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Health Sector Budgeting for the Revival of Global Economy

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Abstract

Aside from various economic crises faced by different countries are different time , the countries, and sometimes the world as a whole, have faced serious pandemics such as Spanish Flu, Ebola, bubonic plague and the recent COVID 19, among others. In order to boost the economy, the government tends to introduce different stimulus, relief and financial packages in favour of the citizens of its country. The government is inclined to follow the Keynesian model as it focuses on increasing the demand of consumers. It is the need of the hour to realise the importance of health care for the growth and development of the economy as it has been observed that countries where the economic impact of the crisis is huge and prolonged, also suffer from a great impact on healthcare services. The following study concludes, after both theoretical and empirical analysis, that health expenditure plays a major role in increasing global GDP. Thus, the government should focus on increasing expenditures on health during any crisis. This reduces the amount of income spent by consumers on health care and provides them with security. Further, workers' efficiency increases at a great rate, as does their life expectancy. Higher efficiency is associated with higher output and thus higher growth.

Keywords: Gross Domestic Product; Health budget; RCEP countries; Keynesian model; Economic Crisis
JEL Classifications: C51; C52; C55; I12; I15

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1. Introduction

The world has witnessed a number of financial and economic crises starting from the Gulf Crisis of 1991, the East Asian Economic Crisis from 1997-2001, the Global Economic Recession from 2007-09 and many more. One of the biggest crises was the financial crisis of 2007, described as "Continued deleveraging by world financial institutions combined with a collapse in consumer demand and business confidence is depressing domestic demand across the globe, while world trade is falling at an alarming rate and commodity prices have tumbled." (Strauss Kahn, former managing director of IMF)

Aside from the various economic crises experienced by different countries at different times, catastrophic pandemics such as Spanish Flu, Ebola, bubonic plague, and the latest COVID 19 have afflicted countries, and in some cases the entire planet. In addition to affecting people's health, these pandemics have negative economic implications. In the event of a pandemic caused by a communicable virus, the government is required to adopt tight measures, which cause the economy to slow. A significant virus outbreak may necessitate a partial or complete lockdown of the country, resulting in a halt in economic activity and, as a result, a fall in aggregate demand. It also has a negative impact on joblessness. As a result of the lower income, aggregate demand is further strained, resulting in lower household spending. People are additionally stressed as a result of the circumstances, necessitating more health spending. This means that health spending is significant in two ways: first, because pandemics force individuals to spend on their health, and second, because stress forces people to take medicines as a pandemic preventative measure. Because the private sector is unable to meet people's health needs, the government is called upon to help. Increased health investment has a multiplier indirect effect since it raises aggregate demand, not only by raising government spending but also by increasing private consumer spending People will begin to spend more if they feel more preventative and stress-free.

In order to boost the economy, the government tends to introduce different stimulus, relief and financial packages to stabilise the economy. The government is inclined to follow the Keynesian model as it focuses on increasing the demand of consumers. With increased demand, supply has to be increased, which ultimately results in the enhancement of economic activity and thus economic growth. The supply can only be increased effectively if the health of workers is good, as this will improve productivity.

India, along with other economies, faced the adverse conditions during the economic recession of 2008 and 2009. India's GDP fell by around 6.7 percent last year, from around 9.3 percent the previous year. India saw a huge collapse in manufacturing activity, domestic demand, net outflow of capital, steep contraction in exports, and a continuous rise in unemployment, etc. The government started spending on food security, infrastructure, healthcare and poverty removal programmes to stimulate the economic recovery. Seeing these constant efforts, the experts predicted a good growth rate of around 8.3%, and India did step on the path of recovery.

It has also been observed that countries where the economic impact of the crisis is huge and prolonged, also suffer from a great impact on healthcare services. In contrast, in high-income countries and developed countries, the impact on health expenditures due to the global crisis has had mixed results. But the impact on health is still not that severe in high-income countries as compared to low- income countries. This creates the financial pressure on health care budgets for poor and developing countries.

It is the need of the hour to realise the importance of health care for the growth and development of the economy. Perceptions of people have also changed towards health services. Earlier, health was considered a luxury good for all as the services were very expensive. Today, the easy availability of both public and private healthcare at different prices adhering to the needs of all income classes, has made health a necessity. Both the physical and mental health of an individual play an important role in increasing that individual's income, and thus, the income of the entire economy.

Globally, different countries have also come together to improve not only the health of their people , but also provide resources to other countries for better health services. WHO and IMF are key players in driving this global public policy towards health. The international collaborations increase the efficacy of healthcare services, provide support in production of various medical equipment, introduce innovative and efficient methods and vaccines for the treatment of diseases, provide access to affordable health services and many more.

The paper is organised as follows. The first section is a literature review, which discusses various studies related to health and the growth of the economy, including the relationship between them, health equity, health financing and health budgeting. The next section describes the Keynesian four sector model in a detailed way. It further talks about how health expenditure is the important variable in this model, theoretically. In the next section, the relationship between health expenditure and economic growth is empirically tested using panel data regression. The section following this explains the present situation the world is facing. It provides the data on health variables during this COVID-19 pandemic. Using all the analysis done, the next section provides some policy implications and suggestions. Finally, the last section concludes.

