koutsogeorgou (2014) discuss the effects of economic crisis on health care in Greece since 2009. The impact of economic crisis on health care was more predominant on health care expenditure. It shows that annual public health expenditure were reduced by 19.5 percent between 2009 and 2011. As a consequence, number of health workforce reduced and also reduced their salaries and pensions; reduced supply of medical good etc. It deteriorated access to and provision of health care services, increasing out-of-pocket expenditure. As a result of which vulnerable groups suffered more for accessing health care services, outpatient visitors were affected due to increase user fees from 3 euro to 5 euro. Avdi (2012) explore the current and potential impact of economic crisis on health sector financing in case of Albania. It found that during the crisis period, Government expenditure on health falls due to reduction of domestic revenue and health budget cut from total government budget. As a consequence, it leads to increase of the price of health care services and pharmaceutical products as well as increased demand for public health care services due to higher consultation fees in the private sector. Kirigia et al. (2011) explains that the 2008 global economic crisis affects the government health expenditure negatively due to higher reduction in budgetary allocation to the health sector of African regions. But the insurgent of crisis created new health policy measures such as allocation of more revenues for health development, increasing domestic funding for the health sector and mobilize more revenue from external resource. Chubrik et al. (2011) analyze the impact of global financial crisis in the share of public health expenditure to GDP among the Soviet Union Countries such as Poland, Kyrgysthan, Ukraine, Georgia, Moldova and Belarus. It finds that the Soviet Union countries suffered a lot in terms of reduction in government revenue due to lower tax base and fall in export tax due to lower economic growth. Despite the lower fiscal capacity in these countries, some Soviet Union counties maintained the share of public health expenditure at least at pre-crisis level except Georgia. Calvo (2010) explains that global economic crisis affects in several developing countries by increasing fiscal deficit and debt services due to lower revenue generation resulting reduction in social sector expenditure.

2.3. Effects of macro-fiscal determinants on health care/health system

There is a large literature examining the determinants of the growth of heath care expenditure across countries. While many of the early studies concentrated solely on the factors which affects health sector demand such as ageing, urbanization, per capita income, disease pattern, price of pharmaceutical products etc. and they all tried to give policy suggestion regarding how to reduce to growth of health expenditure, apparently persist in the developed countries. But in the low and middle income countries the problem is different; here the main concerned is how to increase health expenditure or how to generate resources for mitigating health care needs in these poor health system economies. The following review explains the impact of macro-fiscal variables such as economic growth, fiscal balance, debt, taxation and expenditure policy on growth of public health expenditure and how these factors are inter-connect with each other for creating fiscal space for health system.

Reeves et al. (2013) examined the impact of tax revenue on the public health expenditure in lower-middle income countries in the perspective of Universal health coverage. The result shows that tax revenues are strongly positively associated with greater investment in public health, access to services and better outcomes. Also finds positive association of GDP with health expenditure is mediated by greater tax revenues, increasing public expenditure. Bajo and Gomez (2015) explains that increase tax revenue and unproductive expenditure cuts are the alternative strategies to increase health expenditure. It shows tax increase especially through income tax and VAT rates have a strongest negative effects on GDP. Castro and Camarillo (2014) argues that countries having higher per capita GDP leads to larger possibility of generating higher tax revenue. It finds that per capita GDP is positive and statistical significant to tax revenue, that seems a positive association between country's economic development and improves tax revenue. Lora and Olivera (2007) finds tax revenue is positively and significantly affects health expenditure as well as social sector expenditure. An increase of one percentage point in the revenue to GDP ratio is associated with an increase 0.0097 percentage points in health expenditure. A reduction in the overall or the primary fiscal deficit by $1 is associated with an average decline in health expenditure of around 3 percent in the current year. So, there is positive relationships between fiscal deficit and health expenditure. Castro and Camarillo (2014) finds positive relationships between taxation and health outcome i.e. life expectancy and infant mortality. It argues that higher tax revenue positively associated with higher levels of social

security and more access to medical services resulting improves health outcome. It likely increase labour productivity and per capita income, thereby tax paying capacity of the people would improves in economies.

Liang and Mirelman (2014) finds that per capita GDP and government debt are positively and significantly correlated with government health expenditure. The positive coefficient on government debt implies that debt financing provides financial leverage to expand public expenditure on health. While, Lu et al. (2010) finds that per capita GDP and debt are having negative and insignificant relationship with government health expenditure as share of GDP. So, there is a mix result about the relationship between per capita GDP and health expenditure as share of GDP because per capita GDP would not affect government health expenditure directly, it can be affected indirectly by paying taxes when income improves but per capital GDP can affect directly to per capita health expenditure by improving access to health care. Lora and Olivera (2007) and Landon et al. (2006) finds that higher debt ratios or higher debt services reduced current health expenditure as well as social sector expenditure.

