Analysing the Effect of Conflict on Nutrition Supply: Evidence from Conflict-affected South Asian Countries

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Abstract **- Ensuring food security depends on sufficient intake of nutrition. However, malnutrition is a very serious problem and on-going concern in conflict-affected five countries in South Asia. International Food Policy Research Institute (IFPRI) and other international organizations accepted that conflict is a unique reason for malnutrition in conflict-affected developing world. The key objective of present research is to examine the effect of conflict on nutrition supply in conflict-affected five countries in South Asia, namely, Bangladesh, India, Nepal, Pakistan and Sri Lanka from 1980 to 2014 by employing the PSS-ARDL bounds test approach to cointegration. Empirical findings of this study provide an evidence that conflict is a single most important reason among included variables for poor nutrition intake (calorie intake) in South Asia. This finding is more useful to the policy-makers and the government, to take efficient steps to minimize and prevent conflict in order to achieve economic development through enhancing human development.**

Keywords **-** Conflict, human development, malnutrition, PSS-ARDL bounds test, South Asia

1. Introduction

Poverty, hunger and malnutrition are the most significant common problem in developing world. Several international organizations, such as, the World Food Summit (1996), United Nation's Millennium Development Goals Report (2000) (hereinafter UNs-MDGR) (2000) and International Food Policy Research Institute (hereinafter IFPRI) (2000) took several effective efforts to eradicate hunger. One of the important efforts acquired by the world community to eradicate hunger, through food security. A country can attain food security when all the people in a country could be able to access sufficient, safe and nutritious food to meet their minimum level of calorie consumption and healthy life at all times [5]. It is obvious that food security depending on food availability, access and utilization. However, poverty (access), conflict (availability, access and utilization), the fertility rate (access), human capital (utilization) and inequality (access) are often causes of food insecurity in the developing world.

Since 1990, international community has used several indices to measure the level of hunger. Global Hunger Index (note 1) (hereinafter GHI) scores, is commonly employed to measure the level of hunger in the world wide. It is the component of undernourishment, child underweight and height, and child mortality. All these components are closely related to the food supply or nutrition intake. Hunger is mainly resulting from inadequate intake of food. It signifies deficiencies in energy, protein, essential vitamins and minerals. Although the world has made a remarkable progress in decreasing hunger, about 795 million people, roughly one in nine are still living chronically under-nourished in 2014-2016 [5]. Ref. [5] further highlights that, in 2013 young children suffering from chronic undernourishment, and wasting were nearly 161 million and 51 million respectively. In addition to that, every year approximately 3.1 million children died due to malnutrition, this is roughly half of the total child deaths. Out of 800 million hunger people in the world, nearly 70 percent are living in Asia (approximately 553 million). In that 336 million people are only from South Asia. Although, the GHI decreased 29.9 in

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2000 to 21.7 in 2015 in the developing world, the higher hunger level is still found in South Asia and Africa South of Sahara. These two regions have the highest score of the GHI with serious stage (note 2) in 2015 at 29.4 and 32.2 respectively [5]. Beside this, South Asian region is one of the poorest region in the world and experienced poor economic growth since independence. In addition, countries in this region not only experienced hundreds of armed-conflict, but also, these countries has given higher priority to militarization. Military expenditure in five countries in South Asia in 2014 has estimated US$ 65.6 billion and the cost of conflict has estimated US$ 437 billion [24].

Conflict effect food access and supply through destruction of entire livelihood system, human casualties and refugee status. According to the Ref. [5], conflict forced to displace approximately 60 million people from their living place. On average per day, 42,000 people forced to flee from their home and millions of people still has to trapped in the conflict-affected areas [5]. Ref. [5] further specifies that displaced people spend on average 17 years of their lifetime in a refugee camp. Conflict and hunger have ridden side-by-side and it can have ripple effects on human development. Calorie deficiency roots by food insecurity causes a negative effect on human capital and decline of individual productivity. Calorie deficits enforce health cost and economic cost in terms of lost human capital and reduced economic productivity. Empirical findings in the literature also indicated conflict causes hunger [18] and undernourishment [6].