2. Literature review

A growing body of literature documents how global crises impact various aspects of the economy across countries and over time. Due to the financial crisis and the subsequent economic crisis, in 2009 many countries experienced a large decrease in gross domestic product (GDP). In the European Union's (EU) 27 member countries, the average decrease in real GDP was 4.3% (EUROSTAT data). Financial and economic distress have wide-reaching social and political consequences, including falling incomes, growing inequalities and huge increases in unemployment. Furthermore, in the past few years, research has been conducted focusing on the impact of the economic crisis on health and health care. (WHO, 2020)

There exists a strong, positive and significant relationship between national expenditure on health care and the GDP of the country. (Blomqvist & Carter (1997); Gerdtham & Lothgren (2000)) The fact that government health expenditure is highly correlated with the per capita GDP of a country was empirically proven first by Kleiman (1974) and then by Newhouse (1977). But there is also an ongoing debate as to whether health care is a necessity for people or a luxury good. To analyse the type of good, income elasticity is measured in different countries in different time periods. An empirical analysis was conducted on selected African countries for the period 1991-2000. It was found that for public health expenditure, income elasticity is greater than one and for private health expenditure, income elasticity is less than one. This implies that public health expenditure is a necessity and private health expenditure is a luxury good. (Jaunky and Khadaroo, 2008) An old analysis was conducted by Kiynaz et. al. (2006) in Turkey for the period 1984-1998 and found that health expenditure is a luxury good for people. But an updated study by Sulku & Caner (2011) on Turkey for the period 1984-2006

found a contrasting result that the income elasticity of health expenditure is less than one. This means that health is a necessary product for the Turkish people. Similar studies were conducted for many different countries, and in most of the countries, it was found that health is considered a necessity for the people of their respective countries. This makes it necessary to discuss the impact of crises on health expenditure, which is a necessity .

In a situation of global financial crisis, many countries tend to reduce the spending on various sectors, with health care sector being the most popular target of both the government and the people. The government used to understate the importance of health provisions. The better health of the population improves the productivity and efficiency level of workers which improves the economic performance and further helps in providing more fiscal resources. Considering the importance of spending on health even in case of crisis, researchers analysed the optimal level of health expenditure to maximise economic growth in any country. In many developed countries, the rate of increase in health expenditures has outpaced the rate of increase in GDP. As the ratio of health expenditure to GDP increases, the economic growth increases in the sense that a better population's health results in increased productivity and hence improved economic performance. In contrast, as the expenditure on health increases as a percentage of GDP, the expenditure on other sectors is crowded out, which affects economic growth negatively. Thus, through empirical evidence, optimal health care is analysed. Whenever health care expenditure is lower than the optimal level, an increase in health expenditure results in increasing growth at a higher rate. But if the health expenditure level is above the optimal level, then the increase in health expenditure either reduces economic growth or increases at a slower rate. (Wang, 2015)

Besides increasing health expenditure, another central concern of the governments of all countries is health equity. This implies that there must be no difference in the quality of health care, between and within countries. Research shows that the differences generally arise due to inequalities in the social determinants of health or inequalities in the social and economic conditions of people living in different segments of different countries. Most academicians only talk about the health expenditure effects of the financial crisis, but very few discusses the health equity effects of any economic crisis. At the outbreak of a crisis, especially economic or financial crisis, there is a steep decline in economic activity, which reduces the tax collections. This forces the government to reduce public spending, especially on public health, and this further undermines the social drivers of health. But if the funds for public health is not reduced much, then the people with good productivity due to better health will give back to the economy by working more and increasing economic activity. Prolonged cuts in health spending by both developed and developing countries during the financial crisis results in further harming health equity through increasing unemployment levels. It was further found that job insecurity is more harmful to people's health as compared to actual job loss. (Ruckert & Labonte, 2012)

There is a debate among researchers as to whether the system of health budgeting should be centralised in nature or decentralised. Various empirical studies concluded that the system should not be completely centralised or decentralised but rather a combination of both to gain maximum benefits from it. Increasing health expenditure is not enough; efforts need to be put into developing, financing and ensuring proper delivery of health services to everyone. This will adversely affect the national performance. The inefficiency in the Ukrainian public health system is due to the over centralisation of (Ministerie van Financiën or Ministry of Finance) MINFIN (shared with the Ministry of Economy and Ministry of Health). This takes away the incentives of local authorities to improve the efficiency of health services. Thus, the state brought reforms by decentralising health care operations, service analysis and delivery responsibilities. But

adhering to national standards, strategic policy decisions and safety regulations remain under the control of MINFIN. (Guess & Stiko, 2004)

Another challenge in the budgeting process is whether to use a bottom-up approach or a top-down approach. Various challenges were faced by the District Health System in Nigeria while planning the health budget. As it is already seen that health reform had resulted in decentralising the system of budgeting, it thus leads to organisational restructuring. In the top-down approach, the budget is prepared by the State Ministry of Health and forwarded to districts and sub districts for its proper execution. They make the budget on the basis of last year's expenditure. While in the bottom-up approach, the local health authorities prepare the budget according to the needs of the locals without any financial constraint in their mind. The State Ministry then reallocates funds to the respective districts. The analysis used the questionnaire method and found that the bottom-up approach was used in Nigeria, and it had much better results. This improved the quality of health and efficiency in the delivery of health services. (Nnaji et. al., 2010)

There is a group of researchers arguing that economic growth (measured by per capita GDP) is the most important factor in increasing growth in health expenditure in both the short and long term. (Narayan, Narayan, & Mishra (2010); Wang (2011); Tamakoshi & Hamori (2014)) Another paper by Behera & Dash (2019) discusses the effects of growth on government health financing. They target the Indian states for the period 1980-2014. Health financing, or fiscal space for health, refers to the share of the total government budget that the government dedicates towards financing healthcare for the people of the country. In general, a country has to spend at least 5-6% of its total GDP on the public healthcare to reach the level of Universal Health Coverage (UHC). In India, the government puts less priority on spending on healthcare, resulting in a low level of health financing as compared to other low income and middle income countries. Some alternative sources are suggested by policy makers to increase health expenditure, such as increasing taxes on alcohol and tobacco, reforms in the tax system, cutting fuel subsidies, etc. This will result in higher health financing and thus higher economic growth in the long run. In the period of study, it was observed that none of the Indian states were financing health at the minimum required level. It was also seen that there was too much heterogeneity among Indian states' health spending. Various econometric analyses predict that healthcare is not a luxury good but a necessity, and it has a strong relationship with economic growth.

