

## **Undernourishment in Developing Nations in Asia: Investigating the Macroeconomic Links**

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### **Introduction**

Food security is defined as ‘a situation that exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life’ (FAO, 2002). The major dimensions of food security include, food availability, accessibility and utilization, and lack of which, individually or collectively, could lead to a ‘food insecure’ society. The specific objective of this study was to examine empirically the relationship between a set of key macroeconomic indicators on prevalence of undernourishment in the Asian region – the most populous region in the world and possesses the highest undernourished population, and about two-thirds of the world’s hungry live in Asia.

### **Methodology**

All countries, except Bhutan in the South Asian region, including: Sri Lanka (LKA), Afghanistan (AFG), Bangladesh (BAN), India (IND), Maldives (MDV), Nepal (NPL) and Pakistan (PAK) and nine other developing nations in Asia, including: Cambodia (KHM), China (CHN), Indonesia (IDN), Malaysia (MYS), Mongolia (MNG), Philippines (PHL), Thailand (THA), Republic of Korea (KOR), and Vietnam (VNM) were selected for the analysis. The ‘Time Series Data’ available in ‘Online Databases’ administered by the FAO, the World Bank and the Asian Development Bank were used covering the period

of 1990 to 2012. A Panel Regression was carried out in Stata (*version 12*) statistical package, according to the following framework under two techniques, including the: (a) Fixed Effects model, and (b) Random Effects model. Subsequently, Hausman test was utilized to decide between fixed or random effects.

$$PUNP_{it} = \alpha_i + \beta_1 ADESA_{it} + \beta_2 AGPR_{it} + \beta_3 AGDP_{it} + \beta_4 UNEMP_{it} + \beta_5 PCGDP_{it} + \beta_6 PAIWS_{it} + \beta_7 PASF_{it} + \beta_8 ICL_{it} + \beta_9 PCFSV_{it} + U_{it}$$

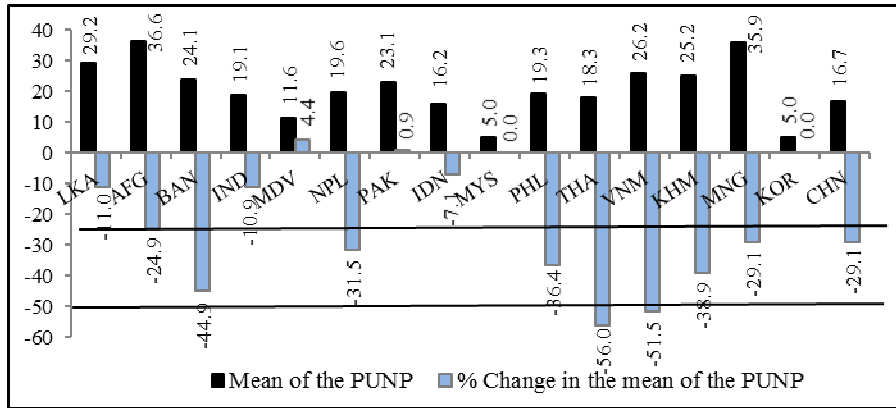
where, PUNP – percentage of undernourished population; ADESA – average dietary energy supply adequacy; AGPR – overall productivity of the agricultural sector; AGDP – contribution of agriculture sector to Gross Domestic Product; UNEMP – rate of unemployment; PCGDP – per capita Gross Domestic Product; PAIWS – percentage of population with access to improved water sources; PASF – percentage of population with access to sanitation facilities; ICL – incidence of caloric losses at retail distribution level, and PCFSV – per capita food supply variability in  $i^{th}$  country for the  $t^{th}$  time period.

## Results and Discussion

### *Descriptive Statistics on Undernourished Populations*

As shown in Figure 1, the highest and lowest Mean of PUNP were reported in Afghanistan (36.6 percent in Bangladesh, Nepal, Philippines, Cambodia, and Mongolia) and Malaysia and Republic of Korea (5.0), respectively. With regard to the percentage change of PUNP between Phase I and II, it was “negative” for all countries, except in Maldives and Pakistan. In fact, this change was greater than China, and was as high as 50 percent in Thailand and Vietnam (i.e. -56.0 and -51.5, respectively).

**Figure 1. Mean and Percentage Change of Mean of the PUNP**



Source: Author’s calculations

**Outcome of Panel Regression Analysis**

Outcome of the Hausman test endorsed that the Fixed Effects model is more appropriate to interpret results (Table 1).

**Table 1. Results of the Panel Regression analysis**

Variables	Fixed Effects	Random Effects	Results from Hausman Test
	Model	Model	
	Coefficients	Coefficients	
	(b)	(B)	b-B (Difference)
ADESA	-4.268**	-4.292**	0.024
AGPR	0.045	0.113	-0.068
AGDP	-0.129**	-0.118**	-0.011
UNEMP	0.013	0.016	-0.003
PCGDP	-0.061**	-0.072**	0.011
PAIWS	0.117	0.141	-0.024
PASF	-0.196**	-0.206**	0.010
ICL	0.264	0.315*	-0.051
PCFSV	0.006	0.002	0.004
Constant	10.175**	10.092**	
Overall R <sup>2</sup>	0.8772	0.8824	
p - value	0.0000	0.0000	0.0206

Notes: \*\* Significant at 1%, \* Significant at 5%

The variables ADESA, AGDP, PCGDP and PASF were statistically significant at 1%, while highlighting the key role they play in relation to the status of undernourishment in selected developing nations in

Asia. The percentage of undernourished population in Asia will have a decline of 4.27, 0.13, 0.06 and 0.2, with respect to a 1 percent increase of Average dietary energy supply adequacy, Contribution of agriculture sector to GDP, per capita GDP, and Percentage of population with access to sanitation facilities, respectively. Hence, the results convince that, a notable decrease in undernourishment would be foreseen, if nations could secure inhabitants with adequate supply of food, while eliminating or minimizing inefficiencies occurred in distribution channels.

### **Conclusions and Policy Implications**

This study highlights that several macroeconomic indicators, including those that stand for dietary energy supply, per capita income, relative contribution of agriculture sector to the economy, and provision of satisfactory sanitary facilities can make a favorable chance with respect to reduction of the state of undernourishment in developing nations in Asia. This implies that appropriate revisions to the existing food, health and agricultural systems in developing countries characterized by incentive-based government interventions (e.g. agricultural production and trade facilitation, establishment of proper food distribution channels) targeting undernourished population in Asia would generate direct economic benefits.

### **References**

Food and Agriculture Organization 2002, *The State of Food Insecurity in the World 2001*.,Rome.