Hartwig and Sturm (2014), Kea et al. (2011), Lu et al. (2010), Palangkaraya and Yong (2009), Hitiris (1997) have used government expenditure as percent of GDP as one of the explanatory variable to explain the growth of public health expenditure. They found positive and significant relationships between them. They argues the government expenditure as percent of GDP shows size of government and ability of government to fund health expenditure. Hartwig and Sturm (2014) finds the lagged values of government expenditure as percent of GDP is one of the robust determinants of the growth of public health expenditure in the OECD countries. Kea et al. (2011) explains that there is positive and significant relationship between public health expenditure and spending capacity (measured through ratio of government expenditure to GDP) in low and middle income countries. Further, prepayment services through tax base system having positive and significant impact on government health expenditure in these counties. Lu et al. (2010) argues that increase in government health expenditure is attributed through the rising spending capacity. It argues that lower spending capacity leads to take longer time period to achieve better health outcome. Landon et al. (2006) established the crowding in/out relationships between government health expenditure and other types of expenditure in economies. It finds that increase share of public health expenditure is having no impact on crowding out of other categories of government expenditure rather it may crowd out private expenditure on health. It

argues that the financing of health expenditure mostly depends on revenue generation capacity, thereby mobilize more funding towards health sector. It argues the possibility of crowding out of public health expenditure from the budgetary expenditure, in the situation where economies suffers slower economic growth rate, higher debt service repayment. As a consequence, it would deteriorate the fiscal capacity of the government and make difficult in financing health care.

3. Theoretical Framework and Model Construction

Tandon and Cheryl (2010) has made an attempt to understand fiscal space using the algebra of a government's intertemporal budget constraint. The equation is written as follows:

$$G_t + r_t B_{t-1} = T_t + B_t + A_t + O_t \tag{1}$$

Where G_t is government non-interest expenditure in time t; rB_t is non-discretionary debt interest payments; T_t is taxes, fees, and other government revenues, including those arising from seigniorage (inflationary finance); B_t is total government borrowing (domestic and foreign net of use of deposits); A_t is grants; and O_t is other sources of funds, such as sale of assets. In other terms, the left-hand side of the represents the uses of budgetary resources (total expenditure) whereas the right-hand side represents sources of budgetary resources (aggregate sources of government revenue). McIntyre and Kutzin (2016) stated that budgetary resources can be generated by pooling revenue from different channels such as ; first, taxes levied directly on individuals such as personal income tax and tax on corporate income or profits (direct tax); second, taxes on VAT and custom duties (indirect taxes); third, revenue from government-owned enterprises or assets (e.g. revenue comes from natural resources such as oil, gas or minerals); fourth, Earmarked revenues such as taxes on tobacco or alcohol and fifth, Payroll taxes. All the above taxation are the part of compulsory or prepayment, made by law and its role is predominant towards UHC.

After the generation of revenue from different sources, the fiscal space for health depends on the priority assigned to health. Government health expenditure, H_t, is a proportion k_t of the overall government budget, or can be written as follows:

$$H_t = k_t G_t \tag{2}$$

The equation (2) says that if G increases as a result of increases in overall fiscal space, health expenditure would increase by a fixed proportion k if expenditure priorities remain

unchanged. The focus from this perspective would be on analyzing increases in *G* and deriving the implications for *H*.

Understanding the inter-temporal budget constraint, Kishore and Prasad (2007) finds there is a huge gap between the use of budgetary resources (expenditure) and sources of budgetary resources (taxation) in low and middle income countries, resulting widening of fiscal gap. Continuous increase the high fiscal gap (current expenditure minus current revenue) led to high fiscal deficit and the build-up of a large debt stock, thereby a vicious cycle of deficit, debt and debt services payment emerge in these resource poor countries. It creates fiscal stress and consequently reduced the government's ability to discharge their primary responsibility to developing social and economic infrastructure.

The above theoretical discussion leads us to construct the following fiscal space for health function by adopting macro-fiscal variables:

$$HE_{it} = f\ (TC_{it}, SC_{it}, FB_{it}, DEBT_{it}, PCGDP_{it}) \tag{3}$$

Where HE is the public health expenditure, TC is the taxation capacity, FB is the fiscal balance, DEBT is total debt services, and PCGDP is the per capita gross domestic product. The details of these variables discussed in Table 2.