3. Research Objectives

The literature discusses the impact of the economic crisis on the health spending of various populations and health care expenditures by the government on the public. In contrast, the present study analyses the opposite relationship, showing health expenditure as the key factor affecting GDP. Our purpose is to estimate the Keynesian four sector model and examine the importance of health expenditure in contributing towards economic development through various components of aggregate demand. Further, we will analyse the impact of the change in health budget and its likely impact on increasing global GDP, taking into consideration the 15 countries (RCEP - Regional Comprehensive Economic Partnership countries excluding Cambodia and including India). Further, the possibility of increasing growth by increasing both government and private expenditure on health to overcome the negatives of any economic crisis has never been suggested before.

The researchers have examined the influence of the economic crisis on health spending of various groups as well as government health care expenditures on the general public. In contrast, the current study examines the inverse link, revealing that health expenditure is the most important factor in determining GDP. The goal of this study is to estimate the Keynesian four-sector model and investigate the role of health spending in contributing to economic development through various components of aggregate demand. In this respect, we have examined the influence of changes in health expenditure on global GDP growth. nations and India. Furthermore, the policies about the potential of boosting growth by raising both government and private health spending to counteract the negative effects of any economic downturn have been discussed.

4. Research Model

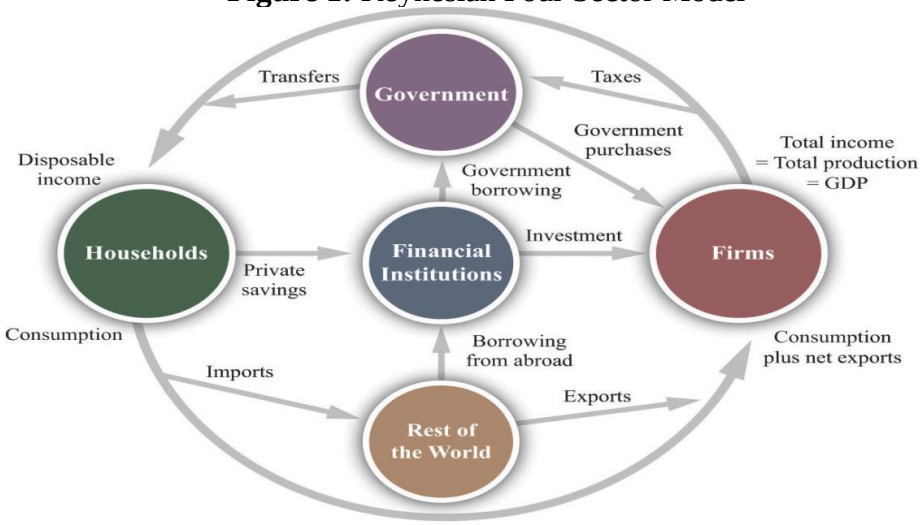
4.1 Theoretical Construct

The simplest two sector Keynesian model includes two sectors ; the household sector and the business sector. There are some financial institutions present in the economy for the process of savings and investment by both firms and households. Households provide their labour to businesses and get wages in return. While businesses provide these households with products to be consumed and receive payments in return for the products supplied.

The government (or public) sector is added to this model to reach a three sector Keynesian model. In addition to the transactions of the two-sector model, fiscal policy also comes into action. This model helps to analyse the transactions related to government purchases and taxes, which are further used for both recessionary and inflationary gaps.

The complete Keynesian model is the four sector Keynesian model where the foreign sector is added to the three domestic sectors; household, business and government, as depicted in Figure 1. It discusses the interaction between the domestic economy and the foreign economy through the export and import of goods and services. This takes into consideration the expenditures made by domestic consumers on foreign goods as well as domestic goods together.

Figure 1: Keynesian Four Sector Model



Source: Dornbusch, R., & Fischer, S. (2014). *Macro Economics.* McGraw Hill. 6th edition.

The addition of the foreign sector extends the analysis to the economic activities even beyond the political boundaries of the country. The aggregate expenditure of the economy is thus defined as:

$$AE = C + I + (G - T) + (X - M) \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (1)$$

where AE is the aggregate expenditure, C is the total private consumption expenditure, I is the total investment expenditure, G is the total government expenditure or government purchase, T is the taxes received by government, X is the amount spent on exports, and M is the total amount of imports. This is the case of a four sector model. An economy is said to be in equilibrium when aggregate expenditure equates the aggregate income (supply or production) of the economy. This is because every dollar that is expended is a dollar that has been gained as income; every dollar that is gained as income is a dollar that someone has expended. Thus, the equation can be written as:

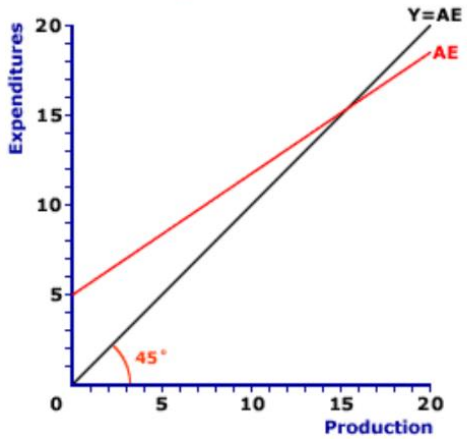
$$Y = AE$$

Substituting value of AE from equation (1), we get

$$Y = C + I + (G - T) + (X - M) \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots..(2)$$

The equilibrium is represented below in the diagram. The 45-degree line shows the every potential equilibrium value for the four sector Keynesian model, and AE line shows the total aggregate expenditure as the sum of consumption, investment, government, and net exports. Wherever the two lines intersect , is the equilibrium where aggregate expenditure equals aggregate income or production. *(Dornbusch & Fischer, 6th edition)*

Figure 2: Income Expenditure Equilibrium



Source: Dornbusch, R., & Fischer, S. (2014). *Macro Economics.* McGraw Hill. 6th edition.

