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Paths to development: is there a Bangladesh surprise?

M. Niaz Asadullah[1*]

Antonio Savoia[2]

Wahiduddin Mahmud[3]

[1] University of Reading, UK, University of Oxford, UK, University of Malaya, Malaysia, and IZA, Germany

Email: m.asadullah@reading.ac.uk
*Corresponding author

[2] University of Manchester, UK

Email: antonio.savoia@manchester.ac.uk

[3] Economic Research Group, Dhaka, Bangladesh, and United Nations Committee for Development Policy

Email: wahiduddin.mahmud@gmail.com

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Abstract

Is Bangladesh's development progress surprising, given its level of economic development? Using aggregate indices of education, health, demographic and gender equality outcomes, we empirically investigate the hypothesis that Bangladesh made exceptional gains in human development compared with countries with similar level of per capita income. Stylised facts and cross-country regression results indicate that, for a broad range of dimensions, there is a human development surplus. Further tests show that such surplus does not reflect the role of economic growth and public expenditure programmes. We conclude by speculating on the role of Bangladesh's human development to sustain the process of growth and on the implications of governance and institutional quality for the nexus between growth and human development.

Keywords: BRAC, economic growth, human development, governance, institutions, Bangladesh, India, Pakistan

M. Niaz Asadullah is Lecturer in Economics, School of Economics, University of Reading, UK.

Antonio Savoia is Lecturer in Development Economics, School of Environment and Development, University of Manchester, UK.

Wahiduddin Mahmud is Chairman of the Economic Research Group, Dhaka, Bangladesh, and .

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1. Introduction

Is Bangladesh's progress surprising when it comes to analysing the relationship between economic performance and human development? Some authors have speculated that the answer to this question could be affirmative (Mahmud, 2008; Devarajan, 2008). The Bangladeshi economy has recorded a remarkable economic performance in the new millennium, but its per capita income remains low (World Bank, 2012a). Yet its levels of many human development outcomes have improved steadily and significantly since 1980, generating a surplus compared to countries with a similar level of economic development. This phenomenon is popularly referred to as the *Bangladesh conundrum* (Mahmud et al., 2008) and has also come to the fore in the media (Sadanand 2010; Economist 2012; Ramesh, Pande and Bhandari 2012). Moreover, Bangladesh is generally seen as an economy in need of substantial governance improvements. To the extent that governance quality matters for economic and human development, the country's success in fulfilling various MDG targets represents a puzzle. This paper looks at the significance of Bangladesh's development progress in a cross-country framework. We empirically investigate whether and to what extent Bangladesh over-performs on human development indicators (such as education, health, sanitation and fertility), given its level of economic development and state of governance. We also attempt some explanations for its progress.

As the country was once famously dubbed 'the test case for development', a study on Bangladesh would contribute to the literature investigating countries' pathways to human development and the view that this is intertwined with economic development (Ranis et al., 2000; Ranis and Stewart, 2006; Ranis and Stewart, 2012). Within this strand, it has been argued that countries (e.g. China) that invested heavily in human development in their pre-reform period entered a virtuous cycle of high human development and high economic growth. In contrast, other countries could not sustain a process of high growth, owing to a +human development deficit (Ranis and Stewart, 2006).

Secondly, this paper is related to the recent revival on the quest of the origins of long-term development. There is a large cross-country literature highlighting market-enhancing governance and institutions as an important ingredient of economic development (e.g., Rodrik et al., 2004; Easterly and Levine, 2003; and Acemoglu et al., 2001). The lack of growth in Sub-Saharan Africa, for instance, is attributed to the poor bureaucratic quality and public services in the region (Ndulu and O'Connell, 1999; Collier, 2007. Some other research has partly challenged this view and has investigated whether, in addition to or vis-à-vis institutions, the heterogeneity in growth experiences can be explained by other factors, such as human capital (Glaeser et al., 2004), good economic policies (Henry and Miller, 2009) or favourable geographical conditions (Gallup et al., 1998). However, global surveys on corruption perception, public sector efficiency and transparency routinely rank Bangladesh as one of the most corrupt countries in the world (Transparency International Bangladesh, 2005). According to the six *Worldwide Governance Indicators* (Kauffman et al., 2009), Bangladesh was on average ranked in the 26th percentile in 1996 and, with the exception of the *rule of law* index, it has since seen a subsequent generalised worsening in all remaining five dimensions of governance. Moreover, Bangladesh is frequently affected by floods and other weather-related adverse shocks. A case study on Bangladesh therefore adds to this

debate on the possible pathways to long-run development, and complements the cross-country empirical literature on the institutions-development nexus.

The contribution of this paper is testing and documenting, in econometric terms, where and when Bangladesh becomes an outlier in cross-country data. In addition, we document which channels are not responsible for Bangladesh's exceptionality (public expenditure and growth). We also highlight the importance of low-cost solutions, public campaigns and inter-linkages between various indicators in achieving social progress, which otherwise would warrant a high level of income. It is in this context that we conjecture on the role of NGOs, though this is not empirically tested because of a lack of data. Neither do we provide a causal explanation for why Bangladesh is exceptional along many dimensions of human development. Such an econometric account is left for future research.

The rest of the paper is organised as follows. Section 2 describes the trends of Bangladesh's economic growth and development during 1980-2009. Section 3 presents regression-based evidence on the alleged exceptionality of progress made in human and social development. Section 4 discusses the possible pathways linking development and growth in the Bangladeshi context. Section 5 concludes by highlighting selected policy challenges.

2. Bangladesh's trends in national income, human development and social indicators

Based on descriptive statistics, this section discusses the evolution of Bangladesh's economic and human development in a comparative perspective. This will help to trace the origins of, and put in context, its alleged exceptionality.

What has Bangladesh's economic performance been like? Table 1 below illustrates Bangladesh's real per capita GDP (panel (a)) and rate of growth (panel (b)) over the 1980-2009 period, comparing them to the developing countries average, as well as to India and Pakistan. The data is from the Penn World Tables, version 7.0 (Heston et al., 2011). The Bangladeshi economy has substantially grown, but its per capita income is not quite close to Indian and Pakistani levels yet. As the rank analysis shows, it remains an economy with a rather low income (and it is classified as such by the World Bank). Its per capita GDP has nearly doubled since 1980, but remains a small fraction of the developing countries average and of that of other Asian developing economies.

Bangladesh's growth performance can be ideally divided into two periods. In the first period, from 1980 until the early 1990s, growth was lacklustre. But it accelerated after 1995, the second period, and it remains sustained in the new millennium. Presumably, this is also the result of a period of economic reforms, which started in the 1990s. As a result, it overtook Pakistan's growth rates in the mid-1990s, and maintained the growth advantage afterwards, but it has been well below the average Asian developing economy and India. As the rank analysis indicates, Bangladesh's growth momentum has not declined and has performed