3.1. Data source and Variables

In this study, we included 85 low, lower middle and upper middle income countries over the period 2000-2013. The list of countries in terms of income category obtained from the 'Global Economic Prospects-2016' report of World Bank. The Table A1 exhibits the list of sample countries included in this study. We included 15-low income countries, 33-lower middle income countries and 37-upper middle income countries in our sample of countries on the basis of data availability of all variables at least 3 years' time period over the 14 years, from 2000 to 2013. The variables adopted for empirical analysis are taken from the World Development Indicators (WDI) online data base of World Bank. The details of variables is described in Table 2. We included two heath expenditure variables such as HGDP and HGE and five macro-fiscal variables such as Taxation Capacity (TC), Spending Capacity (SC), Fiscal Balance (FB), Debt Services (DEBT) and PCGDP in our empirical analysis. The study is based on unbalanced panel data because the balance data of all variable of all low-lower middle-upper middle income

countries are not available over the entire study period. There are many missing values in the variables such as tax revenue, fiscal balance and debt services but expenditure and PCGDP are available for all countries. In this study, we divide our samples into six groups such as full sample (14 years and 85 countries), low income sample (14 years and 15 countries), lower middle income sample (14 years and 33 countries), upper middle income sample (14 years 37 countries), pre-crisis period (2000-2008 and all countries) and post-crisis period (2009-2013 and all countries). The subsample grouping of countries and time period would give a clear snapshot regarding the effect of macro-fiscal factors on the fiscal space for health. In this study, the variables HGDP and HGE are taken as proxy for fiscal space for health. The Table 2 shows the description of the included variable and detail elaboration of variables mentioned as follows.

Table 2. Description of Variables

Variables	Description	Mean	Std. Dev.
HGDP	Public health expenditure as percent of GDP	16.13	142.86
HGE	Public health expenditure as percent of General government expenditure	10.67	4.32
Taxation capacity (TC)	Tax revenue as percent of GDP	15.82	7.11
Spending capacity (SC)	General government expenditure as percent of GDP	27.81	10.07
Fiscal balance (FB)	Cash surplus/deficit as percent of GDP	-1.69	6.37
Debt services (DEBT)	Total debt services as percent of GDP	4.73	4.61
PCGDP	Per capita gross domestic product (current US dollar)	2799.21	2474.40

Source: World development indicators (WDI) online data base, accessed date on 1st August, 2016

3.2. Explanation of the variables

3.2.1. Public health expenditure as percent of GDP (HGDP)

Public health expenditure includes current and capital health expenditure from government (central and local) budgets, external borrowings and grants, and social (or compulsory) health insurance funds. It is also called general government expenditure on health. This indicator shows the combination of fiscal capacity of the government and its commitment to health sector relative to other uses of public spending. It predicts the extent to which the health

system of a country depends on out-of-pocket spending. The threshold level should be equal or more than 5 percent of GDP. In 2014, only 7.7 percent of low income, 16.7 percent of lower middle, and 26.4 percent of upper middle income counties are reached the threshold level of public health expenditure. Still near about 80 percent of countries are below the 5 percent threshold level. In 2014, the mean of HGDP was 2.6 percent in low income, 3.3 percent in lower middle income, 4.3 percent in upper middle income and 5.5 percent in high income countries respectively. In terms of percentage of countries below the average of health expenditure, the Table 1 shows that 65.4 percent of low income, 56.3 percent of lower middle, 62.3 percent of upper middle and 50.8 percent of high income countries are having below the average of public health expenditure to GDP respectively.

3.2.2. Public health expenditure as percent of General government expenditure

The share of public health expenditure in GDP is a partial indicator of prioritization and a better indicator is the share of public health expenditure to total general government expenditure. It indicates the priority of the government funding to the health sector in the budget than the other sectoral allocation. It called as fiscal space for health and the threshold level should be equal or more than 15 percent of total government budget. In 2014, only 11.5 percent of low income, 16.7 percent of lower middle, 18.9 percent of upper middle income counties are reached the threshold level of public health expenditure as percent of government expenditure. Still near about 85 percent of countries are below the 15 percent threshold level. In 2014, the mean of HGE was 10.2 percent in low income, 10.1 percent in lower middle income, 12.1 percent in upper middle income and 13.7 percent in high income countries respectively. In terms of percentage of countries below the average of HGE, the Table 1 shows that 53.8 percent of low income, 52.1 percent of lower middle, 56.6 percent of upper middle and 52.5 percent of high income countries are having below the average level of HGE respectively.

3.2.3. Tax revenue as percent of GDP (taxation capacity)

Tax revenue includes revenue collected from taxes on income, profits, and capital gains; taxes on goods and services; taxes on property; and other taxes. It is compulsory transfers to the central government for public purpose. It provides an indication of government's current taxation capacity and also scope for increasing government revenue. Mclntyre and Kutzin (2016) suggested 'rule of thumb' for taxation capacity such as very low level of taxation capacity (<15

percent); low capacity (15-20 percent); low to medium (20-25 percent); medium (25-35 percent); medium to high (35-45 percent) and very high (>45 percent). In Table 2 shows the mean of taxation capacity is 15.82 percent in the sample countries which shows that low and middle income countries are medium level (25-35 percent) of taxation capacity to spend on health sector.