The variable health care enters the Keynesian four sector model through almost all the four variables of income determination. Starting with the first variable, that is consumption expenditure, health is a consumable good, and as seen in the literature review, many people have started considering health as a necessity good as opposed to a luxury good. Consumers spend part of their income on their own health and sometimes on the health of their dependents, which increases the factor of C and thus the income of the economy. People consider health as a necessity as they are aware that better health will increase their efficiency in their respective jobs, which will ultimately provide them with better rewards. These higher rewards can then be used to increase their standard of living. In the outbreak of pandemics like COVID-19, people are forced to spend more on health care to survive.

Another variable is investment expenditure. Both firms and households invest in the health care facilities. People invest by taking out life insurance policies and medical insurance policies. A small share of their incomes is being paid as premiums to the insurance company, with the promise that the company will finance them either fully or partially in the event of a medical emergency. This increases the factor of I, continuously. Further, businesses also make investments by providing employees with medical security in one or other way. Employers are always concerned about the health status of their employees. This is because if the employee's health status is good, they will take fewer leaves and be more productive in their job. Thus, by providing health security, firms incentivise employees to work harder and generate more output for the industry. This will also increase the factor I and the GDP of the economy.

The next variable under consideration is government expenditure. The governments of some countries provide their citizens with medical insurance coverage out of the taxes paid by those citizens. This provides a feeling of security and care among the citizens of the country. In the situation of pandemics and economic crisis, the government is forced to reduce its expenditure or relocate public expenditure to the sectors adversely affected by the crisis. The important point missed here is that if the health of people is not taken care of, then they are not motivated to work more to increase economic activity and thus consumer demand, both of which tend to fall in cases of crises. Thus, increasing factor G through health expenditure results in increasing GDP at a faster pace.

Lastly, net exports need to be increased to offset the rise in the GDP of an economy. When the pandemic is spread globally, all countries are required to join hands to fight against the virus. To boost the recovery from the pandemic, countries help each other by providing medical equipment, medicines, or vaccines to those countries who are in immediate need of them. Thus, exports can be increased by increasing the supply of health products associated with the pandemic to poor countries, increasing the factor X and economic growth of the exporting economy.

4.2 Specification of Model

A standard Keynesian model is considered where Gross Domestic Product of a country is dependent on private consumption expenditure, government expenditure, openness of economy, gross capital formation. Health per capita is added as another independent variable. Other control variables are also added – consumer price index, real interest rate and official exchange rate. The function can be expressed as follows:

$$GDPPC_{i,t} = f(HEALTHPC, CONS, OECO, GCF, CPI, INTR, EXR) \quad \ldots\ldots\ldots\ldots\ldots\ldots(3)$$

In addition to the variables defined above, two lagged values of GDP per capita are added as independent variables. It is expected that the growth of any country will also be affected by its growth in the previous year.

The model shown in equation (3) is estimated in a panel dataset of 15 countries (RCEP excluding Cambodia and including India) for the period from 2000 to 2018 where all the variables have been expressed in their natural log form. This can be expressed as equation (4) mentioned below:

$$GDPPC_{i,t} = \beta_0 GDPPC_{i,t-1} + \beta_1 GDPPC_{i,t-2} + \beta_2 HEALTHPC + \beta_3 CONS + \beta_4 OECO + \beta_5 GCF + \beta_6 CPI + \beta_7 INTR + \beta_8 EXR + u_{it} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(4)$$

Where all variables are as defined in the previous sub-section
$\beta_i = coefficients\ of\ respective\ independent\ variables$
$u_{it} = error\ term$
i stands for country and t stands for time

4.3 Definition and Source of Variables used in the model

A panel of dataset belongs to 15 countries of Asia-Pacific (RCEP excluding Cambodia and including India). That includes Australia, Brunei, China, Indonesia, Japan, Korea, Laos, Malaysia, Myanmar, New Zealand, Singapore, Thailand, the Philippines, and Vietnam. The time period taken into consideration is from 2000 - 2018.

The paper uses Gross Domestic Product per capita ($GDPPC_{i,t}$) in current US dollars as the dependent variable of the model. The data has been taken from World Bank's national accounts and OECD's national account database.

The first and main independent variable used is current health expenditure per capita (HEALTHPC) in current US dollars. Its data is taken from the World Health Organization's Global Health Expenditure database. They are the estimates of current health expenditure, including healthcare goods and services consumed during each year.

Another independent variable used is final consumption expenditure (CONS) in current USD billions. The data of this variable is taken from the World Bank database. This variable is the sum of household final consumption expenditure (private consumption) and general government final consumption expenditure. Thus, it includes two variables of the Keynesian model.

Then, Gross Capital Formation (GCF) is taken into consideration as an alternative to investment expenditure. It consists of outlays on additions to the fixed assets of the economy plus net changes in the level of inventories. It is expressed in current USD billions and its data is extracted from World Bank database.

