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The Transformation of Bangladesh's Agriculture

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This paper analyses the evolution of the role of the agricultural sector in Bangladesh in recent decades in the context of similar roles performed by the sector both in the historical and contemporary cases of development. It demonstrates that the quality of economic growth, in terms of both egalitarianism and efficiency, has been strongly reflected in the type of agricultural evolution experienced.

The paper argues that in one respect, namely bringing about a rapid decline in agriculture's share of GDP despite decent agricultural growth, Bangladesh has achieved significant success; but it has failed to bring about a corresponding decline in the proportion of the labour force employed in, or eking out a living from agriculture. The result has been a widening in the disparity of living standard between those deriving livelihood from agriculture and those deriving livelihood from non-agricultural activities.

The paper explores the issue with the help of the Labour Force Survey data, which unambiguously point to a failure in bringing about the so-called Lewis transition – the beginning of an absolute decline in employment in agriculture but shows that, even after taking into account the alternative findings of Mahabub Hossain's research based on microeconomic data, it cannot be argued that the possible decline in employment in agriculture has been sufficiently rapid to warrant a decline in disparity between agricultural and non-agricultural living standards.

The paper concludes by outlining the needed reform and public action that would contribute to a more desirable pattern of agricultural transformation.

Keywords: Bangladesh, Asian Experience, Growth, Employment, Structural Change

I. INTRODUCTION

Mahabub Hossain was the leading expert of his generation on agriculture and the rural economy of Bangladesh. My contribution to the volume honouring his memory will focus on the evolution of the role of agriculture in the process of the country's development. The paper will not try to deal with the details of intra-

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agricultural issues like the composition of output, prices, institutions or the technology of the agricultural sector. Instead, the focus will be on the contribution of the sector to the economy's total output and employment both in the recent past and in the future, as Bangladesh pursues the objective of transforming itself successively into a middle-income and a high-income country.

II. HISTORICAL EXPERIENCE OF STRUCTURAL CHANGE IN EMPLOYMENT AND OUTPUT

There is broad agreement among development theorists and historians of economic development that a necessary characteristic of the process of successful development is a steady decline in the shares of agriculture in total output and employment. The decline in the share of agriculture is driven by the phenomenon that as income per person grows, the demand for primary products grows less than proportionately and this tendency accentuates with rising levels of living, the Engel's law, one of the most durable empirical laws in economics. The higher level of living and lower shares of agriculture have been so strongly correlated that the shares of agriculture in employment and gross domestic product (GDP) have often served as useful indicators of the level of development of a country. Evidence suggests that changes in these shares and the rate of economic progress have been strongly inversely correlated. This has been the case for countries with widely varying resource endowment, as true for land-abundant USA and Canada as for the extremely land-scarce Japan and the Republic of Korea. One would expect that for countries with strong comparative advantage in agriculture, the effect of the Engel's law would be blunted, even outweighed as external demand makes up for declining domestic demand. But, historically, there does not appear to have been an exception on this account.

The transformation has been more rapid in countries and in periods of faster growth. For the average OECD countries, the halving of agriculture's share of employment took about 80 years, if 1870 is taken as the starting point, from about 49 per cent to 25 per cent in 1950; but thereafter, the pace of reduction accelerated to reach barely 6 per cent in 1987.¹ Growth in GDP cannot be estimated for the 80-year period since 1870 for want of data, but it is perhaps beyond all controversy that the annual average rate of growth was much faster in the period since 1950 than the period between 1870 and 1950.

¹ The source of the data is Maddison (1991:73).

We do not have historical information about sectoral shares of output. While approximate <u>estimates</u> of aggregate GDP have been made for earlier years GDP accounting details that permit the estimation of sectoral shares are, by and large, a post-WWII development. One can, however, guess what the long-term changes in sectoral shares of GDP might have looked like. A glance at a recent World Bank, *World Development Indicators (WDI)* would show that in the 1990s and later, the share of agriculture in GDP in the advanced industrial countries is about a half of its share of employment or less.² It is likely that agriculture's share of GDP has fallen throughout the period, perhaps faster than its employment share during much of the period.³

The explanation behind the very slow early rate of transfer of labour out of agriculture, halving its share over a period of 80 years, was largely the slow rate of growth of the economy.⁴The much sharper subsequent decline in agriculture's share was largely driven by the more than doubling of the rate of GDP growth, or rather more than doubling of the rate of growth of industrial and tertiary sectors, enabling them to absorb labour at a rapid rate. The rate of transfer of labour out of the primary sector has important distributional consequence. Output per worker is lower in agriculture, employing residual labour force often sharing work among themselves, than in the emerging industrial and tertiary activities. If the latter sectors grow rapidly, inducing a large outflow of workers from agriculture, the average living standard in agriculture rises due both to a reduction in work sharing and a fall in the dependency ratio in the sector. The fall in the "surplus" agricultural labour leads to an overall tightening of the labour market, leading to a rise in real wages in the industrial and tertiary sectors. Slow growth of industrial and tertiary employment condemns rural workers to continued lower output per worker as well as stagnant wages in industrial and tertiary sectors. Thus, faster growth, leading to a rapid reallocation of labour, unleashes forces of greater equality in the distribution of income.

²In circa 1990 in the high-income countries, including the 16 in Maddison (1991) but also in numerous additional, usually small countries – agriculture had 7 per cent of all male and 6 per cent of all female employment. In 1990, agriculture accounted for 3 per cent of GDP in these countries. *World Development Indicators 2005*, (World Bank 2005, pages 58 and 204).

³This is suggested by the sectoral labour productivity growth estimates in Maddison (1991). These labour productivity estimates must have been worked out from some (rudimentary) sectoral outputs; but they are not reported.

⁴Maddison (1991: 50) shows that the arithmetic average annual rate of growth of the 16 countries was 2.5 per cent during 1870-1913 and 2 per cent during 1913-1950.

In Britain, the early decades of the industrial revolution were associated with stagnant industrial wages which perpetuated poverty and urban squalor, poignantly described in the novels of Dickens. Once growth improved, labour market tightened and real wages started rising, making it easier for prosperity to be shared by larger numbers.