Table 1: Economic performance in Bangladesh: 1980-2009

Panel (a): Real per capita GDP							
Year	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2009**
Bangladesh vis-à-vis Pakistan and India							
BGD	716.05	757.35	811.97	874.71	987.70	1191.88	1397.26
Rank	10th perc.	10th perc.	12th perc.	14th perc.	14th perc.	16th perc.	16th perc.
PAK	1453.35	1695.82	1933.94	2052.91	1858.54	2112.40	2353.11
Rank	27th perc.	30th perc.	32nd perc.	31st perc.	26th perc.	25th perc.	25th perc.
IND	1019.63	1175.46	1407.22	1564.59	1860.24	2556.26	3237.84
Rank	20th perc.	23rd perc.	24th perc.	26th perc.	26th perc.	29th perc.	30th perc.
Asia (developing economies)							
Mean	1426.07	1627.99	1955.62	2345.49	2627.31	3420.63	4350.70
Sd	956.52	1066.08	1397.65	1863.66	1984.81	2505.64	3118.99
N	17	17	18	24	24	24	24
Rank	25th perc.	29th perc.	32nd perc.	37th perc.	32nd perc.	34th perc.	37th perc.
South Asia							
Mean	1001.75	1213.06	1416.97	1596.94	1867.28	2392.20	2803.75
Sd	298.46	390.41	552.11	746.50	1002.01	1404.28	1461.14
N	8	8	8	8	8	8	8
Rank	20th perc.	23rd perc.	24th perc.	26th perc.	26th perc.	28th perc.	28th perc.
Developing economies							
Mean	3479.06	3522.03	3653.27	3722.97	4182.07	4880.46	5526.74
Sd	3429.23	3582.07	3539.31	3608.21	4145.72	4831.05	5419.41
N	116	116	118	126	126	126	126
Rank	47th perc.	46th perc.	43rd perc.	44th perc.	43rd perc.	43rd perc.	42nd perc.
Panel (b): Average real per capita GDP growth							
Year		**1980-85**	**1985-90**	**1990-95**	**1995-00**	**2000-05**	**2005-09**
Bangladesh vis-à-vis Pakistan and India							
BGD		1.12	1.39	1.49	2.43	3.76	3.97
Rank		56th perc.	48th perc.	59th perc.	56th perc.	71st perc.	70th perc.
PAK		3.09	2.63	1.19	-1.99	2.56	2.70
Rank		78th perc.	67th perc.	52nd perc.	6th perc.	50th perc.	55th perc.
IND		2.84	3.60	2.12	3.46	6.36	5.91
Rank		76th perc.	76th perc.	69th perc.	71st perc.	82nd perc.	85th perc.
Asia (developing economies)							
Mean		2.92	2.96	2.04	2.42	5.20	5.96
Sd		2.59	3.60	5.64	2.65	3.51	3.67
N		17	17	18	24	24	24
Rank		77th perc.	71st perc.	68th perc.	56th perc.	79th perc.	86th perc.
South Asia							
Mean		3.63	2.48	1.28	2.18	4.90	5.02
Sd		2.28	4.55	4.42	3.19	3.59	4.33
N		8	8	8	8	8	8
Rank		81st perc.	66th perc.	56th perc.	50th perc.	78th perc.	78th perc.
Developing economies							
Mean		0.27	0.84	0.22	2.00	2.98	3.09
Sd		3.75	4.23	4.61	5.66	3.81	3.42
N		116	116	118	126	126	126
Rank		44th perc.	43rd perc.	42nd perc.	48th perc.	56th perc.	61st perc.
Panel (c): Human Development Index							
Year	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2009**
Bangladesh							
HDI value	0.303	0.324	0.352	0.388	0.422	0.462	0.496
HDI rank	14th perc.	14th perc.	14th perc.	17th perc.	20th perc.	22nd perc.	22nd perc.
Pakistan							
HDI value	0.359	0.384	0.399	0.420	0.436	0.480	0.503
HDI rank	22nd perc.	22nd perc.	21st perc.	22nd perc.	23rd perc.	24th perc.	22nd perc.
India							
HDI value	0.344	0.380	0.410	0.437	0.461	0.504	0.542
HDI rank	19th perc.	21st perc.	22nd perc.	24th perc.	26th perc.	28th perc.	28th perc.
Asia (developing economies)							
HDI mean	0.385	0.424	0.443	0.488	0.515	0.563	0.595
Sd	0.120	0.117	0.113	0.112	0.116	0.105	0.100
N	13	14	16	21	21	23	25
HDI rank	26th perc.	26th perc.	26th perc.	28th perc.	30th perc.	32nd perc.	32nd perc.
South Asia							
HDI mean	0.331	0.361	0.388	0.409	0.451	0.499	0.532
Sd	0.119	0.113	0.112	0.119	0.130	0.111	0.098
N	6	6	6	6	7	7	8
HDI rank	16th perc.	20th perc.	19th perc.	20th perc.	25th perc.	27th perc.	27th perc.
Developing economies							
HDI mean	0.434	0.460	0.479	0.499	0.518	0.544	0.575
Sd	0.134	0.136	0.141	0.144	0.149	0.146	0.143
N	72	78	81	87	99	114	124
HDI rank	33rd perc.	32nd perc.	30th perc.	29th perc.	30rd perc.	30th perc.	30th perc.

Notes: Data is from Heston et al. (2011); GDP is calculated at PPP, 2005 constant prices. Countries are grouped following the World Bank classification. Developing countries include low, upper and lower middle-income economies. HDI data is from the 2011 HDR (UNDP 2011).

better than the average developing economy, despite the worsening in the global economic environment and the worsening of its governance quality (see Kauffman et al., 2009).

Bangladesh's human development evolution seems surprising, considering its low per capita income level. The 2011 UN Human Development Report places Bangladesh third out of 178 countries in terms of improvements in education, health and inequality over the last 20 years (UNDP, 2011). Over the last two decades, the country has succeeded in lifting millions out of poverty. According to the World Development Report 2013, **'**Bangladesh belongs to a rather small group of countries that have done well in both in economic growth as well as human development indicators' (World Bank, 2012b)**.**

Panel (c) in Table 2 compares Bangladesh with neighbouring countries' Human Development Index (HDI) over the 1980-2009 period, including its percentile ranking. Comparing panels (a)-(c) highlights some evidence of Bangladesh's exceptionality. The average developing economy is comparatively better ranked in terms of per capita income than in terms of human development. In addition, developing economies' human development average ranking has actually worsened over time, suggesting that economic development has only in part translated into human development. In the case of Bangladesh, we observe the reverse: since 1980, this country has always been better ranked worldwide in terms of human development than economic development, and economic growth has been accompanied by consistent improvements in its HDI ranking. As a result, Bangladesh has managed to catch up with Pakistan, despite its much lower national income.

2.1 Progress in health outcomes, female schooling and population control

The statistics on the HDI, as they are aggregating different dimensions over time, may be hiding interesting details. Hence, we must take a closer look at a number of individual development outcomes over time.

The country particularly stands out in terms of progress in female secondary schooling, fertility decline and two health indicators – infant mortality and child immunisation (Cooray and Mallick, 2012).[1] Bangladesh's progress in these indicators is particularly impressive when compared with India and Pakistan. Figures 1-5 plot data on such indicators in two points in time, the five-year periods 1981-1985 and 2006-2010, and the initial level of national income.[2] To facilitate comparisons, the plots highlight the positions of Bangladesh, India and Pakistan.

[1] There are other health statistics in which Bangladesh's progress is significant. For instance, the country ranks amongst the top 15 countries in terms of progress in annual percentage decrease in stunting (Save the Children, 2012). However, because of long time series, we have not considered this indicator.

[2] We organise the data in five-year intervals throughout the tables below as well. This is necessary as the gaps in the yearly series are far too frequent for developing economies.

Figure 1: Mortality rate, infant (per 1,000 live births)

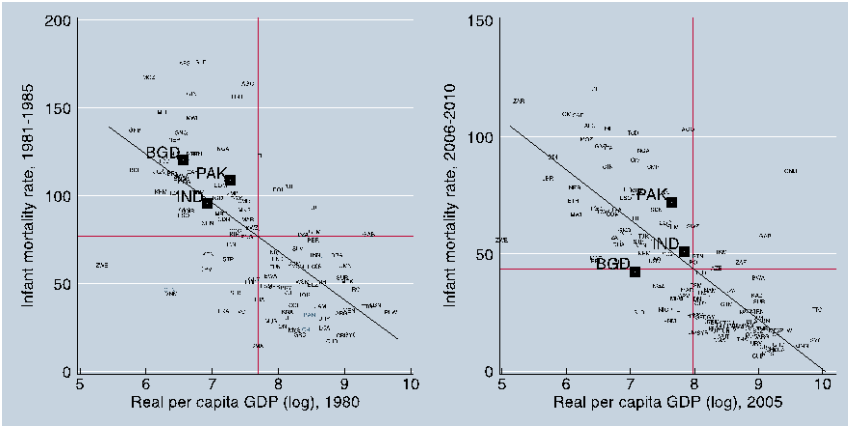


Figure 2: Immunisation, DPT (Diphtheria, Pertussis, Tetanus)