Next, the variable being undertaken is Openness of Economy (OECO), expressed in current US dollars. This is calculated for every country by summing up the total exports and total imports of that country and thus dividing them by GDP in current USD.

To control for inflation, Consumer Price Index (CPI) is also included as an independent variable in the model, with 2010 as the base year. The data for this index is taken from the International Monetary Fund database. 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.

Real interest rate (INTR) in percentage terms) with 2010 as the base year is also taken into consideration. This data is extracted from the International Monetary Fund database. Real interest rate is the lending interest rate adjusted for inflation as measured by the GDP deflator.

The last variable taken into the model is Official exchange rate (EXR). It refers to the exchange rate determined by national authorities or to the rate determined in the legally sanctioned exchange market. It is calculated as an annual average based on monthly averages. It is measured in local currency units relative to the U.S. dollar.

5. Impact of Health Expenditure on Per Capita Income

The descriptive statistics of variables used in this study are presented in Table 1. The dependent variable used is log of gross domestic product in per capita terms (in $US). A lot of variations can be seen in the values of GDP of different countries (using the value of standard deviation). Thus, there is a huge degree of inequality in economic growth per capita across RCEP countries, including India, and the huge gap between minimum and maximum range of GDP per capita. The variation in health expenditure per capita (in

$US) is much higher than that in GDP per capita, as can be seen from the larger difference between the maximum and minimum value. The variable health expenditure per capita ranges from as low as around $ 4.335 for Myanmar to as high as around $ 6025.34 for Australia. Similarly, GDP per capita also ranges from $ 137.168 in Myanmar to $ 68150.1 in Australia.

The sum of private consumption and government expenditure is lowest in Laos ($1.41901 billion) and highest in China ($7650.17 billion). Similarly, Gross Capital Formation is also lowest in Laos, with a value of $0.232 billion, and highest in China with a value of $6085.02 billion. The openness of the economy and consumer price index are lowest in Myanmar at $0.002 and 14.991 respectively. China has the highest value of openness of economy of $4.37 ,and the consumer price index is highest in India at 166.673. For real interest rate, the minimum value of (-18.227%) is corresponding to Brunei, and its maximum value of 35.415% is achieved by Laos. The minimum value (0.966) of Official Exchange Rate in terms of local currency unit per US $ is attained by Australia, while its maximum value (22602.1) corresponds to Vietnam.

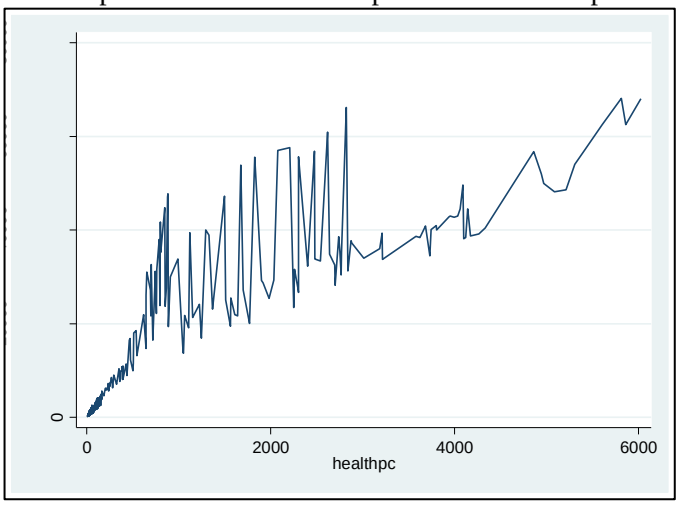
Table 1: Descriptive Statistics of All Variables

Variable	Variable Description	Mean	Std. Dev.	Min	Max
$GDPPC_{i,t}$	GDP per capita (current US$)	14847.56	17904.02	137.168	68150.1
HEALTHPC	Health expenditure per capita (current US$)	937.1627	1431.258	4.335	6025.34
CONS	Final Consumption Expenditure including both household expenditure and government expenditure (current USD billion)	691.63	1279.178	1.41901	7650.17
GCF	Gross capital formation (current USD billion)	359.921	843.154	0.232	6085.02
OECO	Openness of economy (current US$)	0.980	0.840	0.002	4.37
CPI	Consumer Price Index (2010=100)	96.352	23.974	14.991	166.673
INTR	Real interest rate (%)	4.046	5.656	-18.227	35.415
EXR	Official exchange rate (LCU per US$)	2711.962	5219.385	0.966	22602.1

Source: Author's own estimates

Figure 3 depicts the relationship between GDP per capita and health expenditure per capita for all the 15 countries taken into account and the 19 time periods considered. The figure plotted is shown in figure 3. The figure clearly shows a strong positive correlation between the log values of GDP per capita and per capita health expenditure. This shows that as individuals increase their expenditure on health, the global GDP per capita also increases.

Figure 3: Relationship between GDP Per Capita and Health Expenditure Per Capita



Source: Author's calculations

To test the positive relationship between health expenditure and GDP per capita, a regression analysis is performed on STATA of equation (4) and the results of the panel data regression are shown in Table 2.