In the post WWII cases of very high rates of growth in the East Asian miracle countries, rapid industrialisation and tertiarisation led to a fast transfer of labour out of agriculture, a quick elimination of surplus agricultural workers and a tightening of the labour market that resulted in the growth of real wages at about the same rate as average income. As a result, high economic growth was able to avoid a rise in inequality in the distribution of income. It is, therefore, critical that in the process of growth, the falling share of agriculture in GDP is accompanied by a proportionate decline in its share of employment for growth to avoid increased inequality.

III. RECENT ASIAN EXPERIENCE

Let us compare the experience of structural change in some recent and contemporary cases of rapid growth to get a clearer idea of the difference in the distributional outcome due to very different patterns of change in the structures of employment. Table I illustrates the experience of the Republic of Korea (RoK), an example of the celebrated East Asian miracle countries. While we find features similar to those that characterised the cases of classical industrialisation, there are some notable differences: (a) agriculture's share of employment declined much faster; it was reduced by nearly two-thirds in two decades from 1970; (b) the employment share of industries peaked at a level that was somewhat lower than in the classical case, where it was, on the average, about 40 per cent or higher;⁵ and (c) the tertiarisation of employment occurred early and proceeded rapidly.

⁵By around 1960, the share of industry in employment in "high-income countries," which included more countries than those Maddison included, was about 40 per cent on the evidence cited in *WDI* 2005. I would surmise that the peak in the countries included in the Maddison list was higher and reached sometime prior to WWII.

Year	Sectoral Shares of Employment			Sectoral Shares of GDP					
	Agriculture	Industry	Services	Agriculture	Industry	Services			
1970	48.0	-	-	27.5	24.5	48.0			
1980	34.0	29.0	37.0	15.1	34.2	50.7			
1990	17.9	35.4	46.7	8.2	38.2	53.6			
2000	10.6	28.1	61.2	4.4	38.1	57.5			
2010	6.6	17.0	76.4	2.5	38.3	59.3			

TABLE I STRUCTURAL CHANGE IN EMPLOYMENT AND GDP IN THE REPUBLIC OF KOREA

Source: See Khan (2015:41).

The more rapid reduction in agriculture's share was due to the much faster rate of growth, high GDP-elasticity of non-agricultural sectors and high employment intensity of growth in the latter in the East Asian example than in the classical cases. Note, however, that by the completion of the transition to high-income level, agriculture's employment share in the RoK was more than two and a half times as high as its share of GDP, an outcome that is qualitatively similar to that in the classical case. The low-productivity agricultural sector, however, came to employ small enough a proportion of labour force, making it possible to deal with the problem of inequality and poverty by income transfers and subsidies, something that would be impossible had agriculture continued to employ a much higher proportion of the labour force. Export-oriented industries and services were sufficiently employment intensive to create a rapid increase in demand for labour in non-agricultural activities. The result was a steady increase in real wages and also a sharp reduction in the proportion of those employed in agriculture where productivity per worker was the lowest. The great difference between the classical case and the East Asian "miracle" case was that in the latter growth and industrialisation avoided rising inequality from the start. Of course, the difference in the distributional outcome was due to many other differences in the circumstances and policies between the two cases. But the circumstances and policies behind the very different change in the sectoral composition of the labour force were of critical importance.

Let us look at the same aspects of structural change in the case of China during its historically unprecedented growth in the period since the late 1970s, an achievement that exceeded the hitherto unprecedented East Asian cases. Table II

summarises the basic facts which are not easy to explain. First, consider agriculture's share of employment. China's reform of the Maoist economic system began in agriculture with the gradual replacement of the communes by household farming. During the first seven years of reform, agriculture was able to maintain its share of GDP while shedding about 8 per centage points of its share of employment to industry and services. The result was some easing of the extraordinarily large spread in output per worker between agriculture and the rest of the economy. Thereafter, between 1985 and 2002, agriculture's share of GDP fell steadily by more than a half, from more than 28.4 per cent to 13.7 per cent. Over these 17 years, agriculture's share of employment fell by only a fifth, from 62.4 per cent to 50 per cent, thereby widening the gap between output per worker in agriculture and that in the rest of the economy. There were times when it seemed that aggregate employment in agriculture had peaked and started falling, e.g. in 1991; but this declining "trend" was reversed after 1996 when it increased again. A decisive change occurred only since 2002, when over the next decade, aggregate employment in agriculture steadily fell by 30 per cent and the sector's share of employment fell from a half to about a third. In 2002, the productivity of an agricultural worker was only 15 per cent of that in the non-agricultural sector. By 2012, it had improved a little, but was still pitifully low at 22 per cent and this vastly lower productivity affected a third of the working population, creating an overwhelming chasm of inequality.

Year	Agricultural Employment	Sectoral Shares (per cent) of Employment and GDP (within parentheses)				
	(million)	Agriculture	Industry	Services		
1978	283.2	70.5 (28.2)	17.3 (47.9)	12.2 (23.9)		
1985	311.3	62.4 (28.4)	20.8 (42.9)	16.8 (28.7)		
1988	322.5	59.3 (25.7)	22.4 (43.8)	18.3 (30.5)		
1990	389.1	60.1 (27.1)	21.4 (41.3)	18.5 (31.5)		
1991	391.0	59.7 (24.5)	21.4 (41.8)	18.9 (33.7)		
1996	348.2	50.5 (19.7)	23.5 (47.5)	26.0 (32.8)		
2002	366.4	50.0 (13.7)	21.4 (44.8)	28.6 (41.5)		
2012	257.7	33.6 (10.1)	30.3 (45.3)	36.1 (44.6)		

TABLE II STRUCTURAL CHANGE IN EMPLOYMENT AND GDP IN CHINA

Source: See Khan (2015:42).