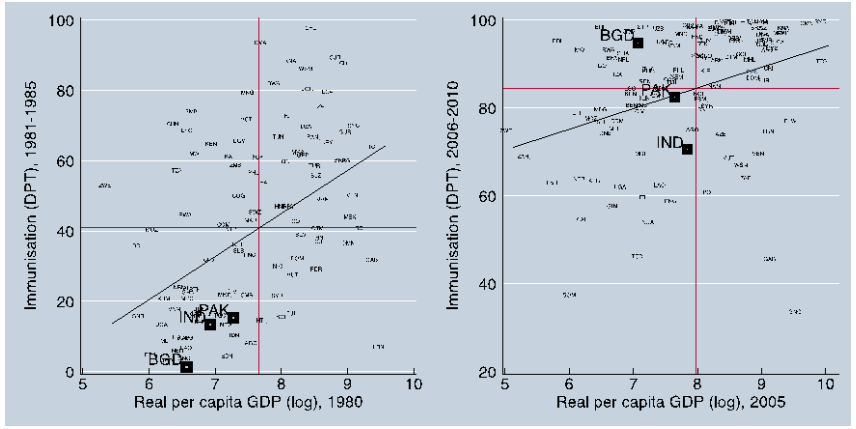
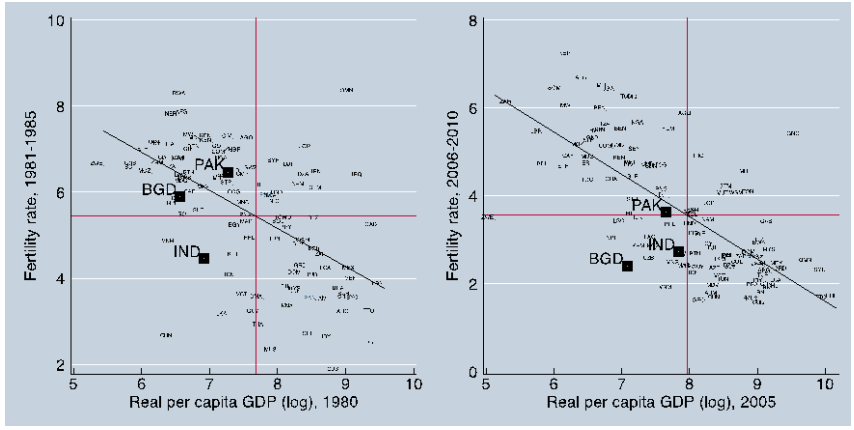


Figure 3: Female secondary school enrolment rate

Figure 4: Fertility rate, total (births per woman)

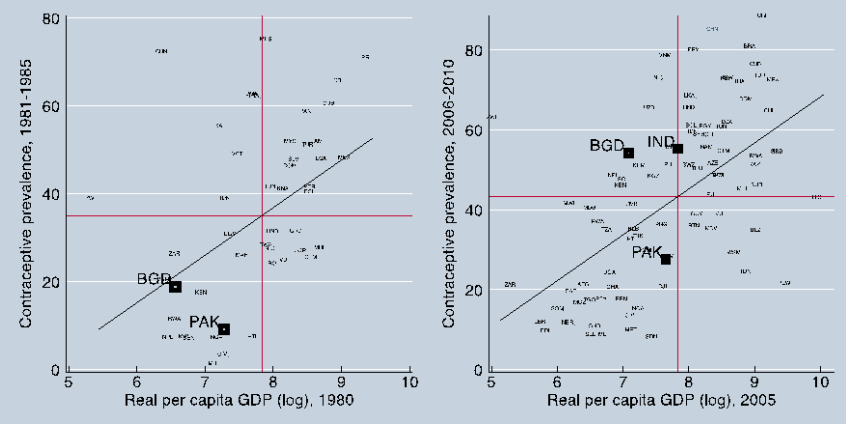


During the period from 1981 to 1985, Bangladesh was behind India and Pakistan in infant mortality. However, by 2010, mortality fell very quickly – so much so that it was lower than that in India and Pakistan (Figure 1). Between 1980 and 2010, Bangladesh's percentile rank in the cross-country data changed from 92 to 54, compared to only a modest improvement experienced by India (77 to 75), whilst the situation in Pakistan worsened (80 to 85) Bangladesh's position in 2010 is also below the regression line, confirming that the progress was achieved despite low income. The health progress made relative to India and Pakistan, as well as income level, is particularly striking in case of immunisation outcomes. The immunisation rate in Bangladesh increased from 1 percent in the early 1980s to over 70 percent within ten years, a development described by UNICEF as a near miracle (Chowdhury, Bhuiya and Aziz, 1999).

Turning to education outcomes, the progress made in female secondary school enrolment is remarkable. Once again, Bangladesh exceeds Pakistan by 2010 (Figure 3). Bangladesh's position in 2010 is also above the 45 degree line, confirming that the progress was achieved despite low income. Between 1980 and 2010, Bangladesh's percentile rank in the cross-country data improved from 18 to 27, compared to a fall for India (32 to 25) and Pakistan (21 to 14).

Since the 1970s, Bangladesh has also managed to reverse its initially poor record in terms of total birth per woman, now largely outperforming countries with similar income, including India and Pakistan (Figure 4). Between 1980 and 2010, Bangladesh's percentile rank in the cross-country female fertility data changed from 78 to 57, compared to only modest improvement experienced by Pakistan (78 to 74) and India (48 to 59).

Figure 5: Contraceptive prevalence (% of women ages 15-49)



Lastly, the progress in fertility decline has been aided by the spectacular increase in contraception prevalence. Between 1980 and 2010, the percentage of women using

contraception jumped from 10 to nearly 60, whilst the 2005 figures for Pakistan and India were 30 and 53, respectively.

3. Econometric evidence: health, education and demography regressions

Bangladesh's 'positive deviance' along key development outcomes is well reflected in Figures 1-5. In this section, instead, we take the analysis of Bangladesh's development further. We test and provide a quantitative appreciation of the exceptionality of Bangladesh's human development progress using cross-country regressions. Regression analysis can be used to formally test the hypothesis that Bangladesh's human development is unusual in relation to other countries with similar economic development. This means that Bangladesh would fare as a response outlier: the dependent variable of interest takes on an unusual value for economies with similar characteristics. In particular, we perform diagnostics based on introducing a Bangladesh dummy in human development regressions, which would simply detect if Bangladesh can shift the intercept of the development outcome of interest.[3] To observe its evolution, such regressions are repeated for each five-year sub-period. The hypothesis of Bangladesh's development exceptionality suggests that the Bangladesh dummy is expected to be statistically significant.

We unpack human development further, exploring for which dimensions Bangladesh's progress is most striking. We do so by using a wide range of measures. The following discussion shows that Bangladesh outperforms countries with similar level of per capita income on a number of health, education and fertility indicators. But this has not always been the case through its history, as we will show below.

3.1 Health regressions

Table 2 (panel (a)) shows the performance in health indicators in Bangladesh since its independence. Compared to other countries at the same income, Bangladesh has had a higher percentage of babies born with low birth weight and significantly higher infant mortality. However, since the 1970s, it has managed to reverse its initially poor record in terms of infant deaths per thousand and child deaths per thousand, now largely outperforming countries with similar income, including India and Pakistan. Excess mortality disappeared by mid-1990s, i.e. even before the country saw large-scale reduction in poverty. In addition, since 1990, the rate of mortality under the age of five has significantly decreased.

The sharp decline in child mortality in the post-1995 period is likely to be due to a confluence of a decline in poverty, a government immunisation scheme, a fall in fertility, the use of low-cost targeted technologies, and broader social changes, such as

[3] Its interpretation is equivalent to calculating studentised residuals (which correspond to the t-stat one would obtain by including the Bangladesh dummy).

improved literacy and women's empowerment (Koehlmoos et al., 2012). Similar factors are likely to have contributed to the fall in low birth babies. We discuss these factors in Section 4.

3.2 Education regressions

Bangladesh's progress in education has been somewhat mixed (Table 2; panel (b)). In the 2006-2010 period, 13 percentage points more of Bangladesh's population was more illiterate than is normal for a country of its income level, reflecting excess illiteracy of 11 percentage points for females and 15 percentage points for males. On the other hand, Bangladesh has generally improved school enrolment levels. Up to 1990, Bangladesh had no exceptional statistics in terms of its elementary school-age children enrolled in primary school. However, this changed in subsequent years and is driven by exceptional progress in terms of elementary school-age girls who attend primary school and poor progress concerning same-age boys. Equally, relative to other countries at its level of income, its superior performance in secondary school enrolment is explained mainly by a 14-percentage point abnormally high record for females in 2001-2005. [4] Tertiary enrolment is, however, abnormally low for females. The pathways underlying the progress achieved in gender equality are discussed in Section 4.