Table 2: Regression Results of Panel Data Determining Relationship between GDP Per Capita and Health Expenditure Per Capita in RCEP Countries excluding Cambodia including India During 2000-2018

Dependent Variable: GDPPC		
No. of Observations: 304	*No. of Groups: 15*	
Estimation Method	FE*	PCSE*
CONSTANT	2.250* (11.88)	0.853** (2.44)
$GDPPC_{i,t-1}$	.474* (7.35)	1.094* (4.86)
$GDPPC_{i,t-2}$	-0.112** (-2.24)	-0.202 (-0.93)
HEALTHPC	0.147* (4.58)	0.078* (3.11)
CONS	0.362* (7.91)	-0.026 (-1.02)
OECO	0.008 (0.92)	-0.005 (-0.65)
GCF	0.107* (5.02)	0.019 (0.83)
CPI	0.068** (2.04)	-0.05 (-.074)
INTR	-0.009*** (-1.97)	-0.021 (-1.26)
EXR	-0.26** (-2.59)	-0.004** (-2.36)
F/Wald-Statistics	787.07	1.11
Adj. R-Squared	0.6494	0.9975
Time fixed effect	Yes	No
Country fixed effect	Yes	No
Error	Default	Default

Test	**Prob>chi2**	**Implication**
Hausman Test	0.0000	FE model should be used
Wald Test	0.0081	Presence of heteroscedasticity
Pesaran Test	0.0045	Presence of cross sectional dependence

Source: Author's own estimates

Figures in parentheses are t or z ratios.

Significance: *1 percent, **5 percent and ***10 percent

The econometric results of equation (4) are presented in Table 2. The results (Hausman Test) indicate that fixed effects model should be used. The results of FE model implies that all independent variables explain almost 65% variation in GDP per capita where coefficient of health expenditure per capita is significant at 1% level.

However, the FE model suffers from the problems of heteroscedasticity and cross sectional panel dependence. Therefore, panel corrected standard error (PCSE) model has been used to finally estimate equation (4). PCSE results show that all independent variables explain almost 99% variation in GDP per capita where coefficient of health expenditure per capita is significant at 1% level.

Thus, the empirical analysis shows that there is a positive and significant relationship between GDP per capita and health expenditure per capita. The increase in health expenditure per capita results in an increase in gross domestic product per capita (growth per capita), controlling for other variables included in the model. This is a strong result, according to which importance of health expenditure cannot be ignored to increase GDP of a country and thus contribute in economic recovery.

6. Present Scenario during COVID Pandemic

Global spending on health has always been on a rising path. In 2018, health spending grew but at a slower rate than GDP. Health financing can be through domestic public financing, domestic private financing or financing through external aid. Around 60% of the total funding was through public financing in 2018, and the remaining 40% was through private financing. A very small share, of around 0.2% , was through external aid. There has been a continuous rise in health spending from external aid during this COVID-19 pandemic. (Benatar, Gill, & Bakker, 2011)

The following Table 4 shows the current health expenditure as a percentage of GDP of select countries or regions. The last column shows the change in health expenditure between 2000 and 2018. As it can be seen, in developed countries and regions, the expenditure on health has increased, while in developing countries, it has declined. For the world, the current health expenditure as a percentage of GDP has increased by more than 1% between 2000 and 2018. The maximum increase has been seen by United States of around 4.35%, followed by North America (4.17% increase) and Japan (3.8% increase). On the other hand, both India and Sri Lanka have observed a decline in current health expenditure of around 0.5% between the year 2000 and 2018.

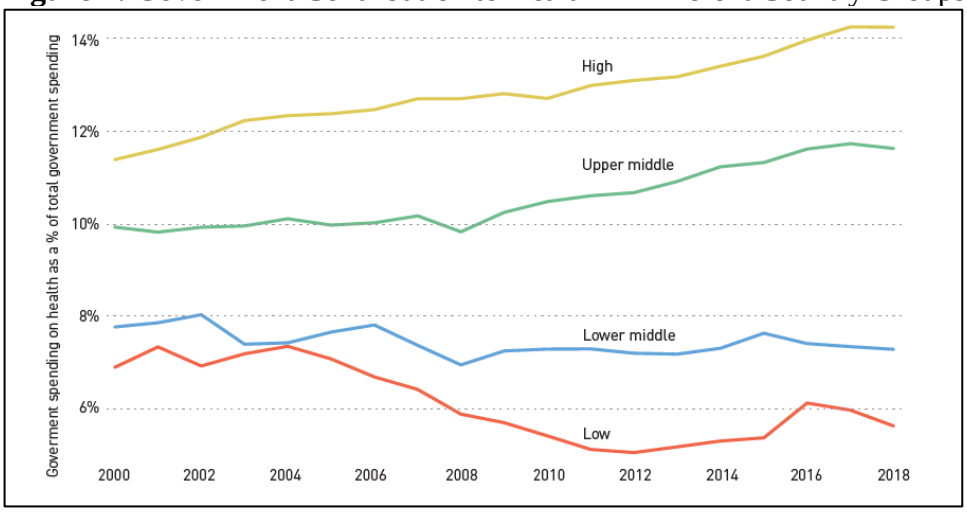
Table 4: Current Health Expenditure of Select Countries/Regions (as a % of GDP)

Country	**2000**	**2018**	**Δ**
Australia	7.62	9.28	↑
China	4.47	5.35	↑
European Union	8.43	9.85	↑
India	4.04	3.54	↓
Japan	7.15	10.95	↑
Latin America & Caribbean	6.58	7.96	↑
North America	12.25	16.42	↑
Sri Lanka	4.25	3.76	↓
South Asia	3.72	3.49	↓
Sub-Saharan Africa	5.10	5.08	↓
United States	12.54	16.89	↑
World	8.69	9.85	↑

Source: World Health Organization Global Health Expenditure database

The distribution of health care spending is totally related to the income of the country. High-income countries generally spend more on health services and low-income countries spend relatively less. This can be clearly seen in Figure 4, depicted here. Further, in low- and middle-income countries, there is a larger share of out-of-pocket spending in the total health care spending. It always remains a major source of funding for health care services. In low- and middle-income countries, the share of out-of-pocket expenses towards health care services has been as high as around 40% and above. It is further observed that high income countries spend mostly on the impatient care, while low- and middle-income countries spend largely on prevention.