3.2.4. General government expenditure as percent of GDP (spending capacity)

General government expenditure includes all the expenses of central, state and local governments in providing goods and services. It includes compensation of employees (wages and salaries), interest and subsidies, grants, social benefits and other expenses such as rent and dividends. Hiritis (1997) has been introduced government share as ratio of GDP (i.e. proxy for the developed of a country) as an explanatory variables to literature. It argues rich countries experienced a high rate of income and public revenue, it likely expected that it has positive impact to public spending including health care. The rule of thumb for spending capacity are same as taxation capacity. The Table 2 shows the mean of spending capacity is 27.81 percent in the sample countries which shows that low and middle income countries are medium level (25-35 percent) of spending capacity to spend on heath sector.

Table 3. Correlation of Variables

Variables	HGDP	HGE	Taxation capacity	Spending capacity	Fiscal balance	Debt services	PCGDP
HGDP	1.00	-0.20	-0.06	-0.09	0.01	-0.07	-0.03
HGE	-0.20	1.00	-0.02	-0.15	-0.06	-0.01	-0.16
Taxation capacity	-0.06	-0.02	1.00	0.50	0.14	0.24	-0.07
Spending capacity	-0.09	-0.15	0.50	1.00	-0.04	0.28	0.20
Fiscal balance	0.01	-0.06	0.14	-0.04	1.00	-0.03	-0.03
Debt services	-0.01	-0.01	0.24	0.28	-0.03	1.00	-0.04
PCGDP	-0.10	0.16	0.28	0.20	-0.09	0.25	1.00

3.2.5. Fiscal balance

Cash surplus or deficit includes revenue (including grants) minus expenses, minus net acquisition of nonfinancial assets. It is called overall budget balance. The Table 2 shows the mean of fiscal balance i.e. -1.69 percent and standard deviation is 6.37 percent, shows huge variation between fiscal surplus and deficit in low and middle income countries.

3.2.6. Total debt services

Total debt services includes some principal repayment, interest paid in currency, goods or services on long term debt, interest paid on short term debt. The Table 2 shows the mean of debt services i.e. 4.73 percent that means on an average low and middle income countries 5 percent of budget spends on the payment of debt annually.

3.3. Empirical methodology

In this study, our objective is to examine the static relationship between health expenditure and macro-fiscal variables of low and middle income countries. Our empirical methodology is based on fixed effect model which examines the static relationship between health expenditure and macro-economic variables.

$$y_{it} = \alpha_i + \beta x'_{it} + v_i + \varepsilon_{it} \qquad\qquad (4)$$

For $i=1,...,N$ and $t=2,...,T,$ Where y_{it} is the dependent variable; x_{it} is the $((k\text{-}1)\times 1)$ vector of strictly exogenous explanatory variables; v_i is an unobserved individual effect/homoscedastic country specific effect; and ε_{it} is an unobserved white noise disturbance/the stochastic disturbance term. The fixed effect (FE) model assumes that the country effect v_i is constant over time and space while the slope estimates (β) are constrained across units. It is also called within estimators because cross sectional unit have its own constant term and it varies within the cross sectional unit. While, the individual country specific intercept (v_i) is not constant over time rather random, called as random effect model. The random effect (RE) model assumes that v_i are uncorrelated with regressors. If the regressors are correlated with v_i and they are correlated with the composite error term $(v_i + \varepsilon_{it})$ and RE estimator is inconsistent (Baum, 2006). The appropriateness of using FE and RE model in the empirical estimation are verified through the Hausman test. The Hausman test shows, whether the regressors are correlated with

the v_i (in case of FE) or uncorrelated with the v_i (in case of RE). The null hypothesis of the Hausman test says there is no systematic differences in coefficient of FE and RE estimation. The rejection of the null hypothesis implies that there is a systematic difference in coefficient, so we need to apply fixed effect model rather than random effect model and vice versa (Jeffrey, 2009). In this study, we applied fixed effect model after the rejection of the null hypothesis through Hausman test and aim of the FE model is to eliminate v_i to give efficient estimators. We estimated the following two panel static model:

Model 1

$$\ln HGDP_{it} = \alpha_i + \beta_1 \ln TC_{it} + \beta_2 \ln SC_{it} + \beta_3 FB_{it} + \beta_4 \ln DEBT_{it} + \beta_5 \ln PCGDP_{it} + v_i + \varepsilon_{it}$$

Model 2

$$\ln HGE_{it} = \alpha_i + \beta_1 \ln TC_{it} + \beta_2 \ln SC_{it} + \beta_3 FB_{it} + \beta_4 \ln DEBT_{it} + \beta_5 \ln PCGDP_{it} + v_i + \varepsilon_{it}$$

The Model 1 employed public health expenditure as percent of GDP as fixed effect estimator while public health expenditure as percent of general government expenditure used as estimator in Model 2. The variables presented in the Model 1 and Model 2 are converted in natural logarithm (ln) in order to reduce the effects of data. The FE model is applied in all six grouping samples.