Why has it been so difficult for China to achieve a rapid transfer of labour out of the huge reservoir in agriculture, despite the extraordinarily rapid growth of the non-agricultural economy? The explanation lies, first, in the irrational labour allocation in the pre-reform economy and the persistence of rigid institutional obstacles to labour mobility during the reform era. Maoist socialism denied the possibility of unemployment. It used employment in public and collective enterprises as a system of concealed unemployment benefit, employing labour far in excess of the legitimate requirement for efficient production. Once reforms were under way and public enterprises were opened up to the pressure of competition from private and foreign enterprises, it was no longer possible for public enterprises to carry the burden of the concealed unemployed on their payroll. A prolonged period of labour shedding from state and collective enterprises followed. Despite the creation of new jobs as a result of rapid growth of the non-agricultural economy, aggregate employment growth in those sectors did not permit rapid enough absorption of labour from agriculture. The situation was exacerbated by China's restriction of rural-to-urban migration by the continuation of the requirement of urban residence permits of the Maoist era. It is noteworthy that, compared to the halving of agriculture's employment share in a decade in the Republic of Korea during the 1980s, the much faster growth of the Chinese economy failed to attain a fraction of that rate of transfer of labour in more than two decades to 2002.

A second notable difference, characterising the Chinese case, is that its share of industrial employment reached nowhere near either the classical or the East Asian cases. It remained the same in 2002 as in the mid-1980s, at just over a fifth of all employment. It is only during the last decade, when the share of industry in total output had started *falling* from its peak in the mid-1990s that industrial employment rose to reach 30.3 per cent in 2012, with the curious implication that industries at the margin have had lower "relative" productivity per worker than the average.

Yet another difference from the recent East Asian case is the low rate of tertiarisation of China's economy, both in terms of employment and output. Employment in services has grown steadily but tardily at least until the late 1990s. Even by 2012, the sector's employment share was just 36.1per cent, far lower than that in the East Asian countries. China is still undergoing a transition in the sectoral distribution of employment and output. It is yet to be seen how quickly and how far agriculture's share of employment falls and where the final

peak of industrial employment settles. It is, however, beyond doubt that China's surging inequality, during the period of growth since the beginning of reform, had much to do with the country's inability to move labour out of agriculture at a faster rate.

IV. SEARCH FOR SOLUTIONS: SOME EARLY RESPONSES

Around the time Mahabub Hossain started his professional career, agriculture was the overwhelmingly dominant sector of the Bangladesh economy, both in terms of output and employment. It accounted for approximately 55 per cent of GDP and close to 80 per cent of employment.⁶ The implications of the latter figure, generally considered credible as the order of magnitude, were utterly bewildering to economic policymakers at the time. Using the existing parameters concerning capital/labour ratios in non-agricultural sectors and reasonable projections of growth of the labour force, no conceivable growth path seemed to indicate the feasibility of even a moderate decline in the proportion of agriculture's labour force, not to speak of the possibility of a "Lewis transition" in the sense of bringing about an absolute decline in agricultural employment. What follows in the remainder of the section is a personal account of the search for a solution that was contemplated in policy discussions and research in the early decades following independence.

It was recognised that a necessary condition of a solution was an unorthodox demographic transition. The total fertility rate (TFR) was well above 5. Conventional wisdom was that a significant decline in the rate had to be preceded by such developments as high literacy, especially for women, improved level of education, improvement in living standard, a fall in mortality, especially among the infants, and a vigorous programme for the spread of contraception. A quick reduction in the TFR would reduce the size of the increment in the labour force albeit with the time lag of a decade and a half.

⁶In 1969/1970, the share of agriculture in GDP was 55.3 per cent (Khan 1972:17). The nearest estimate for employment share is from the population census of 1974 which puts it at 78.5 per cent (Khan and Hossain 1989:15). Later, in Table III, we show that agriculture's share of employment was 58.8 per cent in 1983/1984. This does not mean that there was dynamic shift of labour out of agriculture between 1974 and 1983/1984, but rather that the Census method and definitions are different from those of the Labour Force Surveys.

On increasing the demand for labour, it was felt by many that the classical path of expansion of employment in industries and services would not be quite up to the task. Support from additional unconventional alternatives was sought. One such alternative that we looked into during the 1970s and the early 1980s was suggested by the experience of East Asia in the pre-World War II and immediate post-World War II period when labour use per hectare of land was much higher than what it was in contemporary South Asia. The higher labour input per hectare in East Asia was associated with higher output per hectare as compared to South Asia and the proportionate difference in yield was greater than that in labour use. There was evidence that labour input per hectare increased during certain phases of agricultural development in East Asia and that during those phases output per person increased at least proportionately. These historical facts about East Asia, brought out by the pioneering research by Shigeru Ishikawa, led to the research project initiated by K. N. Raj for the quest of policies that might enable South Asia to productively absorb more labour within agriculture, thereby, reducing the pressure for non-agricultural sectors to absorb labour.⁷ My own views on the subject, at the end of significant personal involvement in the project, is that much of the difference between East Asia and South Asia was dictated by differences in agro-climatic factors which led to the emergence of small operational landholdings and comparatively low incidence of hired labour in East Asian agriculture even before land reforms, which were hard to replicate in South Asia.⁸ Even so, it seems that during the relatively rapid agricultural growth in Bangladesh during much of the last quarter century, there was a significant increase in the amount of labour productively employed in the sector.

Another alternative explored was the creation of non-farm employment within the rural economy in order to reduce the burden that conventional industrialisation and tertiarisation would otherwise have to bear by way of absorbing labour. It was also hoped that this would reduce the need for infrastructural investment by being able to keep labour within the rural economy. The idea about this possibility needed to be clarified. To the extent that ancillary agricultural activities were concerned, they should, of course, grow in any case and policies should encourage their growth. But if the hope was to develop

⁷ The research project and some of the findings, as well as references to literature, can be found in Khan and Lee (1981).

