Bangladesh: Selected Issues

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BANGLADESH

Selected Issues

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Approved by the Asia and Pacific Department

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I.   REMITTANCES IN SOUTH ASIA AND THE PHILIPPINES: DETERMINANTS AND OUTLOOK[1]

Summary

- This paper analyzes the surprising strength of remittances in Bangladesh and other countries in South Asia and the Philippines in 2009.

- The empirical analysis in the paper suggests that the continued strong growth of remittances in these countries is related to the resilience of non-oil GDP growth in the GCC countries and the surge in the GCC countries' hiring of migrant workers from South Asia during 2006–2008.

- The remittances to GDP ratio in South Asia and the Philippines is likely to remain robust in the near term. The demand for migrant workers is likely to remain strong in view of the projected reacceleration of non-oil growth in the GCC countries during the next few years, supported by continued high oil prices.

A.   Introduction

1.   **More than one year into the global financial crisis, remittances continue to rise in South Asia and the Philippines**. Inflows of workers' remittances to these countries increased rapidly before the global financial crisis. Their continued strength has important implications for the balance of payments and macroeconomic policies in these countries:

- Since the onset of the crisis, Sri Lanka's imports and export both declined and the trade deficit narrowed. Remittances are holding up and are now sufficient to finance the trade deficit, thereby providing important support to the balance of payments.

- In Bangladesh, the strength of remittances in conjunction with weak imports caused a record current account surplus in FY2009 (July 2008–June 2009). The injection of liquidity from unsterilized interventions conducted by the central bank to maintain the *de facto* peg of the taka to the U.S. dollar pushed interest rates down and inflated banks' excess reserves. Unless monetary conditions are tightened, this risks setting the stage for an acceleration of inflation and credit to the private sector.

2.   **This paper analyzes recent trends in remittances to South Asia and the Philippines (Section B). It also reports on an empirical investigation of the factors driving the continued strength of remittances to these countries (Section C). Finally, the paper discusses the outlook for remittances in South Asia (Section D).**

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[1] Prepared by Geert Almekinders and Zeno Abenoja (Central Bank of the Philippines). Mr. Abenoja was a summer intern in the IMF's Asia and Pacific Department when the research for this paper was done.

B. Recent Trends in Remittances

3. **During the past three decades, the growth of remittances to a representative group of 45 emerging market economies (EMCs) and low-income countries (LICs) moved broadly in line with the growth of these countries' exports** (Figure 1).[2] The correlation coefficient between the growth of exports and the growth of remittances is 0.60.

4. **There have been a few episodes of weak or negative growth in remittances to EMCs and LICs but some downturns in advanced economies did not trigger declines in remittances.** For instance, the growth of remittances was weak, and negative in some years, during the 1980s, following a boom in the late 1970s. During the Asia crisis in 1998 remittances contracted by 3 percent and exports by 6 percent. However, remittances continued to grow when exports of EMCs and LICs contracted in 2002 in response to a mild recession in advanced economies. In 2008, the growth of remittances to our sample of 45 countries decelerated to 10 percent. Countries with close ties to the United States suffered the most. For instance, remittances to Mexico declined by 4 percent.

Figure 1: Exports and remittances
45 LICs and MICs, 1979-2008 (growth in percent)
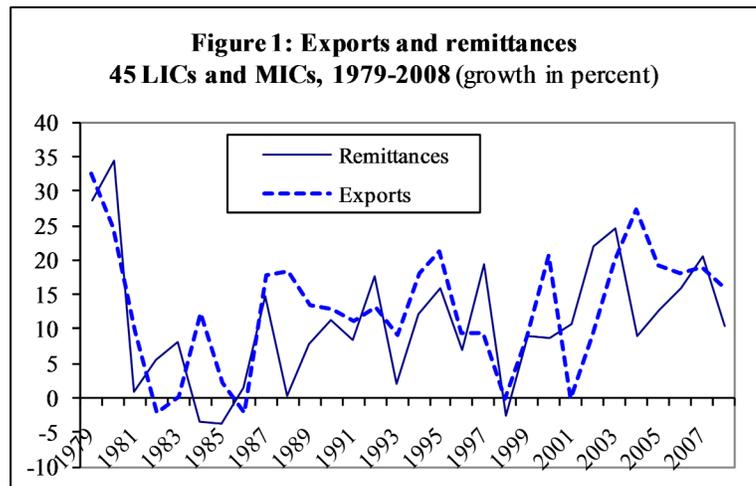
5. **For the group of 45 low- and middle income countries the volatility of remittances was lower than the volatility of exports during 1979–2008.** It is often argued that remittances are more stable than capital account inflows. The large capital outflows from many low- and middle income countries in the wake of the global financial crisis testifies to the volatility of capital account flows. It is also often argued that remittances are more stable than exports. Indeed, for the representative sample of 45 LICs and MICs, over the period 1979-2008, the coefficient of variation for remittances was 0.9 compared to a coefficient of variation of 1.05 for exports.

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[2] The coverage and reporting on remittances data is less uniform than that on merchandise trade data. In order to make a meaningful comparison of the growth of remittances and exports we focus on a group of 45 countries for which continuous and consistent data is available since 1978. It covers 70 percent of all remittances to LICs and EMCs in 2008. The data on exports covers the same 45 countries.

6.   **For the six countries studied in this paper the volatility of remittances was lower than the volatility of FDI and portfolio flows but higher than the volatility of exports and aid inflows during 1979–2008** (Table 1):

- The inflow of remittances in Bangladesh, India, Nepal, Pakistan, Sri Lanka, and the Philippines was considerably less volatile than FDI and portfolio flows.