4. Empirical Results and Discussion

The empirical result of static fixed effect panel models of public health expenditure as percent of GDP as well as public health expenditure as percent of government expenditure are represented in Table 4 and Table 5. The regression results shows in six model specification such as full sample, pre-global financial crisis, post-global financial crisis, low income, lower middle income and upper middle income countries.

4.1. Fixed effect result: Public health expenditure as percent of GDP (HGDP)

Table 4 discuss the result of fixed effect model in which public health expenditure as percent of GDP as the dependent variable using other explanatory variable such as taxation capacity, spending capacity, fiscal balance, debt services and per capita GDP.

Full sample: The Table 4 result shows that tax revenue and spending capacity are positive and statistical significant to the health expenditure. It shows 1 percent increase in tax

revenue, health expenditure increases at 0.40 percent, while 1 percent increase in spending capacity, health expenditure increase at 0.65 percent. Total debt services and per capita GDP (per capita income) are negative and statistical significant to health expenditure. That means, at 1 percent increase in debt services as interest payment, the health expenditure reduced at 0.29 percent, while per capita income increases at 1 percent, the health expenditure share reduced at 0.69 percent. The result shows that the growth of public health expenditure is influenced positively by the fiscal capacity (taxation and spending capacity) but to achieve government health expenditure share at 5 percent level of GDP, the efforts should made to increase more tax revenue from different sources of direct and indirect taxes. In the case of spending capacity, the government of low-middle income countries should give importance to the efficiency of health expenditure. For achieving UHC and provide better health care facilities in the low-middle income countries, the requirement of fiscal space for health (HGDP as percent of GDP) should be equal or more than 5 percent, it can only achieve by improving fiscal capacity to 35-45 percent. As a consequence, high fiscal capacity in terms of generation of more revenue would mobilize the resources to the payment of debt services, thereby debt might not be a factor for reducing health expenditure. Because lower taxation capacity would reduce the government's ability and willingness to spend on human capital as well as other developmental expenditure by the fear of debt burden. So, for the realization of fiscal space in health sector, the low and middle income countries should not dependent on borrowings rather mobilize more funds from the domestic revenue which having long term capacity to generate sustainable finance.

We found that per capita GDP showing negative relationship with health expenditure. This is obvious because per capita GDP shows positive relationship with per capita health expenditure in general but not public health expenditure as ratio of GDP (Behera and Dash, 2016). From this negative consequence of per capita GDP, we can say that increase in per capita income strengthening the household's capacity to spend on health of its own pocket rather depends on government's funding towards health sector. In these countries, OOP health expenditure more due to less fiscal capacity of the government, thereby people devotes there personal income to health expenditure. As a consequence the pooling resources from personal income (through income tax collection) is low and their contribution to health expenditure as percent of GDP also lead to low. In this channel, we can say that there is a negative relationship between per capita GDP and public health expenditure. It can also infer like that increase per

capita GDP leads to increase in government tax revenue (direct tax), and increase tax revenue having positive impact of health expenditure as share of GDP. So, all the variables are interconnected for financing health care in the resource poor economies.

Table 4. Panel Fixed Effect Model. Dependent: Public health expenditure as percent of GDP (HGDP)

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLE	Full Sample	Pre-crisis	Post-crisis	Low	Lower middle	Upper middle
Taxation capacity	0.406*	0.488**	-0.127	2.022***	0.104	0.136
	(0.209)	(0.241)	(0.256)	(0.344)	(0.182)	(0.124)
Spending capacity	0.657***	0.476*	0.205	-0.118	1.789***	0.323***
	(0.241)	(0.280)	(0.186)	(0.331)	(0.370)	(0.114)
Fiscal balance	-0.00307	-0.00207	0.00588	0.0113	0.00121	-0.00774**
	(0.00226)	(0.00214)	(0.00466)	(0.00941)	(0.00168)	(0.00359)
Debt services	-0.295**	-0.405***	-0.00186	-0.199*	-0.408***	-0.0317
	(0.115)	(0.122)	(0.0418)	(0.0963)	(0.126)	(0.0197)
PCGDP	-0.692***	-0.798***	-1.044***	-0.914***	-0.879***	0.0658
	(0.181)	(0.158)	(0.102)	(0.123)	(0.146)	(0.0397)
Constant	3.271**	4.421***	8.918***	1.794	1.559	-0.814
	(1.314)	(1.498)	(1.111)	(1.315)	(1.139)	(0.641)
Hausman fixed	1207.09***					
F test	4.64***	6.42***	21.97***	19.02***	9.25***	5.46***
R-squared	0.549	0.651	0.844	0.717	0.760	0.219
Observations	893	582	311	149	339	405
No. of countries	85	82	78	15	33	37

