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Bangladesh's Growth Trajectories: Is the Country Approaching to Lewis Turning Point in its Economic Development?

Presentation by
Muntaseer Kamal

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Research Team

Subir Bairagi, PhD

Research Fellow

Centre for Policy Dialogue (CPD)

&

Muntaseer Kamal

Research Associate

Centre for Policy Dialogue (CPD)



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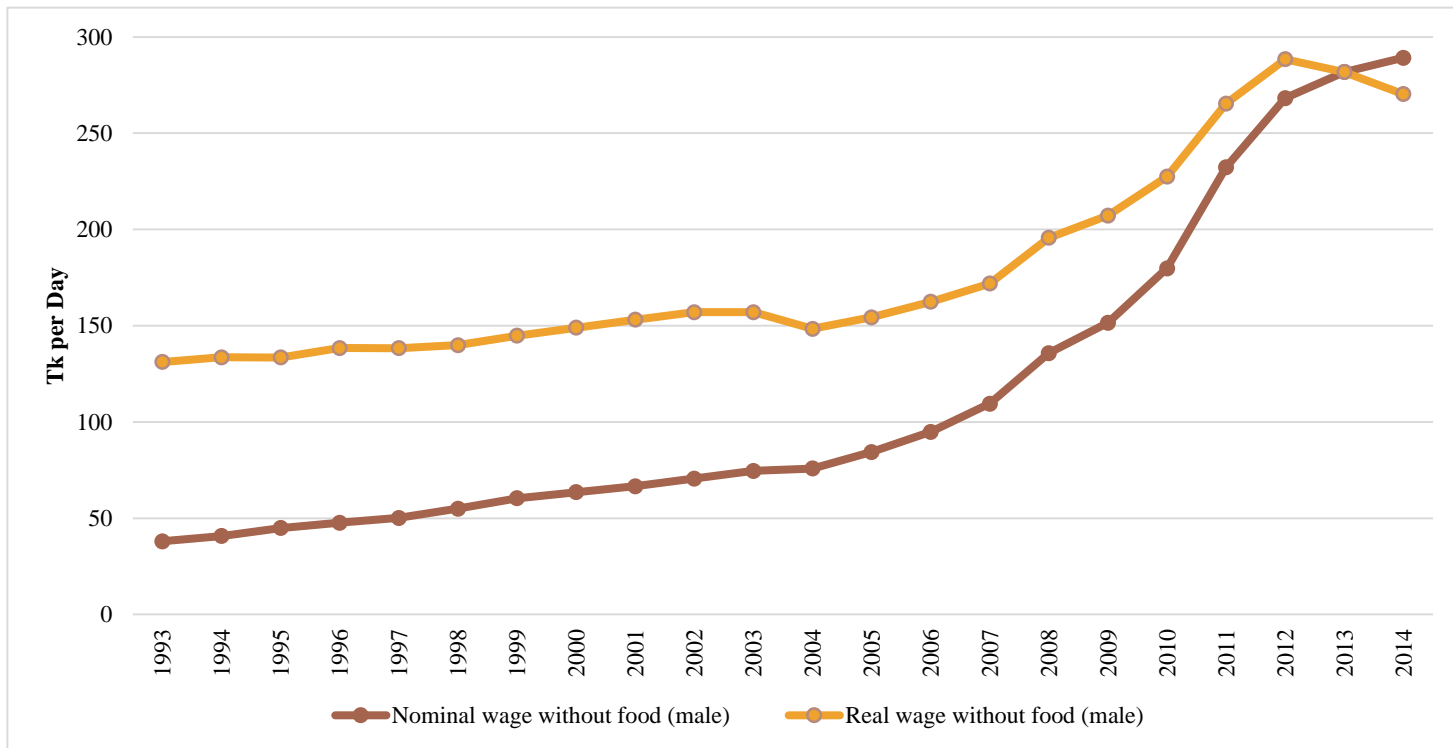
Presentation Outline

- ❑ Introduction
- ❑ Literature Review
- ❑ Objectives
- ❑ Methodology and Data
- ❑ Results and Discussions
- ❑ Conclusions



Introduction

Figure 1. Agriculture wage in Bangladesh



- ❑ Agricultural real wages have been increasing remarkably during the past several years in Bangladesh.

Introduction

Potential catalysts of increasing real wages are:

- ❑ Ample job opportunities in the non-farm sector (Zhang *et al.* 2013),
- ❑ Higher non-farm wage rate than in the farm sector, and
- ❑ Shortage of labour in rural areas (Wiggins and Keats, 2014, and Arfanuzzaman 2014).