Figure 4: Government Contribution to Health in Different Country Groups



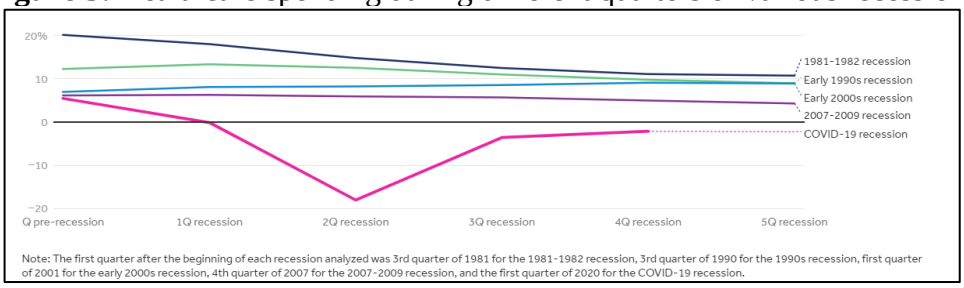
Source: Global report of WHO, 2020

In the year 2020, when the COVID – 19 pandemic arrived, it was difficult to say anything about the change in healthcare utilisation and spending. Since it's a health crisis, it was expected that health spending will increase continuously. Counterintuitively, in many countries, healthcare spending has been declining during the pandemic due to various factors.

To mitigate the spread of coronavirus, governments of many countries imposed a complete lockdown of the nation. This forced people to move towards telemedicine instead of dropping in-person care. This led to a precipitous drop in healthcare use and spending as even though telemedicine use increased, it could not compensate for the lack of in-person care. As the year progressed, healthcare spending started increasing, as lab testing and in person care started to resume to normal functioning. Also, people going for COVID-19 testing also increased sharply. But still, overall health spending declined in 2020, first time in recorded history.

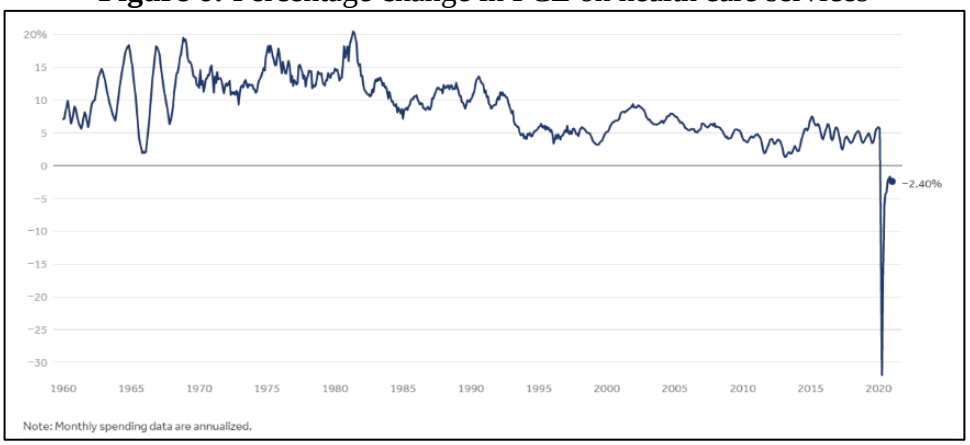
Figure 5 compares health spending at the time of the early 1990s recession, the early 2000s recession, the recession of 2008, and the COVID-19 recession. In the following quarter of the 2000 recession, the expenditure on healthcare spending has actually increased continuously. In other recessions, healthcare spending declined slightly. During the COVID–19 pandemic, however, health spending slowed quarter over quarter and remained flat from the previous quarter.

Figure 5: Healthcare spending during different quarters of various recessions



Source: KFF analysis of BEA data

Figure 6: Percentage change in PCE on health care services



Source: KFF analysis of BEA data

Another way to look at health trends is to analyse data on personal consumption expenditure (PCE) taken from the Bureau of Economic Analysis (BEA). The data is shown in Figure 6. Similar to the previous data, it shows that spending on health services fell sharply in early 2020. Even though this decline has rebounded by January 2021, this was the first time that spending on health services has declined since 1960. In early 2020, GDP of countries has also shown a decline, and the fall in health expenditure could be one of the main reasons behind it. (Cox, Amin, & Kamal, 2021)

When the crisis hit in spring 2020, many countries switched from a national approach to a more territorial and differentiated one across regions. This allows them to tailor crisis responses to local needs while also lowering the expense of national lockdowns. To minimise their economic impact, various countries have implemented particular measures such as masks, school and restaurant closures, and full lockdowns for specific areas or regions, such as Australia, Canada, Colombia, Finland, France, Germany, Italy, Spain, and the United Kingdom. While a distinct geographical strategy is logical in federal countries with substantially decentralised health responsibilities, it is also becoming more common in several unitary countries. Regional and local governments have actively been adapting their responses to the local circumstances since mid-2020.

Significant obstacles hampered vaccine rollout in the first quarter of 2021. Restricted vaccine supplies in certain rich nations and most poor countries due to limited production capacity, as well as a highly inequitable and inefficient distribution of existing supply between countries, are significant difficulties. During the early stages of vaccination campaigns, issues such as varying capacity to plan and execute mass vaccination campaigns, particularly a lack of coordination across levels of government, and the impact of emerging viral variants of concern (VOCs) on the effectiveness of existing vaccines are also of concerns.