⁸I have discussed these in Abdullah and Khan (editors) (1996:162-167).

manufacturing activities along the lines of China's township and village enterprises, then the difference between them and conventional industrialisation was quite thin. Their growth requires infrastructural and other investment just as conventional industrialisation does. The promotion of non-agricultural activities, as has been the focus of microcredit programmes like the Grameen Bank, was largely a diversification of agriculture into non-crop activities. Available evidence suggests that there has been some development of these activities even though it cannot be considered particularly rapid: personal income from these sources amounted to 16 per cent of rural personal income in 1991/1992, peaked in 2000 and 2005 at close to 20 per cent and fell back to 16 per cent in 2010, according to the estimates made from the quinquennial household income and expenditure surveys.⁹ Another important aspect of employment and income generation by this source is that this component has a strongly disequalising effect on the distribution of rural income.¹⁰

Everything seems to suggest that the path indicated by the classical industrial revolution was going to be the one that Bangladesh will need to traverse. The enormity of the problem could lead one to look for unconventional alternatives; but ultimately the solution must be found in transferring labour from agriculture to industries and services.

V. ACTUAL EVOLUTION OF THE STRUCTURE OF EMPLOYMENT

Employment data collected by periodic Labour Force Surveys suffer from more than the average degree of problems to which statistical data in Bangladesh are subject. Some of these problems may be manageable, but the others are more intractable. These surveys have periodically experimented with changes in the definition of labour force. Fortunately, they have simultaneously collected information according to a so-called "usual definition" which appears uniform through different surveys. We have used this definition. An additional problem is that for the first three surveys reported in Table III, labour force covers all those 10 years and above, while the last three surveys cover those 15 years and above. The survey for 1999/2000 compiles information according to both definitions which show that, fortunately, the estimates of sectoral share are about the same for both. Since we use the sectoral shares, not the absolute numbers, we feel that

⁹See Khan (2015:131).

¹⁰This is shown in chapter 9 of Khan (2015) on the basis of an analysis of five household income and expenditure surveys.

we have skirted that problem as well. Note, however, that it is not possible to obtain reliable estimates of change in the absolute size of the labour force from these surveys.

An inherently insurmountable problem is that employment is recorded according to the "principal employment category" of each member, whereas one would in principle want to know the amount of labour, in hours or days, allocated to different occupations. This is probably not a problem for the sectors like manufacturing, other industries and most services where multiple occupations are rare, especially in wage employment. But in agriculture and traditional nonagricultural activities, the phenomenon of multiple occupations is widespread. This can be a serious obstacle in estimating changes in output per worker over time by comparing changes in sectoral shares of GDP and employment if, as seems likely, the proportions of labour time allocated to different activities change. Finally, there can be difficulty arising from the uncertainty that the sectors into which GDP and employment are classified are the same. Our effort to derive a few broad generalisations on sectoral productivity trends is subject to qualification due to these problems.

FORCE (PER CENT OF TOTAL)							
Sector	1983/84	1990/91	1999/2000	2002/03	2005/06	2010	
Agriculture	58.8	51.7	50.8	51.7	48.1	47.5	
Manufacturing	8.9	17.0	9.5	9.7	11.0	12.4	
Construction	1.7	1.5	2.8	3.4	3.2	4.8	
Trade	11.6	12.3	15.6	15.3	16.5	15.5	
Transport	3.9	4.6	6.4	6.8	8.4	7.4	
Public Adm. & Defence	-	-	-	6.3	5.5	4.3	
Other	15.1	12.9	14.9	6.8	7.3	8.1	

SECTORAL DISTRIBUTION OF EMPLOYED LABOUR FORCE (PER CENT OF TOTAL)

TABLE III

Note: For source and definitions, see Khan (2015:18).

Let us consider the changes in sectoral shares of GDP between 1989/1990 and 2009/2010 and of employment between 1990/1991 and 2010. The share of agriculture in GDP fell by nearly two-fifths, while its share of employment fell by less than a tenth. It would appear that the ratio of output per worker in agriculture to that in the rest of the economy has fallen sharply over time.

Component	1979/80	1989/90	1999/2000	2009/10	2011/12	2012/13
Agriculture	30.8	30.3	25.5	18.6	17.2	16.3
Crops	22.3	20.6	14.6	11.2	10.1	9.4
Industry	20.1	21.5	25.3	28.5	28.9	27.6
Manufacturing						
Large and medium)	9.5	9.3	10.9	12.6	12.7	13.9
Small scale	4.0	3.8	4.3	5.2	4.9	3.4
Construction	5.7	6.0	7.7	8.3	9.0	7.2
Power, Gas and Water	0.5	1.6	1.3	1.1	1.1	1.4
Services	49.1	48.3	49.2	53.0	53.9	56.1
Trade	12.6	12.3	12.8	14.9	14.3	13.5
Transport and						
Communication	10.4	9.9	8.6	10.7	11.8	10.9
Education and Health	4.2	4.2	4.7	4.9	5.1	4.6
Finance	1.3	1.4	1.6	1.8	2.1	3.7
Public Administration						
and Defence	1.4	2.1	2.7	2.8	2.8	3.3

 TABLE IV

 SECTORAL COMPOSITION OF GDP AT CURRENT PRICES (PER CENT)

Note: For explanation, definitions and sources, see Khan (2015:12), which also shows these shares at constant prices.

For manufacturing, the share of employment in the LFS of 1999/2000 is an aberration. We have instead used 9.2 per cent, the figure arrived at by rough interpolation of those for the preceding and following LFSs. On the basis of this arbitrary but plausible compromise, the share of employment in manufacturing increased by 35 per cent as compared to 36 per cent increase in the share of GDP at current prices. The most favourable interpretation of this finding, admittedly subject to the accusation of being at least partly contrived, is that there has been a healthy expansion of employment-intensive manufacturing, especially once it is recognised that a high incremental share of it consisted of labour-intensive garments and knitwear (RMG).

Oddly, it is impossible to reconcile changes in output and employment shares of construction, trade and transport. For each of them, employment growth has significantly exceeded output growth, the difference being very large for construction and transport.

For public administration and defence, employment data are available only for the years since 2002/2003. Not only has the share of these categories in total employment fallen, but, by 2010, there appears to have been an absolute reduction in their employment by more than 15 per cent. Almost certainly, the definition of the sector has undergone a change unless one is willing to attribute the result to an outright error in measurement.