Note: (1) Full sample (2000-2013); (2) Pre global financial crisis (2000-2008); (3) Post global financial crisis (2009-2013); (4) Low income countries; (5) Lower middle income countries; (6) Upper middle income countries. All variables are in natural logarithm except fiscal balance. Robust standard errors in parentheses; *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Pre-crisis: The impact of all independent variables to the health expenditure are showing the same result (as shown in the full sample) in the pre global financial crisis period from the period 2000 to 2008. **Post-crisis:** taxation capacity and debt services shows negative and insignificant relationship with health expenditure in the post global financial crisis from the period 2009 to 2013. The result confirms our discussion in the literature that global financial

crisis was reduced the tax revenue collection due to slower economic growth and debt services payment had done through borrowings, resulting huge spending cut in public health expenditure in the low and middle income countries. There has no empirical finding on the extent to which tax revenue and debt services affected health expenditure in the post-crisis period. This study found tax revenue and debt are having no statistical significant relationship to public health expenditure as percent of GDP. There is negative and significant relationship with per capita GDP and health expenditure, show at 1 percent increase in per capita income leads to 1.04 percent reduction in the share of health expenditure to GDP. Comparing pre and post crisis period, the negative impact of per capita income to health expenditure is more in the post-crisis period, it can say that only sources health expenditure was per capita income in form of OOP health spending and there was no sources of heath expenditure from the government side due to low fiscal capacity contribution. So, during the post crisis period high per capita income devoted to more in out-of-pocket health expenditure and less devoted to government health expenditure in the form of pooling finance mechanism. During crisis period, government reduced their allocation to health sector because tax revenue capacity low and high debt service burden resulting access to health care from public source is very costly due to increase in medical consultation fees and price of medicine. So, OOP spending as percent of total health spending was high during that period and much of the household income goes to the purchase of private health services.

Low income: health expenditure is more sensitive to the taxation capacity, means at 1 percent increase in tax revenue leads to 2.02 percent of public health expenditure. So, most of government expenditure of health care in low income countries depends on taxation capacity and debt impact on the reduction of health expenditure is lesser than the full sample because low income countries are having enough fiscal space to manage debt payment as well as health spending. The health expenditure is less sensitive to the debt burden, means at 1 percent increase in debt services contributed 0.19 percent reduction in public health expenditure. **Lower middle:** Health expenditure is more sensitive to the spending capacity, means at 1 percent increase in spending capacity leads to 1.78 percent of public health expenditure. So, most of government expenditure of health care in lower middle income countries depends on spending capacity and the debt impact on the reduction of health expenditure is more than the low income countries. That means, at 1 percent increase in total debt services, the health expenditure reduced at 0.40

percent. **Upper middle:** health expenditure is having positive and significant relationship with spending capacity while positive and insignificant relationship with taxation capacity. There is a negative relationship between fiscal deficit (fiscal imbalance) and health expenditure. It shows at 1 percent increase fiscal deficit leads to reduction of health expenditure at 0.007 percent which is very negligible impact on health care. Overall result implies that the total debt service is showing negative and significant relationship with public heath expenditure in all the six model specification (column 1-6) in Table 4 and fiscal capacity is the factor which contributing positively to the growth of health expenditure. Through the channels of fiscal capacity, the low-middle income countries would able to reduce debt burden as well fiscal imbalance in the economy for the long run sustainability of fiscal space for health.

4.2. Fixed effect result: Public health expenditure as percent of Government expenditure (HGE)

Table 5 discuss the result of fixed effect model using the public health expenditure as percent of general government expenditure as the dependent variable by including other explanatory variables such as taxation capacity, spending capacity, fiscal balance, debt services and per capita GDP.