Enhance standard of living through dropping poverty and eradicate hunger was one of the central targets of the UNs-MDG reporters set to achieve by 2015. Unfortunately, most of the developing countries, including South Asia, fail to achieve this target. Increasing debates to minimise global hunger, the international communities set another target which is the Sustainable Development Goal (hereinafter SDGs) to achieve by 2030. Food security has become one of the most fertile field of study as regards sustainable development and human development. Although conflict is a key factor to induce hunger through food security, little work has been done linking nutrition supply and conflict [27], [14] and [16]. In addition, existing literature are lacking with appropriate econometric method and underpinning theories. Yet the experience shows that conflict is a unique reason for undernourishment in conflict-affected five countries in South Asia, this area has not received sufficient attention in empirical research. Considering the literature gap and knowledge gap, this study aims to examine the consequences of conflict on calorie supply in conflict-affected five countries in South Asia using the ARDL cointegration methods and inter-temporal welfare function. Finding of this study will be very useful to enhance human development and implement the SDGs. The rest of the paper is organized as follows. Section 2 review the existing literature. Underpinning theory and econometric methods are discussed in Section 3. Section 4 presents and discusses the empirical findings and, Section 5 concludes.

2. Overview of Conflict and Hunger in South Asia

South Asia is a poorest region with vulnerable economic condition and large number of world hunger people. Despite the poverty, this region has experienced more than 400 conflict, including the civil war in Sri Lanka and Nepal, the regional war between India and Pakistan, religious extremist attacks and terrorist attacks in all countries. Ongoing conflict puts entire South Asian regions into precious condition with poor human development. Conflicts kill more than 200,000 people, displaced 2.9 million people internally and at least 2.2 million in refugee camps over the last few years and, millions of people still trapped in conflict-affected areas in South Asia [8]. Six out of 10 global hungers and eight out of 10 malnourished children live in South Asia. Bangladesh, India, Nepal and Pakistan are among 36 countries in the world which account for 90 percent of the global malnutrition burden (note 3). The GHI, used to measure a level of hunger is on the alarming stage with 22.2 in Nepal, 25.5 in Sri Lanka, 27.3 in Bangladesh, 29 in India and 33.9 in Pakistan. Out of 114 countries, GHI ranged in South Asia is lies between 58 (Nepal) and 93 (Pakistan).

Ultimately, conflicts left millions of people in need of emergency food assistance in this region. Although, donors are willing to supply, people who remained in conflict-affected area still faces the problem to access sufficient food to sustain healthy lives and they lose other sources of livelihood by delaying and struggling to deliver food supply and aids and, lose other sources of livelihood by break-down food production, trade and social fabric. Conflict enforced people live in precarious conditions and forced hunger through destruction and unusable of thousand of hectares of land in conflict-affected areas, increase the cost of food production, hold backs commercialization and stock management system, destruction of entire livelihood system, decrease productivity of labour by human casualties and recruitment to the military activities. This will eventually lead the government to import food and pulling out investment from the country. Moreover, conflict disrupts the education system, particularly, female education, which has been identified as a key tool to protect children from mulnutrition. Even after the war ended, land-

mines planted during the time of war continue to challenge human life, food production and economic development. Conflict leads to hunger by the way of interrupting the agricultural cycle, diver farmers fro their land, interrupt trade mechanisms, destroys food stores, provokes food shortages which push up prices. Dramatic increases in food price can be a destabilizing factor and root causes of crises. Besides, conflicts, the subcontinent have placed greater priority on the military sector rather than on the economic and human development sectors [13]. Increasing military expenditure inevitably pull investment away from sustainable development.

2. Literature Review

Conflict is a single most important reason for hunger in the developing world, however, little empirical work has been undertaken in this area. Some empirical evidence suggested that conflict is the key factor to cause malnutrition of children in conflict affected area. Ref. [1] employed panel data model to examine the effect of war and drought on malnutrition in Zimbabwe. The authors measured malnutrition through the height of the children and found war and drought induces malnutrition of children. Ref. [15] examine the effect of military famine on child hunger over the period from 1990 to 2000 in cross countries using a panel data method. They measured child hunger by the percentage of children under weight. They found, militarization, armed conflict and gender stratification causes to child hunger. On the other hand, war settlement, increasing political rights and improving gender equality decrease child hunger.