The fact of significant growth in agricultural wages has drawn the attention of researchers towards the question of whether Bangladesh is approaching to or has already reached the Lewis turning point (LTP) in its economic development

Literature Review

- ❑ Considering 1986-2002 period, Ranis (2012) observed that the “turning point” was yet to be reached in case of Bangladesh.
- ❑ Zhang *et al.* (2013) reported that the LTP has arrived in Bangladesh, using data for 1995-2010 period.
- ❑ Islam (2015) reported even though industries other than readymade garments have also registered impressive growth in recent years, “they do not add up to what is required for reaching the LTP in the near future”

Literature Review

- ❑ Bangladesh's neighbouring countries that are expected to reach LTP (Nomoto 2012)

Countries	LTP in year
Vietnam	2020
Indonesia	2020
Philippines	2040
India	2040

The above discussions corroborate the notion that Bangladesh's LTP may yet be a number of years from now.

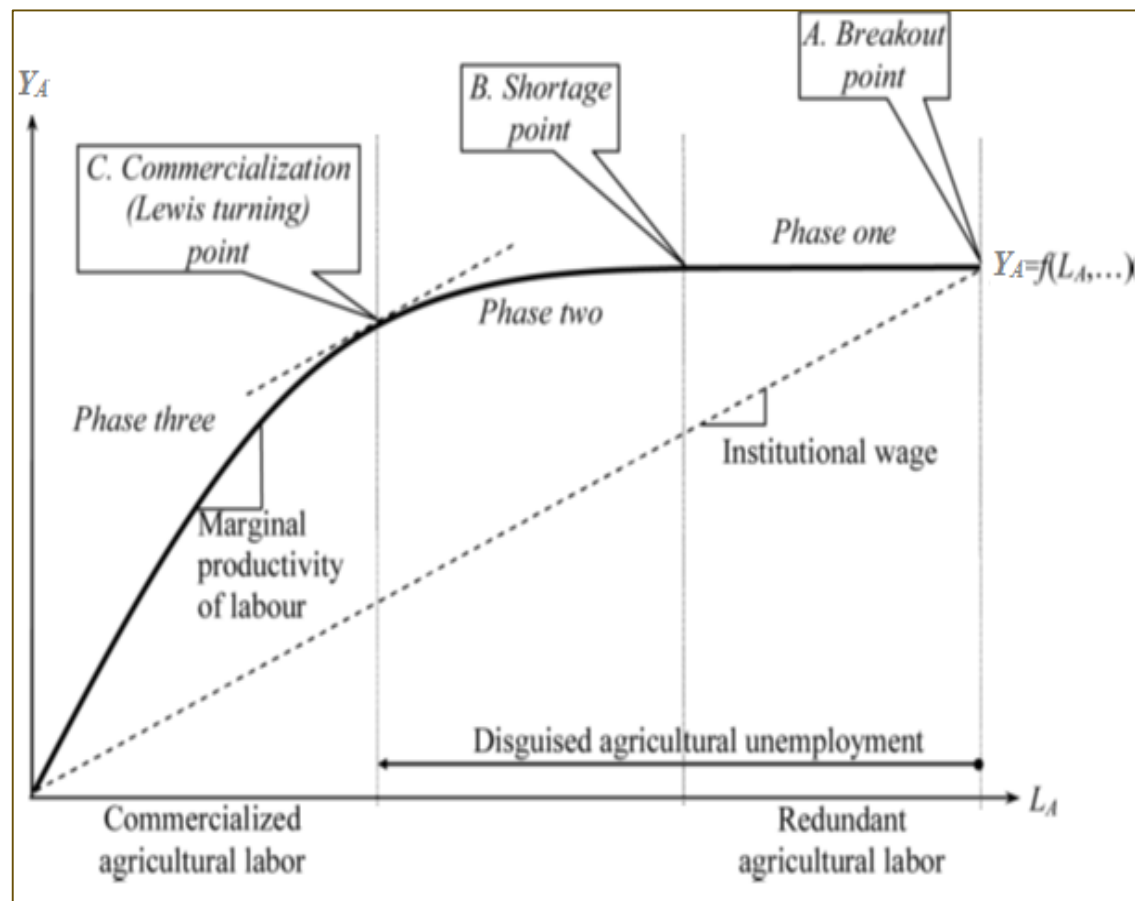
Objectives

1. To test the hypothesis of whether Bangladesh is approaching or has reached the Lewis Turning Point (LTP) in its economic development, in a setting of the Lewis-Ranis-Fei economic framework.
2. To identify the sources of sectoral growth, and estimate the contribution of labour that migrated from agriculture sector.