If one were to accept the above at their face value, one would conclude that not only in agriculture but also in construction, trade and transport,together accounting for three-quarters of labour force,output per worker has fallen relative to GDP per worker. Since we also know that on our interpretation, output per worker in manufacturing increased only modestly relative to GDP per worker, the conclusion would have to be that there was an enormous gain in output per worker in some very narrow sectors of the economy, mainly services, relative to the rest of the economy.

It should be useful to consider the micro-level survey data covering 1,245 households in 60 villages in 57 districts in 1987/1988, a repeat survey of 1,880 households in the same villages in 1999/2000 crop year, and another repeat survey of 1,927 households in the same villages in 2004 in which Mahabub Hossain participated and reported in collaboration with Abdul Bayes (hereinafter referred to as the Hossain-Bayes data for convenience).¹¹ These data found important changes in the occupational distribution of workers: (a) the proportion of all rural workers employed in household farms fell from 45 per cent in 1988 to 41 per cent in 2004; (b) 23 per cent of all workers were principally wage employed in non-household agricultural farms in 1988 and their number fell to 10 per cent in 2004; (c) the proportion of workers employed in non-agricultural work increased from 30 per cent in 1988 to 47 per cent in 2004; (d) the incidence of multiple occupations fell from 45 per cent of all workers in 1988 to 38 per cent in 2000; (e) once secondary occupation is included, "workers engaged in the agricultural labour market" fell from 28 per cent in 1988 to 20 per cent in 2000, while workers "earning livelihoods from the non-agricultural labour markets" increased from 16 per cent to 21 per cent.¹²

Hossain and Bayes (2009) argue that improved rural roads, electrification and technological progress in rice cultivation created an opportunity for additional employment in trade and transportation. In particular, the workers

¹¹Hossain and Bayes (2009).

¹²Direct quotes are from Hossain and Bayes (2009:300). Note that the information is somewhat fragmentary, for example, certain things are reported for 2000 as the terminal year while others for 2004. This is because of what the source article reports.

from land-poor households, who were employed as agricultural wage labourers, increasingly sought employment in transport activities and "at the lower end (of the productivity scale) of service and trading activities." Agricultural labour market became tight due to: (a) the movement of workers to non-agricultural employment; (b) the expansion of the tenancy market as former wage-labourers increasingly became tenant farmers; and (c) migration to cities and abroad. As a result, they find that real wages in agriculture started increasing, especially since the turn of the century.

How can we combine the information from the LFS and from the Hossain-Bayes data to obtain some plausible hypotheses about changes in the sectoral composition of employment? If one defines the so-called "Lewis transition" occurring at the beginning of the absolute decline in employment in agriculture, then, according to the number of those principally employed in agriculture, the transition had not started by the year 2010. The number of those with agriculture as the principal occupation was higher in 2010 than in any of the LFS years in the preceding decade.¹³ It is just possible that the same criterion applied to Hossain-Bayes data would show that those principally employed in agriculture were just a shade lower in absolute number in 2004 than in 1987/1988, indicating that Bangladesh, according to this measure, was on the verge of "Lewis transition" or actually undergoing it.¹⁴ If, however, one takes into account the fact that the share of agriculture in employment has fallen faster once secondary and tertiary employment categories of individuals are taken into account,¹⁵ it is highly likely that absolute amount of labour used by agriculture has fallen, the starting date being sometime late in the 1990s or early in this century. The issue of whether the ratio of agriculture's share of employment to its share of GDP has fallen or risen relative to the same for the rest of the economy must still be considered

¹³Applying the sectoral shares to total labour force shown in the *Statistical Yearbook* 2014, Chapter 2, we find agricultural employment in 2010 to be 26.9 million as compared to 20.7 million in 1999/2000 and 23.8 million in 2005/2006. It is also useful to remember that "Lewis transition" is not so much about employment in agriculture as in the entire traditional sector where labour is "employed" in excess of requirement dictated by the market.

¹⁴The uncertainty in measuring this arises due to the notoriously bad aggregate labour force data in the LFS, especially its rural urban division. Reported female employment in rural areas violently fluctuates from one LFS to another.

¹⁵Hossain and Bayes (2009) state that, between 1988 and 2000, "The average number of days of employment per year for agricultural wage-labour has declined from 205 to 177" (p. 301).

unresolved. Agriculture's share of GDP at current prices, the measure of the sector's ability to bid for primary factors of production relative to that for the rest of the economy, fell by 46 per cent between 1989/1990 and 2012/2013. It is at best highly doubtful if the sector's share of total labour has fallen as much.

The above explanation also sheds light on the finding that employment shares of trade, transport and construction have increased faster than the GDP shares of these sectors. Days of employment per person for those working parttime in these sectors have increased rapidly, especially in the "lower end (of the productivity scale)" and a disproportionate number of those who previously had these as their secondary or tertiary employment category came to emerge with them as their primary employment category.

It is hard to arrive at any definitive conclusion. We, however, conclude that the consideration of the Hossain-Bayes argument raises questions about the slack/tightening of the rural labour market and the dating of the "Lewis transition." But it does not invalidate the argument that output per worker has fallen faster in agriculture (and closely-related traditional activities) than in the rest of the economy.

VI. STRUCTURAL CHANGE OF THE BANGLADESH ECONOMY IN THE HISTORICAL CONTEXT

How does the structural change of the Bangladesh economy compare with the different historical experiences outlined earlier in the paper and what insights can we get from the historical experiences about the emerging pattern of structural change in Bangladesh? The cases discussed above illustrate the different paths that structural change, with broad universal features, has taken place in the history of development. These features are as follows. First, agriculture's share of GDP and employment has to decline during the process of development. Given that initially, at a low level of development, the ratio of agriculture's income share to its output share is lower than for the rest of the economy, it would be desirable for the gap between them to fall over time. It would be particularly undesirable for the rate of proportionate decline in agriculture's share of employment to lag behind that in the sector's share of output because that would aggravate the inequality between agriculture and the rest of the economy.