Relatively very little empirical work is available to study the consequences of conflict on food supply. The research study by Ref. [26] provided an overview of the impact of conflict on food security from 1990 to 2001. The author observed that GDP per capita, agricultural production, food production, and food consumption in terms of calories decreases during the conflict period in the world. This finding was supported by Ref. [14], who performed a quantitative analysis of the effect of conflict on food security for 73 developing countries over the period 1970 to 2002 by using panel data. He proxies daily per capita calorie supply for food security. He grouped the countries in East Asia, Near East and North Africa, Latin America and Caribbean, South Asia and Sub Saharan Africa. The civil war variable is peroxide by battle death per thousand members of a warring population. The author found civil war and conflict negatively impact to determine per capita calorie supply. Moreover, other independent variables, such as, per capita GDP, population growth rate, food aid and fertilizer usage were positively determine calorie supply. Another study by Ref. [16] found negative effect of conflict and military expenditure on food deprivation in the developed and developing countries using the correlation method. Moreover, they found, per capita GDP, modernization and global dependency decrease food deprivation. Generally, all the existing studies conclude conflict causes harmful effects on nutrition level of children and adult in conflict-affected areas. However, existing studies fail to employ supporting theories and appropriate econometric tools to examine short-run and long-run effect of conflict.

3. Methodology

3.1 Theoretical Model

Existing literature on the consequences of conflict on human development lacks the use of underpinning theories. This study employs the Inter-temporal welfare function employed by [22], [25] to examine the military cost of social welfare. The following inter-temporal welfare function (note 4) assumes that people in a country maximize their inter-temporal welfare [shown in "Eq. (1)] for a given amount of government budget [shown in "Eq. (2)"] on civilian goods (nutrition supply (C_t)), military goods (M_t), and domestic products (Q_t).

$$H(Y_t, C_t, M_t, \mu) = e^{-\lambda t} U(C_t, Q_t, M_t) + \mu\left(\alpha + \frac{C_t}{K_t} + \frac{M_t}{K_t}\right) Q_t \quad (1)$$

"Eq. (2)" is obtained after several mathematical operations, which explains the partial impact of military goods on nutrition supply.

$$\frac{\partial C_t}{\partial M_t} = \frac{(\alpha - \lambda) u_{13} + u_1 / K_t + u_{13} M_t / K_t}{u_{11}(\lambda - \alpha) - u_1 / K_t - u_{11} C / K_t} \quad (2)$$

3.2 ARDL Bounds Test Approach to Cointegration

In order to examine the existence of cointegration among variables of interest, the present study employs the ARDL bounds test approach, proposed by Ref. [21] (hereinafter PSS), which has several merits compared to other available approaches in the literature. Before estimating equilibrium relationship, it is necessary to select the optimal lag length using any standard lag length criteria or selection of an optimal model [20]. "Eq. (3)" is structured to determine the existence of cointegration between conflict and nutrition supply and other control variables.

$$\Delta \log(CSpc_t) = \varphi_0 + \phi_1 t + \sum_{i=1}^{p1} \varphi_{1i} \Delta \log(CSpc_{t-1}) + \sum_{i=0}^{p2} \varphi_{2i} \Delta \log(AGpc_{t-1}) + \sum_{i=0}^{p3} \varphi_{3i} \Delta \log(GNIpc_{t-1}) + \sum_{i=0}^{p4} \varphi_{4i} \log(HCEpc_{t-1}) + \quad (3)$$

$$\sum_{i=0}^{p5} \varphi_{5i} \log(MEpwp_{t-1}) + \gamma_1 \log(CSpc_{t-1}) + \gamma_2 \log(AGpc_{t-1}) + \gamma_3 \log(GNIpc_{t-1}) + \gamma_4 \log(HCEpc_{t-1}) + \gamma_5 \log(MEpwp_{t-1}) + u_{1t}$$

The decision of cointegration is taken by testing the null hypothesis of no-cointegration ($H_o : \gamma_1 = \gamma_2 = \gamma_3 = \gamma_4 = \gamma_5 = 0$) from the "Eq. (3)" by using non-standard 'F' statistics and Ref. [21]'s critical value table for the bound test. If the null hypothesis of no cointegration in bounds test is rejected, it means there exists a long run relationship among variables and the cointegration model can be estimated using ARDL and short-run relationship using an error correction model (ECM), as presented in "Eq. (4)".