3.3 Demographic indicators regressions

Demographic indicators are exceptional in Bangladesh (Table 2; panel (c)). Population growth is unusually lower for Bangladesh than for countries with a similar income level, and there is lower fertility per woman. Fertility started to decline significantly as early as 1981-1985, with the rate of decline increasing in the 1990s. Bangladesh has also had an increasingly smaller age dependency ratio than a typical country of its development level. Finally, similar to other countries in South Asia, Bangladesh's population has a lower female proportion than normal. The decline in fertility and dependency ratio confirms the process of demographic transition, which was achieved through a combination of social awareness campaigns and easy access to contraception, as discussed later in Section 4.

The demographic changes documented above could be an important channel through which Bangladesh's future growth process is likely to benefit. The demographic transition changed the age composition of the Bangladeshi population, potentially affecting resource allocation at the household level and leading to demographic dividends at the

[4] This is also consistent with household data-based evidence for Bangladesh – see Asadullah and Chaudhury (2009a).

Table 2: Coefficient on Bangladesh dummy in health, education and demographic outcomes regressions: 1970-2010

1971-1975	1976-1980	1981-1985	1986-1990	1991-1995	1996-2000	2001-2005	2006-2010
Panel a: Health outcomes							
Low birth-weight babies (% of births)							
			35.13***	33.52***	15.73***	21.51***	8.17***
			(1.15)	(2.03)	(0.73)	(0.83)	(0.90)
Mortality rate, infant (per 1,000 live births)							
21.50***	20.25***	13.21***	6.00	-2.39	-10.27***	-16.64***	-19.29***
(5.94)	(5.40)	(4.90)	(4.55)	(3.65)	(2.71)	(2.44)	(2.61)
Mortality rate, under-5 (per 1,000)							
10.34	11.75	2.80	-7.86	-19.22***	-28.47***	-37.08***	-39.09***
(11.14)	(10.14)	(9.22)	(8.74)	(7.07)	(5.23)	(4.51)	(4.57)
Panel b: Education outcomes							
1971-1975	1976-1980	1981-1985	1986-1990	1991-1995	1996-2000	2001-2005	2006-2010
Literacy rate, adult, total (% of people aged 15 and above)							
		-24.22**		-15.75**		-12.03***	-13.37***
		(10.12)		(6.39)		(3.52)	(2.50)
Literacy rate, adult male (% of male aged 15 and above)							
		-23.82**		-15.80**		-15.17***	-15.52***
		(8.68)		(5.94)		(3.34)	(2.12)
Literacy rate, adult female (% of female aged 15 and above)							
		-26.02**		-16.85**		-9.89**	-11.62***
		(11.45)		(7.00)		(3.77)	(2.94)
School enrolment, primary (% gross)							
11.53***	-1.90	-18.29***	-9.65**			5.73**	0.14
(4.04)	(4.78)	(6.04)	(4.46)			(2.76)	(2.98)
School enrolment, primary, male (% gross)							
20.76***	6.88	-10.56**	-8.53*			-1.88	-7.02**
(4.08)	(5.06)	(4.77)	(4.32)			(2.66)	(2.82)
School enrolment, primary, female (% gross)							
1.94	-6.63	-14.78***	-9.62**			14.34***	7.63**
(4.51)	(5.10)	(5.36)	(4.85)			(3.10)	(3.22)
School enrolment, secondary (% gross)							
7.51***	1.31	0.11	-2.83		10.76***	9.76***	1.31
(2.02)	(2.47)	(2.11)	(2.59)		(2.74)	(2.34)	(2.25)
School enrolment, secondary, male (% gross)							
12.80***	3.59	2.28	-0.77		8.30***	4.73*	-3.39
(1.89)	(2.62)	(2.26)	(2.68)		(2.66)	(2.41)	(2.34)
School enrolment, secondary, female (% gross)							
3.09*	-5.35**	-4.60**	-5.12*		13.80***	14.84***	6.12**
(1.76)	(2.51)	(2.30)	(2.66)		(2.92)	(2.57)	(2.35)
School enrolment, tertiary (% gross)							
1.19**	1.35**	1.91***	1.69***		-1.12	-1.90	-2.72
(0.46)	(0.59)	(0.64)	(0.59)		(1.06)	(1.26)	(1.67)
School enrolment, tertiary, male (% gross)							
2.60***	2.18***	3.66***	3.51***		-0.67	-0.70	-1.25
(0.58)	(0.73)	(0.75)	(0.52)		(1.16)	(1.25)	(1.54)
School enrolment, tertiary, female (% gross)							
0.16	0.24	0.69	0.72		-2.08*	-2.87**	-4.76**
(0.40)	(0.52)	(0.59)	(0.55)		(1.21)	(1.38)	(2.10)
Panel c: Demographic outcomes							
1971-1975	1976-1980	1981-1985	1986-1990	1991-1995	1996-2000	2001-2005	2006-2010
Population growth (annual %)							
-1.31***	0.14	-0.05	0.00	0.04	-0.22	-0.32**	-0.62***
(0.17)	(0.23)	(0.15)	(0.15)	(0.23)	(0.17)	(0.14)	(0.22)
Fertility rate, total (births per woman)							
0.15	-0.02	-0.53***	-1.20***	-1.61***	-1.65***	-1.84***	-1.93***
(0.13)	(0.15)	(0.16)	(0.16)	(0.16)	(0.15)	(0.14)	(0.14)
Population, female (% of total)							
-1.59***	-1.48***	-1.74***	-1.81***	-2.28***	-2.21***	-1.97***	-1.60***
(0.19)	(0.21)	(0.22)	(0.17)	(0.33)	(0.28)	(0.27)	(0.32)
Age dependency ratio (% of dependents, younger than 15 and older than 64, to the working-age population)							
	0.82	-2.72*	-7.45***	-9.50***	-14.20***	-16.81***	-19.55***
	(1.44)	(1.45)	(1.46)	(1.26)	(1.16)	(1.28)	(1.47)

Notes: Data is from the 2011 World Development Indicators (World Bank, 2011). The dependent variable in each regression is measured as a five-year average. All regressions control for one-year lagged level of per capita income (log) and are conducted on a sample of developing economies. Heteroskedasticity-robust standard errors are in parentheses; ***, ** and * indicate significance at 1%, 5% and 10% level (two-tailed test).

aggregate level. There is also micro-level evidence that these demographic changes are likely to benefit the development process.[5] The changes are also significant, in that they facilitated progress in other social indicators. We discuss this issue in the next section.

4. Pathways to human development

Sen (1999, Chapter 2) distinguishes between 'income-mediated' and 'support-led' human development. The former works through rapid and broad-based economic growth, which facilitates better standards of living and better provision of social services, while the latter works primarily through effective welfare programmes that support health, education and social security. In this section, we look at the potential of both channels. Firstly, we assess whether Bangladesh's human development progress can be supported by public expenditure, as this could be important for future policy strategies. Secondly, we assess to what extent Bangladesh's human development can be aided by economic growth. Finally, we speculate on the lessons we can learn from this case study.

4.1 Does public expenditure matter?

The trends in the government's budgetary allocations show that the shares of expenditure on both health and education out of the total budget expenditure have increased steadily from the early 1980s to the late 1990s (Mahmud, 2008). However, as a percentage of GDP, spending on education and health still remains rather low when compared to other developing countries.[6] On average, education expenditure in Bangladesh remains below that of India and Pakistan. This is evident from Table 3, which presents data on public spending (see panels (a) and (b)).

In panel (c), we test whether public expenditure in Bangladesh has been abnormally low by studying the sign and significance of the Bangladesh dummy in public expenditure regressions. Bangladesh has had, and still has, significantly less public health spending as a share of GDP than countries with the same income (1.82 percent less in 2006-2010). Similarly, public spending on education is, for example, 2.1 percentage points lower than in countries with the same income level in 2006-2010.