The Table 5 result implies that the reprioritization of health expenditure in the low-middle income countries are associated with the macro-fiscal factors. The result shows the per capita GDP and debt services are positive and statistically significant relationship with HGE in all the model specification from column 1-6. While the Table 4 result shows that there is a negative relationship between per capita GDP and HGDP. HGDP as the partial measurement of prioritization because it is the fraction of country's income but HGE is the fraction of government's current budget which gives more clarity on the importance of health care in low-middle income countries. The positive impact of debt services on HGE implies that debt having no negative consequence on the reprioritization of health expenditure. The literature such as Tandon et al. (2010) argues that the burden of debt services reduces the share of health expenditure to government budget and it is one of the factor for de-prioritization of health in the budget making process. But we have not found such features in the low and middle income countries. The result can interpret in two ways, first the debt burden is not sever in these countries or government has the ability to manage the debt to GDP ratio with in the prudent dent limit of 60 percent; second, other factors of reprioritization such as political commitment,

democratization, lower levels of corruption, women participation etc. are correlated with higher shares of public expenditure on health

Table 5. Panel Fixed Effect Model. Dependent: Public health expenditure as percent of Government expenditure (HGE)

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLE	Full sample	Pre-crisis	Post-crisis	Low	Lower middle	Upper middle
Taxation capacity	-0.0266	-0.0774	0.0845	0.278	-0.127	0.143
	(0.0895)	(0.0916)	(0.132)	(0.414)	(0.129)	(0.120)
Spending capacity	-0.443***	-0.369**	-0.757***	-0.496**	-0.384**	-0.682***
	(0.109)	(0.163)	(0.123)	(0.198)	(0.183)	(0.113)
Fiscal balance	-0.00159**	-0.00330***	-0.00660	0.00255	-0.00141*	-0.00785**
	(0.000707)	(0.000804)	(0.00490)	(0.00219)	(0.000771)	(0.00355)
Debt services	0.0475**	0.0757***	0.0150	0.0220	0.113***	-0.0320
	(0.0233)	(0.0282)	(0.0314)	(0.0518)	(0.0335)	(0.0198)
PCGDP	0.234***	0.265***	0.219***	0.305***	0.239***	0.0654
	(0.0345)	(0.0349)	(0.0464)	(0.0393)	(0.0344)	(0.0400)
Constant	1.998***	1.641***	2.864***	1.376	1.861***	3.793***
	(0.486)	(0.612)	(0.625)	(1.185)	(0.571)	(0.643)
Hausman fixed	31.70***					
F test	12.35***	16.31***	15.55***	27.13***	17.29***	8.91***
R-squared	0.384	0.448	0.359	0.412	0.549	0.298
Observations	893	582	311	149	339	405
No. of countries	85	82	78	15	33	37

Note: (1) Full sample (2000-2013); (2) Pre global financial crisis (2000-2008); (3) Post global financial crisis (2009-2013); (4) Low income countries; (5) Lower middle income countries; (6) Upper middle income countries. All variables are in natural logarithm except fiscal balance. Robust standard errors in parentheses; *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Table 5 shows that Fiscal balance and HGE are positive and statistically significant relationship, which shows that at 1 percent increase in fiscal imbalance (deficit), the HGE reduced to 0.001 percent. So, fiscal deficit and health expenditure are negative related and impact is very less. It found very peculiar result about negative relationships between spending capacity and HGE, which means current government expenditure as percent of GDP increases, the reprioritization of health expenditure reduces. Taxation capacity shows negative relationship

with HGE in result of full sample, pre-crisis, lower middle. While positive relationship found in the case post-crisis, low income and upper middle income countries but there is insignificant impact of taxation capacity to HGE in all regression results.

5. Concluding Remarks and Policy Implication

This study explored the relationships between fiscal capacity (taxation capacity and spending capacity) and public health expenditure by incorporating per capita GDP, fiscal balance and total debt services in fiscal space for health function for the low and middle income countries for the period, 2000-2013. We employed static panel data estimation – 'fixed effect model'. The results shows that the effects of taxation capacity and spending capacity on public health expenditure is positive and significant in the full sample. Debt and per capita GDP shows negative effect in the growth of public health expenditure and positive effect in the growth of reprioritization of health expenditure in mostly all subsample. Public health expenditure affected severely by the global financial crisis due to lower taxation capacity and higher debt burden. The results of the full sample are different from the subgroup sample regarding the impact assessment of health expenditure with other macro-fiscal variables. The result founds that the realization of fiscal space for health possible by generation more domestic revenue and efficiency in spending pattern. Also founds that the impact of macro-economic condition towards health financing varies among the low income, lower middle and upper middle income countries because the assessment of fiscal space for health dependent on countries heath needs, political commitment and efficiency level to utilize the resources.