$$\Delta \log(CSpc_t) = \varphi_0 + \phi_1 t + \sum_{i=1}^{p1} \varphi_{1i} \Delta \log(CSpc_{t-1}) + \sum_{i=0}^{p2} \varphi_{2i} \Delta \log(AGpc_{t-1}) + \sum_{i=0}^{p3} \varphi_{3i} \Delta \log(GNIpc_{t-1}) + \sum_{i=0}^{p4} \varphi_{4i} \log(HCEpc_{t-1}) + \quad (4)$$

$$\sum_{i=0}^{p5} \varphi_{5i} \log(MEpwp_{t-1}) + \lambda ECT_{t-1} + \varepsilon_t$$

where, φ_{ij} and γ_{ij} are short-run and long-run coefficients. $CSpc$ is the per capita calorie supply which is used as a proxy for nutrition supply (the dependent variable). Conflict-effect is the main explanatory variable for determining the nutrition supply in the present study and its sign is expected to be negative. It is measured by military expenditure per warring population ($MEpwp$). Warring population proxies by arm personnels in a country [14]. Ref. [7] measured war-effect variable from the combination of military expenditure and armed personnels. We hypothesize that conflict-effect variable may negatively affect nutrition supply in both periods. Ref. [15] found significant negative effects of military expenditure and conflict on child hunger. In the same line of argument, Ref. [14] found a significant negative effect of military personals on per capita calorie supply.

Other control variables, such as, $GNIpc$ is the per capita gross national income used to measure the standard of living of people and the sign of its coefficient is expected to be positive. An empirical study by Ref. [14] found positive effects of per capita GDP on per capita calorie supply and Ref. [15] found positive effects of per capita GNI on child hunger. $HCEpc$ is the human capital investment used as a proxy for health and education expenditure. Human capital investment is expected to increase the nutrition supply. Ref. [12] found that human capital expenditure has improved health achievements. Food price is one of the key factors to determine per capita calorie supply. However, due to unavailability of food price data for all countries, consumer price index (CPI) is taken as a proxy and its sign is expected to be negative [2]. Similarly, food production is a main determinant of nutrition supply. Per capita agricultural output is taken as a proxy for food production. Ref. [14] found positive effects of agricultural output on per capita calorie supply.

3.3 Data

The data for the variable per capita calorie supply is taken from Ref. [28]. Whereas, the data for military expenditure and military participation from 1988 to 2014 is taken from Ref. [24]. RCSS policy study 10 ([23]-[3]) has used to collect other years. Due to unavailability of food price data for all South Asian countries, this study uses CPI as a proxy for food prices as it is an important determinant of per capita calorie supply. CPI data from 1980 to 2014 for all South Asian countries has collected from IFS and IMF. Other data used in this study, including per capita Gross National Income (GNI) and agricultural output from 1980 to 2014; and education and health expenditures from 1995 to 2013, for all five countries are collected from Ref. [31]. For other years, various country level statistical reports have been used. In Bangladesh, data is extrapolated (note 5) from 1980-1987 using appropriate univariate time series method. Due to the unavailability of data before 1980 for military, education and health expenditures, this study used annual time-series data from 1980 to 2014.

4. Empirical Findings and Discussion

This section focuses on the discussion of the empirical results taken from the ARDL bounds test. The empirical findings of present research highlight a number of interesting and important results. Considering the nature of conflict, size of military expenditure and democratic character, a separate model estimates for all five countries.

4.1 Pre-requests of ARDL bounds test

This study employs DF-GLS and Ng-Perron tests for testing the presence of unit root in time-series variables. The results of unit root test confirm that none of the variables are stationary at second difference i.e. $I(2)$; thus, allowing to use the ARDL cointegration approach. Determining optimal lag-length leads to meaningful cointegration results.

Selecting an optimal lag-length is an important prerequisite in ARDL approach, but it does not require symmetry of lag-lengths of various variables used. The optimal ARDL model for $ARDL(p_1, p_2, p_3, p_4, p_5)$ is selected based on AIC and SBC statistics. A summary of selected ARDL models for all countries are presented in Table 1.

A key assumption of ARDL bounds test approach is that the errors in the "Eq. (3)" must be serially independent. The results of Breusch-Godfrey serial correlation LM test is reported in Table 1 which indicate that $'p'$ values for both models are greater than 0.05. This result indicates that the null hypothesis of no serial correlation is accepted and concludes that the estimated models are free from serial correlation. The ARDL model has the ability to detect heteroskedasticity since it allows different lag order. Nevertheless, a robust ARDL model using a White test that rectifies the problem of heteroskedasticity is applied to estimate the long-run and short-run estimates.