[5] Causal evidence on the demographic dividend is not available. But see Schultz (2009) for a case study on the return to a programme-induced demographic transition. He uses data from household surveys and long-run social experiments in Matlab thana, which extended a family planning and maternal and child health programme to half the villages in the district in 1977. Recorded fertility in the programme villages was 15–16 percent lower than in the control villages for two decades. Households in the programme villages realised health and productivity gains that were concentrated among women, survival and schooling increased among children, and after 19 years household physical assets were 25 percent greater per adult than in the control villages.

[6] There is some evidence that household spending on health has increased over time. Household share in the total health spending increased from 57 percent in 1997 to 64 percent in 2007 (Rannan-Eliya, 2012).

Table 3: Health and education public expenditure in Bangladesh: 1976-2010

Panel (a): Health expenditure							
Year	1976-1980	1981-1985	1986-1990	1991-1995	1996-2000	2001-2005	2006-2010
Bangladesh vis-à-vis Pakistan and India							
BGD Rank				1.28 11th perc.	1.15 7th perc.	1.18 8th perc.	1.13 4th perc.
PAK Rank				0.84 5th perc.	0.76 4th perc.	0.70 1st perc.	0.83 2nd perc.
IND Rank				1.22 10th perc.	1.25 9th perc.	1.11 6th perc.	1.27 6th perc.
Asia (developing economies)							
Mean Sd N Rank				1.81 1.01 26 28th perc.	1.90 1.01 27 26th perc.	1.94 1.08 27 21st perc.	2.07 1.25 27 24th perc.
Panel (b): Education expenditure							
Year	1976-1980	1981-1985	1986-1990	1991-1995	1996-2000	2001-2005	2006-2010
Bangladesh vis-à-vis Pakistan and India							
BGD Rank	0.94 1st perc.	1.26 3rd perc.			2.40 14th perc.	2.35 11th perc.	2.47 9th perc.
PAK Rank	2.13 14th perc.	2.43 18th perc.			2.16 11th perc.	2.05 8th perc.	2.77 16th perc.
IND Rank	2.87 30th perc.	3.19 34th perc.			4.16 46th perc.	3.40 27th perc.	3.09 20th perc.
Asia (developing economies)							
Mean Sd N Rank	3.63 3.14 12 43rd perc.	2.93 2.35 11 30th perc.			3.27 1.56 21 28th perc.	3.61 1.91 20 31st perc.	3.80 1.59 20 33rd perc.
Panel (c): Coefficient on Bangladesh dummy in health and education expenditure regressions							
Year	1976-1980	1981-1985	1986-1990	1991-1995	1996-2000	2001-2005	2006-2010
Public spending on education, total (% of GDP)							
	-2.82*** (0.33)	-2.89*** (0.82)			-8.44 (6.58)	-15.51 (13.08)	-2.14*** (0.31)
Health expenditure, public (% of GDP)							
				-0.79*** (0.18)	-0.98*** (0.14)	-1.30*** (0.15)	-1.82*** (0.19)

Notes: Data is from the 2011 World Development Indicators (World Bank, 2011). Both types of public expenditures are expressed as share of GDP and measured as five-year averages. The developing countries group includes low, upper- and lower-middle income economies, following the World Bank classification. The dependent variable in each regression is measured as a five-year average. Both regressions control for one-year lagged level of per capita income (log) and are conducted on a sample of developing economies.

Such results suggest that Bangladesh's progress in human development has been achieved despite low social expenditure. This is confirmed by an analysis of data on progress in health and education inputs (Table 4). Health inputs measured in terms of percentage of births assisted by skilled attendants remains low, i.e. only 26.5 percent (BRAC, 2012). Percentage of total births attended by skilled health staff is significantly lower in Bangladesh when compared to other countries of similar income level, and the situation has not improved over time. This is also true for number of hospital beds. All these can be in part attributed to the insufficient public investment in health.

In education, schools remain resource-strapped. There are six additional students per teacher (a proxy for school quality) in Bangladeshi primary schools than what its income level would predict. The student-teacher ratio was also significantly higher in secondary education for all years except the period 2006-10. As in the case of health, this could be

the effect, in part, of the lack of public resources invested in education, as we illustrate in Section 4.

Given low budget spending and levels of inputs, progress was achieved through a combination of low-cost solutions and non-government service providers, which complemented public education and health interventions.[7] In this context, the NGO sector played an important role in a number of ways.

Table 4: Coefficient on Bangladesh dummy in health, demographic and education inputs regressions: 1970-2010

1971-1975	1976-1980	1981-1985	1986-1990	1991-1995	1996-2000	2001-2005	2006-2010
Health inputs							
Immunisation, DPT (% of children ages 12-23 months):							
	-26.49*** (3.31)	-22.39*** (3.43)	13.16*** (3.00)	12.38*** (2.43)	17.62*** (1.97)	14.51*** (1.61)	26.49*** (3.31)
Immunisation, measles (% of children ages 12-23 months):							
	-28.43*** (3.31)	-24.85*** (3.03)	12.31*** (2.63)	3.71 (2.26)	6.33*** (1.91)	17.07*** (1.61)	28.43*** (3.31)
Births attended by skilled health staff (% of total)							
				-33.01*** (4.27)	-42.50*** (2.90)	-41.45*** (2.97)	-38.93*** (2.69)
Hospital beds (per 1,000 people)							
	-1.82*** (0.36)	-1.63*** (0.33)	-0.94*** (0.15)	-0.85* (0.43)	-2.45*** (0.54)	-1.46*** (0.25)	
Education inputs							
Pupil-teacher ratio, primary							
8.42*** (1.75)	10.84*** (2.18)	5.75*** (1.86)	20.26*** (2.19)			5.96*** (1.93)	6.32*** (1.74)
Pupil-teacher ratio, secondary							
8.42*** (1.75)	-0.29 (1.25)	3.99** (1.55)	4.21*** (1.11)		14.46*** (1.15)	6.77*** (1.18)	-0.13 (1.59)
Demographic inputs							
Contraceptive prevalence (% of women aged 15-49)							
	4.91 (4.62)	-3.45 (6.48)	3.96 (4.42)	18.52*** (3.68)	22.93*** (2.28)	27.99*** (2.58)	19.71*** (2.46)

Notes: See Table 3.

Diarrhoea accounted for one-third of all childhood deaths in the 1970s and 1980s, whilst another third was attributable to six immunisable diseases. Yet by 1986-1990, Bangladesh had a higher percentage of immunised children compared to other countries of similar income level (Table 4). This reversal of past trends in immunisation statistics, combined with a successful campaign against diarrhoeal disease, ensured a steep decline in child mortality. Two low-cost interventions made this possible.

The Oral Therapy Extension Programme (OTEP) of BRAC scaled up oral rehydration solution using an incomplete but simple substitute. This initiative covered 12 million households and played a key role against diarrheal disease (Chowdhury and Cash, 1998). OTEP also provided a platform to scale up child-targeted health programmes, thereby assisting the government to achieve the target of 80 percent infant immunisation by 1990. In 142 sub-districts, OTEP health workers additionally instructed mothers on

[7] The share of NGO financing in the total health spending ranged between one and two percent over the period 1997-2007 (Rannan-Eliya, 2012).

the value of immunising children against the six diseases (diphtheria, pertussis, tetanus, measles, polio and tuberculosis) and of feeding them vitamin A-rich food. As such, the BRAC programme facilitated the government programme through social mobilisation and creating a demand for increased coverage. In addition, BRAC ran another scheme – the Child Survival Programme (CSP) – to promote the government's efforts to attain 'Health for All' by 2000 through reducing child and maternal morbidity. The CSP health technology included the oral rehydration therapy, immunisation and Vitamin A (Rohde, 2005). Between 1986 and 1990, the CSP covered a third of Bangladesh, including many non-OTEP areas. The NGO-government coalition in the health sector therefore remains an important explanation for the exceptional progress towards health-related MDGs in Bangladesh.

The gains made in immunising children against measles and DPT were aided by an early decline in fertility. The latter, on the other hand, was achieved at a time when female schooling was extremely low, poverty was widespread and contraception use was limited. The success in early reduction in fertility is instead attributed to NGO- and government-led social campaigns that educated the masses about the importance of family planning for child and maternal wellbeing. By the 1990s, more married Bangladeshi women of childbearing age started using contraceptives than is typical for a country of Bangladesh's income level (see Table 4). This helped achieve a further decline in fertility.