Second, the long time that it took for the Lewis transition to take place in the classical case was the reason why for many decades of initial industrialisation

real wages stagnated, creating mass immiserisation during that period. The historically unprecedented growth in China for decades led to rapidly increasing inequality, largely because of the difficulty of deploying "surplus" agricultural labour to sectors of higher productivity. In contrast, in the Republic of Korea real wages grew at roughly the same rate as per capita income from the early phase of development due to the rapid transfer of surplus agricultural labour to sectors of higher productivity, thereby, combining growth with the avoidance of increased inequality.

Third, of the remaining two broad sectors, industries had a leading role in absorbing labour, especially in the early phase of labour transfer both in the classical and the RoK case. Much of the early success in reducing the burden on agriculture depends on the robustness and high employment intensity of industrial growth. The Chinese case shows that even extremely rapid and decently employment intensive industrial growth can, for decades, fail to permit significant absorption of labour from agriculture due to initial problems of labour misallocation and institutional obstacles to rural-urban migration. And lastly, historical experience seems to suggest that industrial output and employment also peak at a certain level of development and that *successive cases of industrialisation have tended to experience progressively lower levels of the peak*. Thus, ultimately, the services sector must absorb much of the employed labour force.

It is hard to know what, if any, time period of the historical cases might be compared with Bangladesh in the period since 1990. During this period, Bangladesh averaged an annual growth rate close to 5.5 per cent, which indicates that the change in its structure of employment needs not be as slow as it initially was in the classical case. At the beginning of the period shown in Table I, per capita income in the RoK was more than seven times that in Bangladesh in 1990 and the rate of growth of the RoK was close to 9 per cent for the following two decades.¹⁶ Thus, there is no reason to expect the kind of dynamic transformation in the structure of employment and income in Bangladesh in the period after 1990 as the one that the RoK experienced after 1970. According to World Bank dataset, China ranked lower than Bangladesh in terms of per capita GDP at the time of launching reforms and, as shown in Table II, its share of agricultural employment was higher. However, despite grappling with the problem of huge

¹⁶These and the following measurements are based on GDP statistics at constant 2005 US\$ from the World Bank dataset.

concealed unemployment in industries, China achieved a much faster decline in agriculture's share of employment in the first two decades and a far more rapidly accelerated decline thereafter as compared to Bangladesh in the period since 1990. The explanation lies in the astronomically high rate of China's growth and high elasticity of non-agricultural growth: in the decades since 1980 China's economy grew at twice the annual rate at which the Bangladesh economy grew since 1990.

We have noted that the basic data, especially those about employment, suffer from many conceptual and measurement problems, that definitions of sectors across variables and countries are of dubious uniformity. And yet, it seems that the following findings are sufficiently robust to retain validity even if corrections for the limitations were possible: (a) the fall in agriculture's employment share has lagged far behind its GDP share, exacerbating the inequality between those earning their living from agriculture and the rest of the economy; (b) industry's shares of employment and GDP have grown at inadequate pace; and (c) the tertiarisation of the economy, especially in employment, has been slow.

Of the historical and contemporary examples of structural change, development theory unequivocally suggests a preference for the East Asian case illustrated by the RoK: very high overall growth leading to even higher growth of industry and modern services; high employment intensity of growth of these non-agricultural sectors; a rapid reduction of agriculture's share of employment; and overall growth in employment, resulting in an early tightening of the labour market and a rapid increase in real wages.¹⁷

The classical case, though embodying the essential features of structural change during the course of industrialisation and transformation to high levels of living, represents too slow a process because of the slow, though historically unprecedented at the time, rate of growth. The Chinese case, though exceeding all prior experience of sustained growth, suffers from the drag of huge initial misallocation of labour which slowed down the rate of labour transfer out of agriculture. It should not come as a surprise that Bangladesh has failed to attain

¹⁷Note that even at high levels of development agriculture's share of employment in the RoK continues to be more than twice its share of GDP, but the arithmetic difference between the two is so small that it has been feasible to support the income of the farmers by transfer from the rest of the economy. Whether such transfers are desirable is quite a different issue, involving complex social priorities which have been debated in the East Asian countries for decades.

the most desirable kind of structural change, one that countries like China and India also failed to attain during decades of much faster growth. We, however, need to understand the nature of this failure as clearly as it is possible to see through the smokescreen of murky statistical information.

To begin with, we need to understand the extent of change in the gap between agriculture's share of employment and its share of GDP. Taking the LFS and GDP data literally, we find the gap widening, implying a continuing and disastrous decline in the relative productivity of labour in the sector, into the first decade of the twenty-first century. We have, however, considered some evidence suggesting the possibility that the decline in the actual labour input in agriculture might have been faster than what the LFS data show. There is also some evidence about movement in real wages, which suggests that the labour market in agriculture might have tightened significantly, although such evidence is convincing for only recent years, starting after the middle of the first decade of the twenty-first century.¹⁸

Whatever reasonable rate of reduction in the number of days of work per year in agriculture that an average worker shown to be principally employed in agriculture might have occurred, it is unlikely to have entirely reversed the massive decline in the relative productivity index of agriculture, which we define as the proportionate change in the ratio of output share to employment share of agriculture divided by the proportionate change in the ratio of output share to employment share of the rest of the economy, even if we recognise the possibility of significant error in measurement. This index fell by a third in the decade leading to 2010.¹⁹A faster reduction in agriculture's share of the workforce and a more rapid increase in the shares of industries and services would be called for.

VII. THE MAGNITUDE OF THE TASK AHEAD

It is important to begin by noting that some of the most favourable factors have been playing out and the easiest options have largely been exhausted. The first of them worth noting is the rapid demographic transition bringing down the TFR from more than 5 in 1981 to 2.11 in 2011, just about the replacement rate. Further reduction in TFR is unlikely; indeed some disturbing recent data,

¹⁸See Chapter 9 of Khan (2015).