Looking at all the data on health expenditure, the states of various countries need to plan the health budget accordingly. Each state is suffering from the problem of lack of resources and the pressing need to provide healthcare to all. The states proposed a budget in such a way that ample resources are there to improve health infrastructure and resource stockpiles necessary for all citizens at such challenging times. This is the need of the hour for the recovery from this health pandemic.

7. Conclusion & Policy Implications

The data is analysed for a specific 15 countries for the period 2000-2018. The model formed is a strongly balanced panel data model. The model found a significant and positive relationship between health expenditure per capita and GDP per capita of a country, controlling for other variables. A similar result is observed in all the countries under study. Theoretically, health expenditure is added in various factors in the Keynesian four sector model. Health expenditure is directly a part of government expenditure. It also becomes a major part of consumption expenditure in times of pandemics (like COVID - 19). Even if firms start investing more in producing health related products, it also enters the model through investment expenditure. Thus, specifically at times of crisis, health expenditure plays a major role in increasing global GDP according to the Keynesian macro-economic model of four sector. During a crisis, there is always a struggle faced by all countries to increase the GDP of their respective countries. As health plays a critical role in increasing global GDP, the government should focus on increasing expenditures on health during any crisis. This reduces the amount of income spent by consumers on health and provides them with security. Further, workers' efficiency increases at a great rate, as does their life expectancy. Higher efficiency is associated with higher output and thus higher growth.

There is considerable concern about the government's health spending—1.2 percent of GDP according to the 2020 data, but even higher estimates are low by worldwide standards—and the government's repeated inability to achieve what appear to be reasonably ambitious spending plans. The government's Twelfth Plan (2012-13 to 2016-17) aimed for a 1% increase in health spending for the plan period, but this goal was not fulfilled; as a result, important health indicators have not improved, and pressing health care requirements remain unmet.

Various constraints limit India's capacity to create the budgetary space required to expand public health spending. Slow progress on tax reform limits the ability to raise revenue, while the macroeconomic vulnerability associated with large fiscal deficits and high government debt suggests that more borrowing is unnecessary, and debt should likely be decreased. Spending prioritisation is also poor because budgeting lacks a strategic medium-term goal. Insofar as the government is unwilling to generate resources through disinvestment (privatisation), and the private sector is hesitant to become too active in areas dominated by the government, heavy government participation in the economy is a further limitation. Fiscal decentralisation, inadequate economic planning, political economy issues, and bureaucratic slowness are all added to the confusion.

Following the Keynesian Model, it is suggested that consumer demand should be increased continuously to recover the economy from any economic crisis. The consumer will increase demand only if his income is sufficient to purchase not only necessity but also luxury items. In addition to this, he must not be concerned about increasing his savings. To ensure stability in a consumer’s income, they need to work efficiently and regularly which is only possible if their health status is good. Thus, the key indicator of increasing consumer demand is the sound health of all citizens of the country. Everyone

is concerned about not only his own health but also his family as he will be mentally sound and able to put all his concentration into working.

This leads to one major policy suggestion: the key focus of the government on health expenditure and increasing their spending on health care crisis both during and after the pandemic. The government can also incentivise people and firms to invest more and more in health. If all sectors make health their priority, then the falling GDP of the country could be recovered.

The COVID-19 epidemic is putting pressure on all levels of government to respond in an environment of considerable uncertainty and economic, budgetary, and social pressure. With the appearance of variations and the commencement of new waves of infection in many countries since mid-2020, governments are faced with a limited ability to sequence policy action. To manage, escape, and recover from the crisis, national, regional, and municipal governments have discovered that they cannot rely on a straight or linear route of policy action. Governments must instead act in lockstep on all fronts at the same time. As a result of the requirement for flexibility and adaptation, governments are rethinking their multi-level governance systems and reevaluating their regional development priorities. It is recommended to ensure that vaccinations are available in a safe and equitable manner across regions within countries by establishing effective coordination mechanisms between national and subnational governments, such as the sharing of dose delivery predictions. This is especially crucial because, as vaccine delivery accelerates, all levels of government must prepare for a surge in supply and ensure that logistics and infrastructure are in place. To enable speedier and better geographical coverage, subnational governments should be included in immunisation efforts. It is critical to involve local actors who are more versed in the local population and infrastructure in order to successfully target individuals who need vaccines first (e.g. the elderly, people with pre-existing illnesses, and healthcare staff) and relieve the burden on the healthcare system.

COVID-19 has a strong direct impact on mortality and healthcare costs. For those who have suffered and recovered from this life-threatening ailment, the consequences of the physical disease may disappear in a couple of weeks. Unfortunately, long after the current crisis has passed, the ripple effects on physical and mental health will persist. Healthcare organisations and executives should consider taking steps now to better understand, quantify, and plan for these new layers of effects in order to better assist their members, patients, staff, and the communities they serve. Organizations should think about taking the following steps:

- Developing virtual health offers and capabilities that are more capable of caring for chronic patients than typical "tele-urgent" services.
- Improving virtual, remote, and home health capabilities for treating chronic or episodic diseases
- Developing a system for prioritizing high-risk individuals to facilitate care deemed safe and appropriate (often in collaboration with payers and providers)
- Promoting resilience in communities by providing risk-specific crisis counselling and expanding outreach initiatives to prevent behavioural health problems
- Using data and technology through predictive analytics to identify those who are most in need of prevention and clinical resources
- Improving the integration of behavioural and physical health services, including expanding behavioural health competency among primary care providers and expanding the use of peer counsellors, implementing universal screenings for mental and substance-use disorders, and initiating or accelerating efforts to reduce stigma.

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