Similarly, excess infant mortality in Bangladesh disappeared compared to other countries as early as 1986-1990 – a time period when female schooling was very low. This achievement is particularly striking considering the fact that maternal schooling is considered to be a key channel in explaining the global reduction in child mortality (Gakidou et al., 2010). Once again, the early decline in fertility combined with immunisation and a diarrheal diseases campaign explain Bangladesh's achievement without a high level of maternal education.

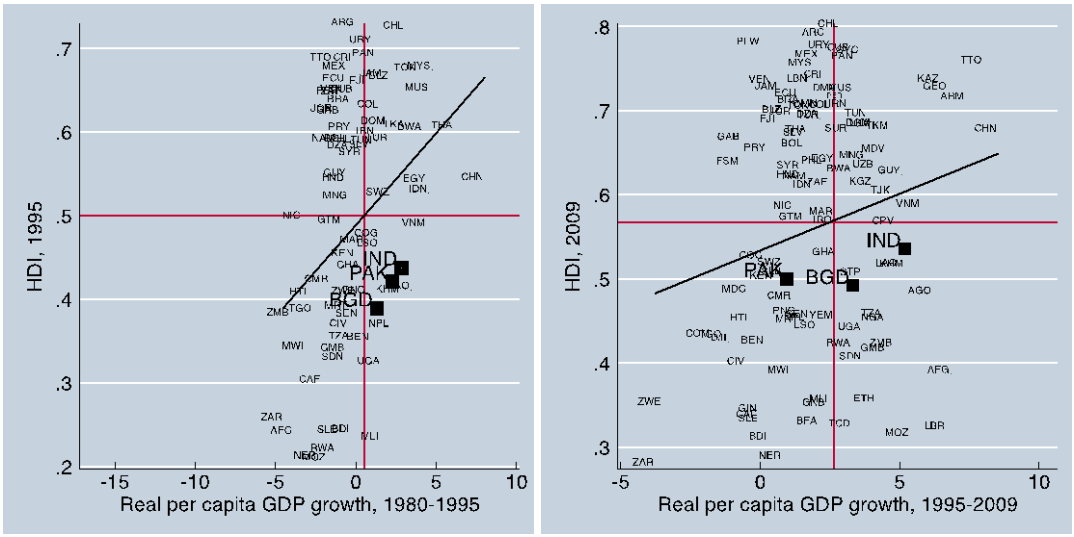
NGO programmes also made an important contribution in the education sector. At the primary level, the effects of government schemes such as a cash stipend scheme and a food for education programme were reinforced by the large presence of BRAC-run single-teacher non-formal schools, and helped to achieve gender parity in enrolment. BRAC schools targeted dropouts and non-enrolled children, particularly girls, in marginalised communities. However, the boom in female enrolment in secondary education is largely credited to a government- and donor-led gender-targeted cash transfer scheme, i.e. Female Secondary School Stipend programme (FSSSP). A partnership was formed with pre-existing Islamic schools (i.e. madrasas) to scale up the programme.

Despite the above achievements, several challenges remain unmet. Bangladesh still lags behind in achieving universal health coverage. Progress is still lacking in outcomes such as maternal mortality and school completion. At the same time, Table 4 highlighted the low level of inputs and public spending compared to other countries of a similar income level. In policy terms, therefore, this suggests that the potential of the public expenditure tools has still to be fully exploited. Sustaining the development momentum may require a greater commitment to publicly funded health and education programmes in the future.

4.2 Human development and growth: a virtuous cycle for Bangladesh?

Public spending on health and education aside, can higher growth in per capita income lead to pay-offs in terms of human development? Ranis et al. (2000) have argued that economic growth may feed into human development, which in turn reinforces growth, starting a virtuous cycle. Does the above evidence imply that the Bangladeshi economy could be experiencing such a cycle? This may not be the case if the links channelling growth into human development are not strong. In particular, development in Bangladesh may have been *economic growth lop-sided*, to use the language of Ranis et al. (2000).

Figure 6: Scatterplot of HDI and per capita income growth, 1980-2009



To illustrate this, we look at how Bangladesh is positioned in the relationship between human development and per capita real GDP growth as obtained from cross-country scatter plots (Figure 1). To eyeball the data, we report vertical and horizontal lines indicating the mean of the x- and y-axis variables, respectively. Following Ranis et al. (2000), this allows us to classify the relationship between growth and human development into four categories: *virtuous cycle* (top-right quadrant), *vicious cycle* (bottom-left quadrant), *growth lop-sided* (bottom-right quadrant) and *human development lop-sided* (top-left quadrant). Figure 3 shows the scatter diagrams, for all developing

countries for which data are available, showing this relationship (along with simple regressions). We split the 1980-2009 period into two sub-periods, so that the analysis reflects the change in growth performance that Bangladesh experienced in the mid-1990s. Note how Bangladesh has, even after its growth leap, experienced *growth lop-sidedness*, although it has moved a little closer to the *virtuous cycle* countries.

This implies that the links leading from growth to human development are relatively weak, or at least not strong enough to lift the country in the top-right quadrant. In turn, this may signal that health and education expenditure may be insufficient or income concentration may be acting as a brake to human development. Ranis (2009) has recently argued that Bangladesh has a better chance to move into a virtuous cycle, given its strong human development base. Whether this can become true may depend on polices aimed at strengthening such links.

4.3 Which lessons from the Bangladeshi experience?

Bangladesh's achievements do not seem to fit into the typical pathways to development. The evidence above shows that its progress in human development neither reflects the effect of economic performance nor public expenditure-led human development. Rather, the progress may be attributed to using low-cost solutions to providing public goods. In the case of Bangladesh, Mahmud (2008) argued that the public provision of health and education has been engineered by NGOs, combining low-cost solutions with public awareness campaigns.

Future research should formally test for this possibility by studying the development process in countries that had a similar growth experience and yet dissimilar labour cost, non-state providers and population density. However, the focus on low-cost solutions often ignored quality of service provision and hence may involve growth trade-offs. Such solutions often involved innovative institutional partnership with non-state providers.[8] One case in point is the mainstreaming of *madrasa* education through reforming their curricula and accepting their eligibility for participation in the female secondary school stipend programme (Asadullah and Chaudhury, 2009b). This low-cost reform has led to a boom in female secondary schooling and facilitated the school participation of children from poor socioeconomic backgrounds. Existing evidence suggests that enrolment in these schools is associated with a slight learning disadvantage (Asadullah, Chaudhury and Dar, 2007). This aspect of the development process may prove to be a binding constraint on the growth process if policy makers aim to increase the share of technology and skill-intensive manufacturing activities in the economy.

[8] An exception is the non-formal school programme run by BRAC. These schools helped Bangladesh achieve the MDG target of universal primary education and gender parity in enrolment without comprising education quality.

The empirical evidence presented also emphasises the need to better understand the multiple pathways through which human development and growth can be achieved. For example, will improved human development lead to pay-offs in terms of growth in per capita income? We speculate on these issues in the reminder of the section.

In order to sustain the current rate of growth, the lessons from countries like China is that their pre-reform stage HD surplus aided the later process of growth via aiding the process of human capital formation. However, these countries also had a governance surplus. This sets Bangladesh apart from pre-reform China. Despite an HD surplus, whether the country will end up in the category of HD-lopsided depends on whether the governance deficit will: (a) adversely affect the process of human capital formation; and (b) directly affect non-human capital-related drivers of growth.