Methodology: Theoretical Model

Figure 2. Stages of economic development in a setting of Lewis-Ranis-Fei model



Methodology: Empirical Model

Estimation of production function

Two specifications of Cobb-Douglas production functions for the agriculture, A, and the non-agriculture, NA, sectors can be expressed as below:

$$Y_A = f(L_A, K_A, H_A, T_A) = \alpha_0 e^{f_A(T)} L_A^{\alpha_L} H_A^{\alpha_H} K_A^{\alpha_K} \quad , \text{ and}$$
$$Y_{NA} = g(L_{NA}, K_{NA}, H_{NA}, T_{NA}) = \beta_0 e^{f_{NA}(T)} L_{NA}^{\beta_L} K_{NA}^{\beta_K} \quad ,$$

where, Y is the output, L, K, and H are the traditional inputs: labor, capital, and land, respectively; T denotes the technological progress that is assumed to be Hicks neutral.

Decomposition of sectoral growth

Differentiating log-linearised forms of above equations with respect to time, we have:

$$g_{Y_A} = \frac{\partial f_A(T)}{\partial t} + \hat{\alpha}_L g_{L_A} + \hat{\alpha}_H g_{H_A} + \hat{\alpha}_K g_{K_A} \quad , \text{ and}$$
$$g_{Y_{NA}} = \frac{\partial f_{NA}(T)}{\partial t} + \hat{\beta}_L g_{L_{NA}} + \hat{\beta}_K g_{K_{NA}} \quad .$$

The instantaneous percentage growth rate formula is used to estimate growth rates.

Methodology: Labour Reallocation Effect (LRE)

The contribution of migrated agricultural labor to the economic growth is estimated, employing the World Bank's (1996) *LRE* approach, which is expressed as:

$$\text{LRE}_{WB} = \frac{L}{Y} (MPL_{NA} - MPL_A) l_{NA} g_{l_{NA}}$$

Where, l_{NA} is the share of non-agriculture labor to the total labor force, and $g_{l_{NA}}$ its growth rate; MPL is marginal productivity of labor, estimated from production functions

If $MPL_{NA} > MPL_A$, then there is a positive net effect on growth due to a reallocation of labour migrating from agriculture. The effect size would depend on how large the l_{NA} is and how much more productive the non-agriculture sector is.

Methodology: Lewis Turning Point

Mathematically, the LTP of economic development, defined in Figure 2, can be expressed as this following condition:

$$MPL_A = W_A$$

where, W_A can be the real agricultural wage rate or institutional wage rate that is defined as the average productivity of labor.



Data: 1975-2013

Sector	Variables	Definition
Agriculture	Output	Agricultural GDP (in million Tk.)
	Labour	Employment (in '000 persons)
	Capital	Agricultural machinery and equipment (in million Tk.)
	Land	Agricultural arable land and cropland (in '000 ha)
	Fertiliser	Consumption of different types of fertilisers ('000 metric tons)
	Irrigated area	Ration of irrigated land to total cultivated land
	Time	Index of year
	D1	Dummy for privatisation and liberalisation, years 1987-2013 equal 1, otherwise zero.
	D2	Dummy for price increase regime, years 2007-2011 equal 1, otherwise zero.
Non-agriculture	Output	Non-agricultural GDP (in million Tk.)
	Labour	Employment (in '000 persons)
	Capital	Agricultural capital is subtracted from total gross fixed capital formation
	D1 and D2	Defined above

Notes: Fertiliser input, gathered from IFPRI, MoA, and BBS, will be added to agriculture production function in future. Data on output, labour, non-agricultural capital (gross fixed capital formation) are gathered from The Asian Productivity Organization (APO); and agricultural capital (machinery and equipment are considered) and arable land data from FAOSTAT. All data are deflated in 2013 prices. GDP stands gross domestic product, ha for hectare.