Table 1: *Selected ARDL models based on SB Statistics*

Country	Optimal Lag	*Decision of Cointegration*		*LM test for Serial Correlation*	
		$'F'$ Stat.	Conclusion	$'F'$ Stat.	$'p'$ Value
Bangladesh	ARDL(1,3,1,2,0,1)	7.991	exist at 1%	1.714	0.209
India	ARDL(1,0,3,2,1,0)	5.601	exist at 1%	0.957	0.438
Nepal	ARDL(1,3,2,3,3,2)	4.052	exist at 5%	0.362	0.782
Pakistan	ARDL(1,0,1,3,3,2)	4.502	exist at 1%	2.898	0.075
Sri Lanka	ARDL(1,0,0,0,2,2)	3.638	exist at 10%	2.275	0.113

Before proceeding to estimate the long run and short run estimates, it is imperative to confirm the existence of the long run relationship among variables of interest. The conclusion of cointegration is derived from Pesaran *et al*'s (2001) critical value table for the respective independent variables ($k = 5$) and number of observations ($n = 34$). The result of estimated $'F'$ statistics for "Eq. (3)" is presented in Tables 1 which indicates that the estimated values for all models exceed the upper bound critical value at a respective significance level. Therefore, the null-hypothesis of no-cointegration is rejected.

4.2 Long-run and Short-run Cointegration Results

The negative and statistically significant error correction coefficient (ECC) stated in Table 2 for all five countries indicates that the models move towards equilibrium. Moreover, the absolute value of the coefficient of the error correction term is less than one. This implies that system is not explosive and it leads towards equilibrium in the long run of the corresponding model. Long-run and the short-run ARDL conitegration estimates are presented in Table 2 which indicates that most of the variables have an expected sign in the long-run and short-run for all five selected countries. In addition, estimated coefficients illustrate elasticity of independent variables. Although, the sign of the coefficient of conflict-affect variable, generally, has an expected negative sign, it is negative and statistically significant in the short-run in Nepal, Pakistan and Sri Lanka and, in the long-run in India and Nepal. However, the effect is marginal on per capita calorie supply. For instance, a percent increase of conflict-effect variable decreases per capita calorie supply by mostly less than two percent. However, in some countries like Bangladesh, Pakistan and Sri Lanka, in the long-run, coefficient of the conflict-effect variable does not have an expected sign. Our empirical findings of negative effect of conflict on per capita calorie supply are in line with the earlier findings of [15]-[14].

Table 2. Long-run and Short-run Coefficient for the ARDL cointegration model

	Bangladesh ARDL(1,3,1,2,0,1)		India ARDL(1,0,3,2,1,0)		Nepal ARDL(1,3,2,3,3,2)		Pakistan ARDL(1,0,1,1,0)		Sri Lanka ARDL(1,0,0,0,0)	
Variable	Coef.	't' Value	Coef.	't' Value	Coef.	't' Value	Coef.	't' Value	Coef.t	't' Value
Long – Run Estimated Results										
$Log(MEpwp)$	0.060	3,003*	-0.075	-2.737**	-0.114	-2.382**	0.431	2.518**	0.064	3.562*
$Log(HCEpc)$	-0.005	-0.186	-0.070	-1.129	-0.735	-3.867*	-0.212	-1.861	-0.045	-1.300
$Log(GNIpc)$	-0.201	-3.044*	0.474	2.127**	0.043	0.168	-0.174	-2.745**	0.082	2.904*
$Log(AGpc)$	0.136	3,325*	-0.423	-1.984***	0.531	3.220*	0.107	1.594	-0.091	-2.279**
$Log(CPI)$	-0.543	-10.263*	0.541	3.342*	0.219	1.328	-0.001	-0.013	0.005	0.238
c	-	-	-	-	-	-	6.105	10.996*	-	-
t	0.046	9.416*	-0.052	-3.036*	0.030	1.583	-	-	-	-