In principle, progress in human development can aid growth in a number of ways. Firstly, investment in female schooling is widely believed to contribute to growth, and not just via the labour market channel. There are also potential returns to women's schooling in the household sector, where female schooling has important effects on the human capital of future generations. Indeed, cross-country analysis confirms the beneficial effects of female educational attainment – it lowers fertility, increases life expectancy and reduces infant mortality (Barro and Lee, 1994). If true, we can expect the boom in female secondary schooling in Bangladesh to reinforce the progress already made in terms of increase in life expectancy and reduced infant mortality through the improved agency of women. However, such an effect cannot be captured in the short run. In addition, the level of female schooling is still low to have a growth effect.[9]

Secondly, human development can create human capital and lead to growth pay-offs. Indeed, increased investment in education is often promoted as a key development strategy aimed at promoting economic growth. Microeconomic study of Bangladesh finds high private rates of return for additional years of schooling, as measured by increases in wages (Asadullah, 2006), implying that the rise in schooling should raise GDP. Equally, education of girls is believed to have substantial macroeconomic returns. Low levels of female enrolment in school and a gender imbalance in school enrolment are harmful to economic growth (Knowles et al., 2002; Klasen, 2002). Recognising this, the government of Bangladesh has introduced a number of reform programmes over the last two decades to remove various supply- and demand-side constraints to female education. As evident from the earlier section, Bangladesh has made remarkable progress in improving school participation of boys and girls.

However, empirical studies of economic growth across a range of countries have often found a low, and frequently insignificant, coefficient on the growth of schooling (Pritchett,

[9] In their study on the determinants of economic growth in South Asia, Cooray and Mallick (2012) find that female schooling is an insignificant source of growth.

2001; Easterly, 2003). The growth-enhancing effect of education could be greatly diminished if governance in the education sector and in the broader economy is poor, so that school attendance creates little human capital, and/or education only pays off in rent-seeking activities. Indeed many low-income countries have seen little increase in per capita income, despite experiencing significant gains between 1960 and 2000 in the average years of schooling. The lack of macroeconomic returns to education in low-income countries is attributed to a number of factors, including poor quality of education (Pritchett, 2001) and the economy's inability to use schooling productively (Rogers, 2008).[10]

Significant challenges remain in the education sector, particularly on improving learning outcomes. In 2008 only three percent of students achieved all competencies in maths and fewer than 15 percent in the vernacular Bangla. Only 63 percent and 69 percent of children achieved a minimum numeracy and literacy performance, respectively (DPE, 2011). In other words, gains in human development in the form of increase in educational access have not gone hand-in-hand with improvement in quality; this is partly because of governance problems in the education sector. Service provider absenteeism in the health and education sectors is a well-documented phenomenon (Chaudhury and Hammer, 2004; Chaudhury et al., 2006). Transparency International Bangladesh (2005) has also found that in the education sector, 40 percent of students at the primary level had to pay admission fees at an average rate of Tk. 209, despite the fact that primary education is supposed to be free; 32.4 percent of primary school students who were entitled to a government stipend had to pay an average of Tk. 40 for enrolment in order to receive the stipend. In the case of girl students at the secondary level, 22 percent had to make similar payments for the government stipend, at an average rate of Tk. 45.

Increases in schooling therefore are a necessary, but not sufficient, condition for increases in the human capital stock of the economy. The extent of the growth-enhancing effect of education depends, among other things, on the degree of corruption in the economy. In this sense, whether Bangladesh's progress in human development will translate into higher growth partly depends on improvements in governance in the social and economic sectors.

[10] Rogers (2008) uses data on corruption, the black market premium on foreign exchange and the extent of the brain drain in developing countries as indicators of an economy's productive use of schooling. Regression analysis shows that the impact of schooling on economic growth is substantially higher in countries that are adjudged to use schooling productively. In particular, the impact of schooling is found to increase as the average level of corruption and the black market premium falls.

5. Conclusions

Given its income level and its initial conditions, Bangladesh's achievements in human development are remarkable. In this study, we have empirically investigated Bangladesh's patterns of development, presenting regression-based evidence aimed at uncovering where, when, and along which dimensions of development, Bangladesh's exceptionality lies. The results support the view that Bangladesh has achieved significantly higher progress, compared to economies sharing similar levels of income, in terms of a wide range of social indicators. Bangladesh enjoyed a higher rank in the HDI, even when compared to other countries with similar per capita income. However, this progress in human development is more significant for the post-2000 period. Component-wise, analysis indicates that Bangladesh was amongst the losers in child mortality reduction in the 1970s and 1980s, but not in the 1990s and 2000s. Similarly, the gender disadvantage in primary and secondary education disappeared by the mid-1990s. Overall, progress was exceptional because it was achieved despite low budgetary allocations, poor governance, lower living standards and, in some cases, in a very short period of time.

Where does the exceptionality of Bangladesh's development come from? Our analysis highlights several things that happened simultaneously to cause the development surprise. First, the human development progress achieved coincides with the rise of NGO programmes which, in partnership with the governmen,t, helped reduced fertility and child mortality through a combination of low-cost solutions and social awareness campaigns. Similar collaborations brought success in the field of education. This lends support to a more marginal approach facilitated by a dynamic NGO sector, instead of the 'transformational' approach using large-scale foreign aid flow (Easterly, 2006). However, the success of this approach is partly due to Bangladesh's geography: the proximity of settlements facilitated the easy adoption of low-cost solutions and the quick spread of good practices. Second, the health and education indicators improved at varying pace and different intervals. This created useful synergies between different social indicators. The fertility decline began during the 1980s, when income and schooling levels were very low. This set the ground for later progress in education and health indicators. Equally, gender parity in schooling was triggered by the introduction of demand-side incentive schemes, which was further reinforced by the nationwide up-scaling of microcredit programmes. Third, more resources are needed to tackle the problem of unattended births and increase the number of beds per hospital. Whether gains in education and uptake of health services will translate into human capital remains unknown. Improving the quality of education may not be achieved through low-cost solutions per se. An effective human development strategy combining health, education and training will be key to the economy's competitiveness as it tries to break into middle-income country status. Therefore, our study supports Mahmud (2008), which calls for greater allocation of public funds to social causes, continuous public awareness campaigns and improved governance in public service delivery systems.

Finally, we conjecture on the role of Bangladesh's achievement in human development for its long-term economic development. Following Ranis and Stewart (2006), such progress could place Bangladesh on a path of sustained growth, eventually starting a virtuous cycle whereby higher human development is followed by higher growth, igniting a positive feedback loop. Would this be enough to sustain economic development?

Insufficient governance and institutional quality could be an obstacle. Collier (2007) argues that an economic growth programme need not be based around the agenda of good governance and accountability. Bangladesh was able to achieve economic growth despite being tied to the most corrupt government in the world for many years (often governance quality indicators have ranked Bangladesh in the bottom quintile: see for details Teorell et al., 2008). The path to economic success was conventional high-labour manufacturing, a sector that does not require too much government intervention to make things work in countries with large labour forces and ports. However, according to Collier, as the economy becomes complex and specialises in high value-added activities, the current institutional set-up may become a binding constraint. Bangladesh may find itself in a trap whereby further growth is threatened by the poor state of governance (World Bank, 2012a).

Here, progress achieved in social and human development can be helpful, via an economic and a political channel. According to the economic channel, the growth effect due to improvements in human development could itself provide the resources to develop better institutions of governance. But the ultimate effect on the growth process may still depend on whether gains from human development are large enough compared to governance-related inefficiencies (and provided that the governance deficit per se does not limit the beneficial effects of human development on economic growth). The political channel, instead, would see an effect working through an increased demand for better institutions and governance. Advances in social and human development may make larger strata of the population politically active, demanding reforms of economic and political institutions so that those excluded may also benefit from the process of economic development. This would be one more reason to prioritise polices that sustain the human and social development momentum in Bangladesh. However, as Acemoglu and Robinson (2012) warn, the timing and the real effect of the political channel will depend on the elite's incentives and commitment to development.

