

Study on Factors Affecting Country's Growth

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Abstract—The goal of this project is to create a basis of analysis that corroborates the relation between factors that affect a country's economy.

In the first stage of this report, we wish to demonstrate the synopsis of the problem statement, explain the data and its relation using an Exploratory data analysis[EDA]. The problem statement is explored from various angles using other existing papers and kaggle EDAs.

The plan moving further will be to perform a few more EDA/Visualization to further our understand of the dataset and clean to improve the model to be more forgiving and informative for a larger scope of analysis. This will help the model forecast with an even higher accuracy. We also plan to experiment with various models in order to select the most optimal one.

Index Terms—Prediction/Forecasting, Macroeconomies, Global Goals[UN's], Multiple Linear regression, Time-Series Analysis

I. INTRODUCTION

As the days go by we see more and more country increase their economic growth. The economic growth of the country is what defines the country's development rate in a global scale. But as the days go on and the way the goals are aligned to be a more stable economy or the global goal of being more sustainable focused than a higher economic power, the means to forecast the growth of the economy becomes more complicated.

Almost all of the country's problems can be analysed with the context of its economic growth. This economic growth has various factors that influence its trend; some obvious ones like: Gross-Domestic-Product[GDP] per Capita, Unemployment rate, Population Growth, Government Expenditure, etc; and some not so obvious ones like: Firms with female ownership, Lending interest rate, etc. Other than these conventional metrics for measuring growth we have:

- The Impact of Human Resources
- Investment of capital
- Availability of Natural Resources
- Improvement in Technology

For our project we will be estimating the GDP on-a-country-basis which will help us project or forecast where the countries GDP might be in the forecoming future. GDP measures the monetary value of final goods and services—that is, those that are bought by the final user—produced in a country in a given period of time (say a quarter or a year). It counts all

of the output generated within the borders of a country. GDP is composed of goods and services produced for sale in the market and also includes some nonmarket production, such as defense or education services provided by the government. An alternative concept, gross national product, or GNP, counts all the output of the residents of a country.

But nowadays since the global goals of UN for countries is to target a sustainable goal development it is necessary for newer alternatives that is subjected to more scrutiny for even the macro factors such as waste produced per capita gained to see if that portion of economic growth is sustainable or not. The goal of our project is to quantify GDP as a factor of growth and be able to estimate how the trends for the future of the economy would be. It focuses more on growth than sustainable development, but we will look into the factors that affect the "Sustainable Development Goals" too

II. LITERATURE REVIEW

A. How big of an impact does expenditure on health care have on GDP?

The study of this research paper attempt to identify an association of the life expectancy with healthcare expenditure and GDP in Bangladesh. The researchers of this study generate the analysis to look for an association of GDP with government funding towards health care sector and life expectancy. Their study details the total government spending, as a share of GDP, can be different according to the country's priorities which depends on capacity to pay and fiscal constraints of a financial year. Also, the fact that government funding towards healthcare sector is biased based on aspects like distribution of young-older population, urban-to-rural ratios, and burden of communicable and non-communicable diseases reflect the amount of needed money for the health system. However, life expectancy is also unequally distributed globally. For example, life expectancy is often better in the developed countries, as compared to that of the developing countries.

For the study, they collected total health expenditure and GDP for the year of 1996 to 2006 from "Bangladesh Health Bulletin 2011" and the life expectancy for the same period was taken from "Sample Vital Registration System 2010" respectively. To compare life expectancy with the total health expenditure, fiscal year has been considered. Total

health expenditure and GDP were expressed using both the Bangladeshi taka (BDT) and USD [Dollars].

Fiscal year	THE in BDT (Lakh)	THE in \$ (Million)	GDP in BDT (Lakh*)	GDP in \$ (Million)	Life expectancy (Year)
1996 - 1997	393	0.50	14571	18.68	58.9
1997 - 1998	426	0.55	15901	20.39	60.1
1998 - 1999	466	0.60	17209	22.06	61.5
1999 - 2000	506	0.65	18313	23.48	62.7
2000 - 2001	571	0.73	19499	25.00	63.6
2001 - 2002	624	0.80	20557	26.36	64.2
2002 - 2003	665	0.85	22298	28.59	64.9
2003 - 2004	742	0.95	24181	31.00	65.1
2004 - 2005	845	1.08	26747	34.29	65.2
2005 - 2006	988	1.27	29568	37.91	66.2
2006 - 2007	1118	1.43	32831	42.09	66.6

Table 1: Total health expenditure, GDP and Life expectancy from 1997 to 2007 in Bangladesh.
*1 Lakh taka= ~USD 1300. THE: Total Health expenditure; GDP: Gross Domestic Product.

Fig. 1. Total Health Expenditure

As seen in fig1, total health expenditure includes all of the payments like spending for doctor's consultation fees, medication, laboratory tests and hospital bills. Here the term life expectancy means an expectation of longevity i.e. expected years for a person to survive. They considered total health expenditure (THE) as dependent variable and independent variables are life expectancy and GDP. They performed the analysis using STATA version 13 SE (College Station, Texas, USA). Graphical presentation and descriptive statistics were performed to present the findings. Multivariate logistic regression was carried out to find the association of total health expenditure with life expectancy and fig1. total health expenditure, GDP and Life expectancy from 1997 to 2007 in Bangladesh. GDP. A conventional cut-off value of 0.05 was taken as statistical significance. From this study, they found a direct relationship of total health expenditure and life expectancy in bi-variable analysis.

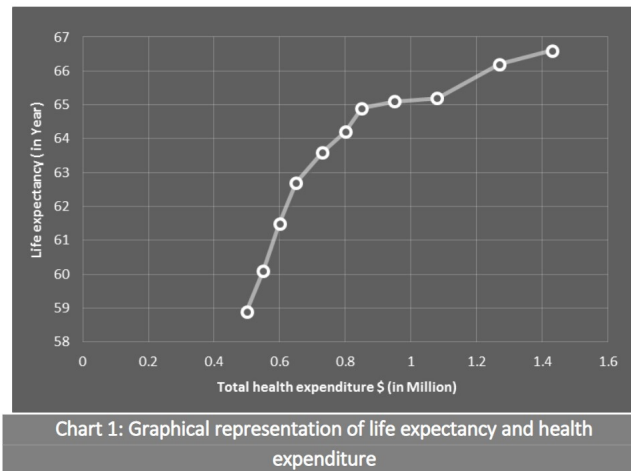


Fig. 2. Graphical representation of life expectancy and health expenditure

A priori was considered expecting that both the GDP and LE will have a positive impact on THE. Thus their proposed

$$THE = \beta_1 + \beta_2 GDP + \beta_3 LE + Se$$

Fig. 3. Formulae

econometric model is-

As in Fig.3, Beta1 is the intercept and Se is an error or residual value. This equation has considered Beta2 and Beta3 as the slope for the independent variable of GDP and LE, respectively. Hence, the results show that total health expenditure is more sensitive to gross domestic product rather than life expectancy of a country. Through further analysis of longitudinal data for different developing countries, the typical association of health expenditure to GDP can be established. *B. Q2*

III. DATASET

We have explored multiple dataset

IV. EXPLORATORY DATA ANALYSIS

V. ACKNOWLEDGEMENT

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