Short –Run Estimated Results										
$\Delta Log(MEpwp)$	-0.009	-1.481	0.044	1.768	-0.083	-2.404**	-0.092	-2.872**	-0.013	-1.068
$\Delta Log(MEpwp)(-1)$	-	-	-	-	0.102	2.829**	-0.174	-5.020*	-0.029	2.430**
$\Delta Log(HCEpc)$	0.005	0.293	0.135	3.186*	-0.233	-4.068*	-0.128	-6.071*	0.019	0.637
$\Delta Log(HCEpc)(-1)$	-	-	-	-	0.408	5.063*	0.056	2.802**	0.076	2.751**
$\Delta Log(HCEpc)(-2)$	-	-	-	-	0.218	3.708*	0.041	2.323**	-	-
$\Delta Log(GNIpc)$	0.004	4.852*	0.143	3.487*	-0.059	-0.671	0.008	0.374	0.061	1.273
$\Delta Log(GNIpc)(-1)$	0.082	0.151	-0.283	-3.970*	-0.289	-3.616*	0.026	1.188	-	-
$\Delta Log(GNIpc)(-2)$	-	-	-	-	-0.217	-2.413**	0.066	3.367*	-	-
$\Delta Log(AGpc)$	0.080	4.852*	-0.023	-0.809	0.117	2.852**	0.074	4.696*	-0.086	-1.779
$\Delta Log(AGpc)(-1)$	-	-	0.311	4.685*	-0.229	-3.387*	-	-	-	-
$\Delta Log(AGpc)(-2)$	-	-	0.111	3.411*	-	-	-	-	-	-
$\Delta Log(CPI)$	-0.321	-5.830*	0.385	5.337*	-0.397	-3.039*	-0.001	-0.039	-0.015	-0.241
$\Delta Log(CPI)(-1)$	0.151	2.369**	-	-	0.044	0.361	-	-	-	-
$\Delta Log(CPI)(-1)$	0.194	3.557*	-	-	0.459	3.895*	-	-	-	-
c	7.915	8.304*	4.779	8.573*	11.127	6.614	-	-	6.836	5.595*
ECT_{t-1}	-0.873	-8.279*	-0.845	-8.632*	-0.998	-6.621*	-0.407	-6.306*	-0.901	-5.593*

Human capital expenditure is one of the main determinants nutrition supply and is expected to improve the per capita calorie supply. The results presented in Table 2 provide expected positive sign with statistically significant results only in the short-run for all countries. While in the long-run, coefficient of human capital expenditure is negative, which is statistically insignificant at 5 percent level of significance. The indirect effect of conflict might be the reason for negative and insignificant results of human capital expenditure in the long-run. Per capita GNI is used to measure standard of living and it is one of the important variable to determine nutrition supply. It has an expected positive sign and statistically significant in the long-run in India and Sri Lanka and in the short-run in all countries except Nepal. Similarly, per capita agriculture output is another important factor that determines the nutrition supply. It has expected positive sign with statistically significant results for all countries except Sri Lanka. The CPI is used as a proxy for food prices and its sign is expected to be negative in determining the nutrition supply. Although, the coefficient is negative, it is statistically significant for Bangladesh both in the long run and short run and for India in the short-run only. In South Asia, millions of vulnerable people are living less than one dollar a day and they spend major part of their income on food. Subsequently, insufficient investment on food production and human development, poor earning opportunities and increase in food price may have a huge impact on the survival of individuals.

5. Policy Recommendations and Conclusion

This study examines the impact of conflict on nutrition supply in Bangladesh, India, Nepal, Pakistan and Sri Lanka from 1980 to 2014. Applying the ARDL bounds test approach and the inter-temporal welfare function, this study found that conflict is the main reasons for malnutrition in South Asia. This finding indicates that ensuring food security, breaking the cycle of hunger and the prevention of malnutrition in South Asia mainly depends on the prevention of conflict. This finding of present research can be used by the government, the policy-makers, civil societies and even the general public as a guide to take effective measures to minimize and prevent conflict, which, in turn, leads to reduce the malnutrition and enhance human development.

Note:

Note 1: IFPRI calculates GHI to measure level of hunger. It is measured based on four components, such as, Undernourishment (share of population with insufficient calorie intake) , Child Wasting (proportion children under five with low weight for their height), Child Stunting (proportion children under five with low height for their age) and Child Mortality. GHI ranged between zero (no hunger) to 100 (the worse).

Note 2: GHI score between 20 to 34.5 is considered serious stage

Note 3: http://web.worldbank.org/wbsite/external/countries/southasiaext/0,,contentMDK:22826499~pagePK: 46736~piPK: 146830~theSitePK:223547

Note 4: Assuming marginal utilities (u_i) and partial derivatives (u_{ij}) are positive; and second derivatives (u_{ii}) are negative

Note 5: Univeraiate time series methods have been used

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