¹⁹This has been worked out by using the sectoral output shares for 1999/2000 and 2011/2012 in Table IV and sectoral employment shares for 1999/2000 and 2011/2012 from Table III.

indicating a reversal of the age at marriage, raise questions about its sustainability at the claimed level.²⁰ The remarkable demographic transition, preceding its usual preconditions, has brought important benefits. The most important among them is the fall in the dependency ratio: the proportion of the population in the working-age group of 15-60 has increased from 47.7 per cent in 1981 to 57.9 per cent in 2011. Fewer children per woman have also enabled a higher participation of females in the labour force and even enabled them to migrate to urban industries, especially the RMG, the most rapidly expanding of them. The effect of demographic transition will continue for a period but will gradually level off.

There was a second demographic factor contributing to the easing of the pressure on domestic employment creation, namely, the increased emigration. In addition to easing the burden of employment creation, it has greatly helped economic growth by large remittance flows exceeding 11 per cent of GDP in recent peak years. We struggled to obtain credible estimates of the annual rate of emigration, something that one would consider a fairly straightforward statistic at the fingertip of the official agencies, but have faced some frustration in resolving the confusion between stocks and flows.²¹If one uses the apparently unambiguous Bangladesh Bank figures, then annual emigration was well over a third of the annual increment of the labour force in a recent peak year (2011/2012).Two things deserve emphasis: emigration provided a large relief from the burden of creating domestic employment for the increasing labour force; and there is considerable uncertainty about the sustainability of the magnitude of this relief at the recent peak rate. Most of the emigration, largely low-skilled and unskilled,

²⁰There are also questions about the credibility of the estimate itself (Khan 2015:16-17).

²¹Let us illustrate. Table XX (Number of Persons Left for Abroad on Employment and Total Workers' Remittances) on p. 81 of the Bangladesh Bank, *Monthly Economic Trends*, May 2014 shows a figure of 691,402 for 2011/2012 and 441,301 for 2012/2013. Both from the title of the table and the sharp downward fluctuation of the total makes it clear that these are the annual flows. The peak flow, in 2007/2008, was 981,102, according to this source. If so, they account for an extraordinarily high proportion of the annual increase of labour force, more than a third for 2011/2012. Total labour force in 2011/2012 was probably about 55 million and its natural increase per year, though not easy to estimate directly, could not have been more than 3 per cent or 1.65 million per year. The BBS, *Statistical Yearbook* 2012, Table 3.11 on p.79 (Number of Expatriate Bangladeshis Abroad) shows 568,062 for 2011. The table heading sounds like it is the stock figure, but it is close to the Bangladesh Bank figure of annual flow in fiscal year 2011/2012, which means that it is also the flow figure.

has been destined to oil exporting countries and some other gulf territories. Total immigration into these countries must have been facing a decline due to the precipitous fall in oil price. Emigration from Bangladesh declined sharply after the recent peak of 2011/2012. While this source of relief may continue for a while, due largely to the low supply price of Bangladeshi immigrants that might allow them to cut into the share of the countries with higher-priced emigrants, this would be a far less reliable source of relief in the future.

Agriculture's failure to maintain its relative productivity was not due to inadequate growth of the sector. With the exception of the half-decade 1990-1995, agriculture had "decent" to "exceptionally high" growth. This growth rate will need to be maintained and improved upon, if possible. But it is futile to try to preserve or enhance agriculture's relative productivity by increasing its output share, which must continue to fall; it is inevitable that the elasticity of agricultural output with respect to GDP will be well below one. Thus, the focus must be on reducing its employment share.

Recent growth in both industry and services has been quite reasonably employment-intensive. Indeed, industries at the margin have been far more labour intensive than on the average, if the data used for the estimates of Tables III and IV are broadly right. This is largely due to the very high employment intensity of RMG, the largest and most rapidly growing industry, which also has by far the lowest capital intensity, well below a half of what it is for the rest of large and medium scale manufacturing.²² Under any realistic and desirable scenario, the growth of the garments will slow down, *relative* to the rest of the industrial sector, if only to diversify the sector and inevitable limits on the growth of external demand for RMG products. This means that the overall employment intensity of industrial growth in the future will be lower than it has been recently. The future growth of the tertiary sector will have to be dominated much more by the modern services and technology-intensive activities than has been the case for the sector on the average. It is, therefore, unlikely that the sector's incremental employment intensity will be as high as the average.

Thus, a faster rate of labour absorption in these sectors will have to come through a faster rate of growth of these sectors rather than from an enhanced or

²²See Khan (2015:74-76).

even unchanged employment intensity in these sectors.²³ To be more precise, faster growth of industry and services must be brought about by an acceleration of the overall growth rate of the economy. It seems that a minimum of 8 per cent growth of the economy as a whole is required to initiate a "Lewis transition" in the immediate future, even under fairly optimistic assumptions. Some illustration, albeit crude and simplistic, may be in order. An annual agricultural growth of 3 per cent may be the maximum that one might hope to sustain. With an initial share of the non-agricultural sectors in GDP of 85 per cent, this means that these sectors as a whole must grow at 9 per cent. If the output elasticity of employment in non-agricultural sectors as a whole is assumed rather optimistically to be 0.67, the employment growth in the economy, taking the benchmark share of the nonagricultural sector in the economy to be 55 per cent, which is a bit higher than what the last LFS data found, would be about 3.3 per cent. This of course assumes that there is no employment growth in agriculture. Annual growth in the supply of labour for domestic employment, even after emigration at a lower rate during the recent peak, would probably be no more than 2.5 per cent. This means agriculture's employment can absolutely fall at an annual rate of approximately 1.78 per cent. Even with a significant decline in the rate of emigration and a less optimistic outcome on the labour intensity of the non-agricultural production in the near future, there can be some reduction in absolute employment in agriculture.

Annual GDP growth in Bangladesh over the last decade was estimated to have been a shade above 6 per cent. After peaking at 6.7 per cent in 2010/2011, it fell in the following two years and is reported to have peaked up again in the subsequent two years. Thus, the required growth rate would mean a very substantial acceleration beyond the best quinquennial performance in history.