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Appendix Table 1: Mortality rate, infant (per 1,000 live births): 1976-2010

Mortality rate, infant (per 1,000 live births): five-year averages							
Year	**1976-1980**	**1981-1985**	**1986-1990**	**1991-1995**	**1996-2000**	**2001-2005**	**2006-2010**
Bangladesh							
Average	137.76	120.36	104.86	88.32	69.68	54.24	42.24
Rank	92nd perc.	89th perc.	86th perc.	84th perc.	77th perc.	70th perc.	68th perc.
Pakistan							
Average	113.62	108.38	99.60	92.10	82.82	76.68	71.76
Rank	80th perc.	84th perc.	84th perc.	85th perc.	83rd perc.	85th perc.	86th perc.
India							
Average	106.52	95.16	85.22	75.54	66.22	58.00	50.82
Rank	77th perc.	76th perc.	77th perc.	76th perc.	74th perc.	75th perc.	75th perc.
Asia (developing economies)							
Mean	93.32	81.51	70.06	60.96	52.60	44.24	37.68
Sd	37.75	34.75	31.53	26.23	22.78	21.33	20.49
N	26	27	28	28	28	28	28
Rank	68th perc.	69th perc.	68th perc.	68th perc.	67th perc.	66th perc.	66th perc.
South Asia							
Mean	124.05	109.46	94.75	79.47	66.14	56.53	49.12
Sd	41.99	39.20	34.46	27.62	24.86	26.65	28.60
N	8	8	8	8	8	8	8
Rank	87th perc.	85th perc.	81st perc.	78th perc.	74th perc.	73rd perc.	74th perc.

Notes: Data is from the 2011 World Development Indicators (World Bank 2011). Countries are grouped following the World Bank classification. Developing countries include low, upper and lower middle income economies.

Appendix Table 2: Immunisation, DPT (Diphtheria, Pertussis, Tetanus): 1976-2010

Immunisation, DPT (% of children ages 12-23 months): five-year averages							
Year	**1976-1980**	**1981-1985**	**1986-1990**	**1991-1995**	**1996-2000**	**2001-2005**	**2006-2010**
Bangladesh							
Average		1.20	29.40	73.40	77.80	89.40	94.80
Rank		1st perc.	6th perc.	29th perc.	29th perc.	44th perc.	59th perc.
Pakistan							
Average		15.20	40.40	45.20	54.60	69.00	82.40
Rank		17th perc.	14th perc.	9th perc.	14th perc.	16th perc.	23rd perc.
India							
Average		13.20	42.00	62.40	64.00	62.00	70.40
Rank		13th perc.	17th perc.	19th perc.	19th perc.	10th perc.	11th perc.
Asia (developing economies)							
Mean		31.38	58.14	71.62	78.45	82.01	87.51
Sd		24.56	22.46	19.52	18.98	15.42	11.79
N		20	20	28	28	28	28
Rank		30th perc.	27th perc.	26th perc.	29th perc.	32nd perc.	32nd perc.
South Asia							
Mean		19.75	50.62	65.08	72.17	78.22	86.30
Sd		17.89	21.10	25.98	23.54	19.30	13.27
N		8	8	8	8	8	8
Rank		20th perc.	21st perc.	20th perc.	24th perc.	28th perc.	30th perc.

Notes: Data is from the 2011 World Development Indicators (World Bank 2011). Countries are grouped following the World Bank classification. Developing countries include low, upper and lower middle income economies.

Appendix Table 3: Female secondary enrolment rate: 1976-2010

Female secondary enrolment rate: five-year averages							
Year	**1976-1980**	**1981-1985**	**1986-1990**	**1991-1995**	**1996-2000**	**2001-2005**	**2006-2010**
Bangladesh							
Average	7.53	9.07	11.49		44.51	50.65	49.20
Rank	18th perc.	16th perc.	16th perc.		30th perc.	27th perc.	20th perc.
Pakistan							
Average	8.81	8.93	10.89	16.10		25.41	28.43
Rank	21st perc.	15th perc.	15th perc.	16th perc.		14th perc.	12th perc.
India							
Average	17.28	22.40	26.45	35.33	36.52	43.21	52.66
Rank	32nd perc.	31st perc.	28th perc.	26th perc.	27th perc.	25th perc.	24th perc.
Asia (developing economies)							
Mean	24.59	44.87	45.69	49.34	54.93	62.31	68.28
Sd	24.02	38.10	34.87	30.49	24.10	25.21	23.08
N	16	18	18	21	25	25	24
Rank	39th perc.	49th perc.	45th perc.	35th perc.	35th perc.	30th perc.	27th perc.
South Asia							
Mean	13.55	17.59	24.12	36.52	39.38	45.25	47.20
Sd	16.95	20.08	24.04	25.59	9.28	25.65	20.82
N	7	7	6	6	5	8	7
Rank	28th perc.	29th perc.	27th perc.	27th perc.	29th perc.	27th perc.	19th perc.

Notes: Data is from the 2011 World Development Indicators (World Bank 2011). Countries are grouped following the World Bank classification. Developing countries include low, upper and lower middle income economies.

Appendix Table 4: Fertility rate, total (births per woman): 1976-2010

Fertility rate, total (births per woman): five-year averages							
Year	**1976-1980**	**1981-1985**	**1986-1990**	**1991-1995**	**1996-2000**	**2001-2005**	**2006-2010**
Bangladesh							
Average	6.59	5.89	4.93	4.03	3.35	2.80	2.40
Rank	78th perc.	68th perc.	61st perc.	60th perc.	60th perc.	57th perc.	49th perc.
Pakistan							
Average	6.58	6.46	6.21	5.63	4.85	4.01	3.61
Rank	78th perc.	79th perc.	81st perc.	80th perc.	77th perc.	74th perc.	67th perc.
India							
Average	4.84	4.44	4.07	3.68	3.27	2.94	2.72
Rank	48th perc.	50th perc.	54th perc.	56th perc.	59th perc.	59th perc.	59th perc.
Asia (developing economies)							
Mean	4.97	4.68	4.31	3.78	3.21	2.83	2.66
Sd	1.49	1.56	1.52	1.44	1.36	1.17	1.00
N	28	28	28	28	28	28	28
Rank	50th perc.	53th perc.	55th perc.	56th perc.	58th perc.	57th perc.	58th perc.
South Asia							
Mean	6.10	5.88	5.47	4.85	4.18	3.57	3.15
Sd	1.32	1.50	1.63	1.66	1.71	1.61	1.49
N	8	8	8	8	8	8	8
Rank	66th perc.	67th perc.	68th perc.	70th perc.	66th perc.	66th perc.	67th perc.

Notes: Data is from the 2011 World Development Indicators (World Bank 2011). Countries are grouped following the World Bank classification. Developing countries include low, upper and lower middle income economies.

Appendix Table 5: Contraceptive prevalence (% of women ages 15-49): 1976-2010

Contraceptive prevalence (% of women ages 15-49): five-year averages							
Year	**1976-1980**	**1981-1985**	**1986-1990**	**1991-1995**	**1996-2000**	**2001-2005**	**2006-2010**
Bangladesh							
Average	10.20	18.85	28.35	42.25	51.50	58.10	54.20
Rank	16th perc.	16th perc.	24th perc.	38th perc.	52nd perc.	55th perc.	62rd perc.
Pakistan							
Average	3.30	9.10	14.50	17.17	17.97	29.85	27.53
Rank	6th perc.	12nd perc.	17th perc.	20th perc.	16th perc.	26th perc.	24th perc.
India							
Average	35.30		44.90	40.70	47.55	53.00	55.15
Rank	40th perc.		41st perc.	37th perc.	47th perc.	48th perc.	64th perc.
Asia (developing economies)							
Mean	24.79	37.01	44.99	45.07	48.76	51.33	50.66
Sd	20.03	24.14	19.24	21.97	19.75	18.41	15.87
N	9	9	11	20	27	21	23
Rank	22nd perc.	38th perc.	42nd perc.	42nd perc.	48th perc.	47th perc.	55th perc.
South Asia							
Mean	19.96	22.41	32.91	34.02	37.19	38.45	42.96
Sd	20.84	22.28	20.31	17.23	20.30	16.58	15.97
N	5	4	5	7	8	6	8
Rank	21st perc.	19th perc.	28th perc.	34th perc.	36th perc.	35th perc.	44th perc.

Notes: Data is from the 2011 World Development Indicators (World Bank 2011). Countries are grouped following the World Bank classification. Developing countries include low, upper and lower middle income economies.

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Brooks World Poverty Institute

Executive Director
Professor David Hulme

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Contact:

Brooks World Poverty Institute
The University of Manchester
Arthur Lewis Building
Oxford Road
Manchester
M13 9PL
United Kingdom

Email: **bwpi@manchester.ac.uk**

www.manchester.ac.uk/bwpi

www.manchester.ac.uk/bwpi