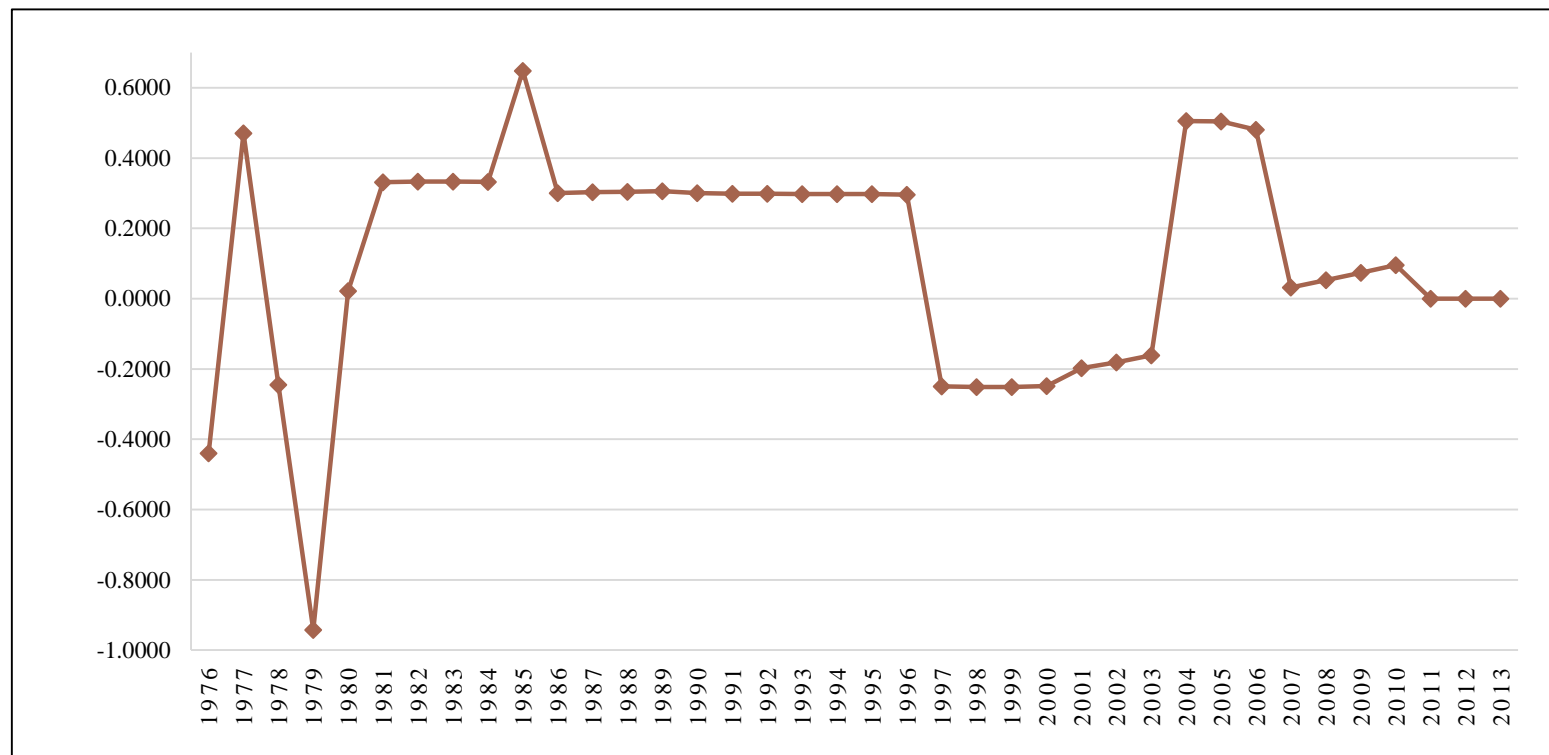
Results and Discussions : Growth Decomposition

	Parameter estimates	Instantaneous annual growth rate	Product parameter growth	of Contribution and to sectoral growth (%)
Agricultural sector				
Labour	0.101	3.77	0.383	44.18
Capital	0.003	5.55	0.015	1.77
Land	0.196	2.31	0.452	52.20
Time	0.016		0.016	1.85
Total	0.316		0.866	100.00
Non-agricultural sector				
Labour	0.447	3.91	1.747	42.36
Capital	0.255	9.25	2.358	57.19
Time	0.019		0.019	0.45
Total	0.702		4.124	100.00

Parameters in column 1 is estimated a Cobb-Douglas production function employing a Bayesian technique