There are several aspects of the difference from the past in policy and programme response that are worth highlighting by way of pointing to the qualitative break in the development path that Bangladesh is facing now. The two major factors behind the remarkable achievements of the Bangladesh economy in recent decades have been the sharp increase in emigration and the phenomenal growth in the production and export of RMG sector. Both these came to be

²³This statement applies to the overall sectoral averages. It would make sense to look for socially undesirable capital intensity of specific subsectors and deal with them by appropriate policies to alter the distorted incentives that might have promoted them.

unleashed by external factors. The rise in oil price since the 1970s and the forces of globalisation since the 1980s opened up the opportunity for migration and remittance flows. The original impetus for RMG came from some of the East Asian exporters of garments, who had hit their quota under the Multi-Fiber Arrangements (MFA) in the 1970s and the 1980s, and entered into collaborative arrangements with entrepreneurs in Bangladesh, which had unfilled quota. RMG exports owe their initial growth to the protection that they received in the form of export quota in advanced industrial economies under the MFA and the generalised system of preferences (GSP). There were important reforms that helped these developments: the most important were reforms in trade policy by way of abolishing the quantitative restrictions on imports and the move away from the fixed, overvalued exchange rate towards more market-determined rates. These reforms helped remittance flows, enabled the flexibility of input supply to industries without which capacity utilisation used to be seriously constrained in the past and generally reduced inflexibilities that constrained the economy. But beyond these limited areas, the economy continued to suffer from huge irrationalities.

The most outstanding of these are the bias against exports and the nonuniformity of protection that characterises the trade regime.²⁴ The RMG industry, once established, negotiated a variety of concessions and support from the government, in addition to what exports are typically offered. These included not only exemption from most taxes but also relaxation of labour laws, tolerance of low workplace safety standards and a variety of periodic ad hoc supports. Public policy was sensitive enough to make an exception to the overall export hostility of the trade regime albeit by a variety of arbitrary and ad hoc methods. This enabled RMG exports to soar; but exports became extremely undiversified with more than 81 per cent of them being accounted by RMG. Traditional exports with proven comparative advantage, jute, jute goods and tea, were virtually wiped out and some non-traditional exports that had started developing, leather products and frozen food, severely lost their share. If manufacturing is to grow at rates surpassing the recent historical maximum of 10 per cent, growth in the sector must be far more broadly based.

²⁴For detailed discussion, see Chapter 7 of Khan (2015).

Bangladesh provides much support to a variety of economic activities, but such support is not defined ex-ante; nor is it uniform or non-arbitrary. The propensity for arbitrary interventions has worked against the policy of simplifying and unifying the tariff structure, as additional arbitrary para tariff was superimposed on the original tariff slabs to provide high protection for some industries. Once one looks beyond the RMG, one finds a large number of diversified manufactured products and exports, encompassing metal products, electrical equipment, shipbuilding and miscellaneous transport equipment, among others, which have the possibility of achieving rapid export-oriented growth if the bias against exports is replaced with adequate incentives. Entrepreneurial enthusiasm to engage in a broad range of potentially profitable activities is not generated by a system of support that is essentially ex-post, arbitrary and ad hoc.Such a system of incentives especially bypasses the small and medium entrepreneurs who lack the clout to deal with complex and corrupt bureaucracy.

Beyond policy reform along above lines, there are other major obstacles to overcome. A notable one is the inadequate physical infrastructure. A single industry can be enabled to overcome the disincentive of infrastructural inadequacy by compensatory fiscal and other incentives. But broad-based industrialisation at a high rate would be impossible without vastly improved infrastructure. Transport and energy are the two components of infrastructure that should be specifically highlighted. Poor transport infrastructure and inadequate roads and port facilities are a major obstacle to the movement of goods and the development of tourism services. High and uncertain time requirement for the transit of merchandise adds to the overall cost of production and causes physical limits on production. Shortage of fuel and power is another physical constraint limiting production. Industries have at times remained idle for want of fuel and power and the irregularity and uncertainty of their supply has impeded competitiveness.

The next overwhelming obstacle to accelerated growth is the inadequate educational infrastructure, the failure to provide basic and secondary education supplemented by a complementary development of tertiary education, all emphasising quality along with quantity. While Bangladesh has achieved impressive progress in the primary school enrolment rate, there are serious questions about the quality of primary education, a question that is even more strongly applicable to secondary education. The inadequate quality and relevance of the contents of tertiary education have been a major factor in depriving Bangladesh of a share of the world market in information technology software and outsourcing. All this is highlighted by Bangladesh's second-lowest score in knowledge economy index among 28 Asian countries in a recent study by the Asian Development Bank, lower than the scores for Nepal, Cambodia and Lao PDR.²⁵

Note that education, transport and energy are areas in which the private sector can have at best a limited role. Due to the indivisibility of investment and high externality of these goods and services, public investment is the natural vehicle for their development. This is an important lesson of the East Asian experience.

This brings us to the final and undoubtedly the decisive obstacle to growth: the absence of a system of governance that guarantees entrepreneurs security of returns to their investment; institutes a non-arbitrary system of incentives; and limits transaction costs by curbing corruption and inefficiency in public administration and its handling of public investment. All societies suffer from corruption in various degrees. Bangladesh has consistently ranked very high in public perception of corruption. Its eradication would be an impossible precondition for development. It is, however, imperative to find ways to limit its crippling effect on productive efficiency and transaction costs.

Mahabub Hossain's career witnessed the transition of one aspect of the evolution of agriculture in Bangladesh, namely its dominant share of GDP being replaced by a modest 16 per cent (less than 10 per cent for crop production). But his career also witnessed a failure on the other aspect of transition, namely a corresponding reduction in agriculture's share of employment, or, more accurately, the proportion of the population who have to depend on agriculture for their livelihood. This is a failure not of agriculture but of the rest of the economy to absorb labour at high enough a rate. Mahabub had been engaged in helping us understand this issue. We have cited his research on these issues. His untimely death will be an obstacle to overcoming this problem.

²⁵See ADB (2014).

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