The findings emanating from this study offer some tentative interesting policy insights. The sources of public health expenditure arise from tax revenue especially indirect taxation and direct taxation. The taxation capacity of low and middle income countries fall below 15 percent and it is very difficult to manage all the spending demand in the economy. Also it is not sufficient to accommodate all the health care demands such as increasing non-communicable diseases, infrastructure and other health related cleanliness etc. McIntyre and Meheus (2014) argues for achievement of health outcomes (such as reducing the average infant mortality rate to 10 per 1000 live births, access to health coverage in terms of skill birth attendant and child immunization to 100 percent, access to health services such as availability of medical professional per 10,000 population), the government of low and middle income countries should

increase health expenditure as share of GDP at more than 5 percent level. Regarding the sustainable finance in developing countries towards the achievement of SDGs, the IMF-World Bank Spring meeting-July 2016' suggests the importance of domestic revenue mobilization, as one the most powerful ways to improve collection, improve sovereignty and strengthening fiscal capacity to spend more on development projects including health. On the revenue side, efforts should made to improve tax system, tax evasion, tax avoidance and increase collection of domestic revenue; while in the expenditure side, focus need to be done in strengthening aggregate fiscal discipline in terms of efficiency and effective utilization of financial resources.

Although this study makes a preliminary attempt in understanding the effects of conducive macroeconomic conditions on growth of public health expenditure through empirical investigation in low and middle income countries. This study could also serve as a basis for showing the useful directions for carrying our similar studies for other countries and regions based on geographical category and other regions of world health organization. For example, one can conduct studies on a panel data set of countries from SAARC, BRICS, emerging economies, Asia-Pacific economies by examining the impact of macro-fiscal determinants on realization of fiscal space for health in the implication of UHC. This study can be extended in different sources of tax revenue (such as direct tax, indirect tax and other tax) and its contribution to health expenditure. It also can be linked to distributional aspects such as who pay tax more and who pay less. Further, our empirical analysis focus on the behavior of macro-fiscal condition towards the health financing but it ignores other aspects such as demographic characteristics, political condition, institutional quality, ethnolinguistically character, female representation in the government administration, which influences the prioritization of health expenditure in the budget. So this work may bring deeper policy insights which will be helpful for designing effective fiscal policies, especially in the direction of achieving sustainable development goals of different economies.

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Appendix

Table A1. List of Sample Countries (N=85, Observation = 895, T= 14 year from 2000-2013)

Lower Income (N = 15, Obs = 149)	Lower middle income (N = 33, Obs = 341)		Upper middle income (N = 37, Obs = 405)	
Afghanistan (T =7)	Armenia (T=10)	Lao PDR (T=7)	Albania (T=3)	Jordan (T=13)
Benin (T=13)	Bangladesh (T=11)	Lesotho (T=8)	Algeria (T=12)	Kazakhstan (T=5)
Burkina Faso (T=12)	Bhutan (T=10)	Moldova (T=13)	Angola (T=13)	Lebanon (T=14)
Cambodia (T=12)	Cabo Verde (T=5)	Morocco (T=11)	Azerbaijan (T=5)	Macedonia, FYR (T=8)
Central African Republic (T=9)	Congo, Rep. (T=8)	Nicaragua (T=13)	Belarus (T=13)	Malaysia (T=13)
Congo, Dem. Rep. (T=9)	Cote d'Ivoire (T=13)	Nigeria (T=10)	Belize (T=13)	Maldives (T=12)
Ethiopia (T=11)	Egypt, Arab Rep. (T=11)	Pakistan (T=14)	Bosnia and Herzegovina (T=9)	Mauritius (T=14)
Madagascar (T=12)	El Salvador (T=14)	Papua New Guinea (T=3)	Botswana (T=7)	Mongolia (T=13)
Mali (T=14)	Georgia (T=13)	Philippines (T=13)	Brazil (T=13)	Namibia (T=12)
Mozambique (T=3)	Ghana (T=11)	Samoa (T=3)	Bulgaria (T=13)	Paraguay (T=8)
Nepal (T=14)	Guatemala (T=13)	Sao Tome and Principe (T=11)	Colombia (T=6)	Peru (T=13)
Rwanda (T=6)	Honduras (T=11)	Senegal (T=6)	Costa Rica (T=14)	Romania (T=14)
Tanzania (T=4)	India (T=13)	Sri Lanka (T=13)	Dominica (T=13)	Serbia (T=6)
Togo (T=10)	Indonesia (T=11)	Syrian Arab Republic (T=8)	Dominican Republic (T=14)	South Africa (T=14)
Uganda (T=13)	Kenya (T=13)	Tajikistan (T=4)	Fiji (T=3)	St. Lucia (T=13)
	Kyrgyz Republic (T=13)	Ukraine (T=13)	Grenada (T=13)	Suriname (T=12)
		Zambia (T=11)	Iran, Islamic Rep. (T=10)	Thailand (T=14)
			Jamaica (T=14)	Tunisia (T=13)
				Turkey (T=6)

Note: N = No of countries, T = No of years data available in the each country. Income wise categorization of countries are based on Global Economic Prospects-2016' report of World Bank.