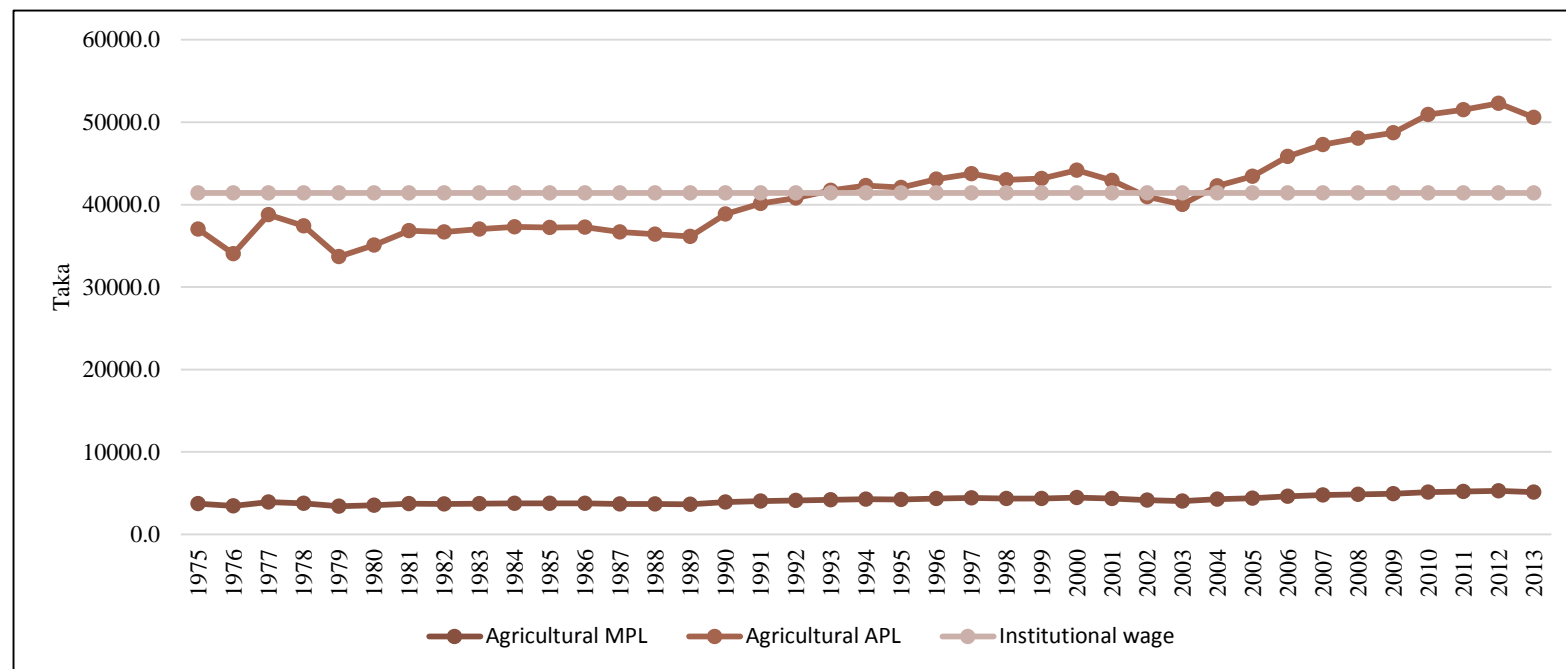
- Contribution of the non-agricultural sector to the economic growth was about 4.7 times that of agricultural sector, which suggests that the economic growth in Bangladesh is driven by the non-agricultural sector.

Results and Discussions : Labor Reallocation Effect



The reallocation of labour away from agriculture has had a positive effect on economic growth in Bangladesh; however, the contribution was not significant (only 0.11%) though.

Results and Discussions : Lewis Turning Point



The trend in MPL_A is far removed from the assumed institutional wage (mean value of the 1975-2013 agricultural APL), also true if we compare it with the agricultural real wage rate. For 1995-2013 period, the average agricultural real wage was Tk. 52555 per year.

The Bangladesh economy has not absorbed the surplus agricultural labour and is yet to reach the Lewis Turning Point.

Conclusions

- ❑ Economic growth in Bangladesh is driven by the non-agricultural sector.
- ❑ The growth in non-agricultural sector is driven by both capital and labour accumulation, while agricultural sector is still driven by the labour accumulation.
- ❑ The labour reallocation model demonstrates that the reallocation of labour away about from agricultural has had a positive but not a significant contribution to the economic growth (only 0.11%).
- ❑ The trend in marginal productivity of agriculture labour is far removed from the average institutional wage, implying that the surplus agricultural labour has not been fully absorbed in the Bangladesh economy.
- ❑ Thus, it can be concluded that Bangladesh has not reached the Lewis turning point in its economic development as yet.

Thank you for your attention