- Contrary to what was found for the sample of 45 low- and middle income countries in aggregate, remittances in South Asia and the Philippines were more volatile than exports. To understand this, it should first be noted that the metric of volatility used here, namely the coefficient of variation, scales the standard deviation of a time series by the mean of the time series. Except for the case of Nepal where remittances now exceed 20 percent of GDP, typical variations in remittances matter less for the balance of payments than typical variations in exports because the U.S. dollar value of exports is larger, often substantially, than the value of remittances. Upon correcting for the average size of the inflows, remittances turn out to be more volatile. Clearly, the strong recent rise in remittances relative to exports will tend to make the 30-year average of remittances relatively small and the coefficient of variation relatively large. Similarly, the coefficient of variation of exports is relatively high for countries with relatively strong growth of exports in recent years (Bangladesh, India).

Table 1. The volatility of remittances and other BOP inflows, 1980-2008

| | Coefficient of variation: standard deviation in percent of the mean for the ratio of the inflow to GDP | | | | |
	Remittances	Exports	Aid	FDI	Portfolio
Bangladesh	55	48	45	138	829
India	47	45	51	67	80
Nepal	98	30	25	175	...
Pakistan	51	16	40	105	220
Sri Lanka	20	14	52	51	225
Philippines	58	34	60	76	168
Mean	55	31	46	102	304
Median	53	32	48	91	220

Sources: IMF, Balance of Payments Statistics; World Bank, World Development Indicators.

7.   **However, while exports of low- and middle income countries are projected to contract in 2009, remittances have held up very well in South Asia and the Philippines and are set to record strong growth in 2009** (Table 2).[3] The October 2009 World Economic Outlook projected a 25 percent contraction of exports of EMCs and LICs in 2009 with a subsequent recovery of growth to 7 percent in 2010. By contrast, remittances to Bangladesh continue to grow at the average rate recorded during 2006–08. The acceleration

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[3] The United Arab Emirates is an important source of remittances. For instance, it accounts for almost one-fifth of remittances to Bangladesh. A slowdown in Dubai, following the recent financial problem, would have adverse effects on remittances but these would probably be felt in 2010 and beyond.

of remittances to Pakistan may be partly related to the substantial correction in the exchange rate which took place in the third quarter of 2008 and which made it more attractive for migrants to send foreign exchange home. The acceleration of remittances to Sri Lanka may be related to the end of the conflict with the Tamils and brightened the country's outlook and boosted patriotism of migrants. The growth of remittances to India, Nepal and the Philippines has decelerated from the high rates recorded during 2006–08 but remains solid.
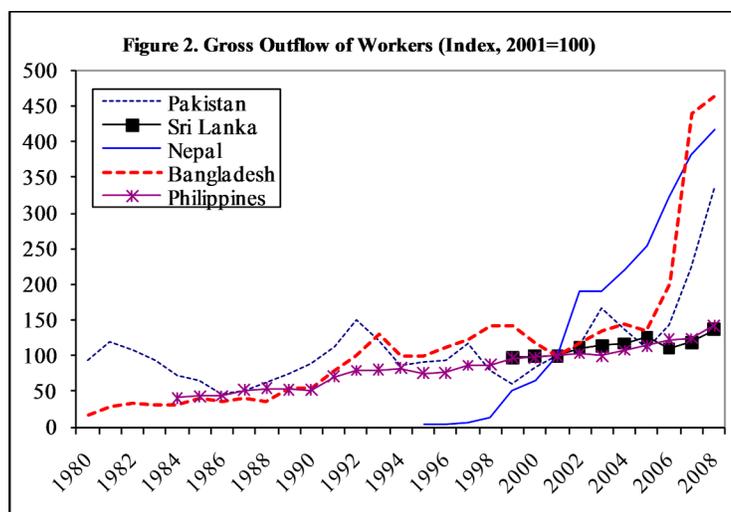
Table 2. Inflow of Remittances, 2002-2009

	2002	2005	2008	2008	Annual change in $-value (in percent)		
	(in percent of GDP)			(in US$bn)	2006-08 (average)	Q/Q(-4)	Through
South Asia 1/	**5.9**	**7.0**	**9.1**	**71.8**	**24**	**20**	
Bangladesh	5.7	7.0	11.0	9.0	28	29	Nov-09
India	3.3	3.0	4.2	50.8	29	9	Jun-09
Nepal	11.0	13.8	19.5	2.5	30	10	Aug-09
Pakistan	4.8	3.9	4.2	7.0	18	32	Nov-09
Sri Lanka	4.5	7.1	6.5	2.6	14	18	Sep-09
Philippines	9.0	10.8	9.7	16.4	15	6	Oct-09

Sources: IMF (BOP Yearbook; World Economic Outlook); Country authorities;
World Bank remittances database-March 2009; CEIC Data Co. Ltd.

1/ Simple averages of the countries in the region, except the US$-value of remittances.

8. **The strong growth of remittances during 2006–08, which has carried through into 2009, seems closely related to the surge in labor migration in recent years** (Table 3). Figure 2 illustrates the increase in gross labor migration in the five countries for which data is available. Starting from a high base relative to the size of the population, Sri Lanka and the Philippines experienced a steady but relatively unspectacular growth of the outflow of migrants in recent years. The other three countries for which data is available experienced a remarkable surge in labor migration in recent years, albeit from a relatively low base. In the case of Bangladesh the surge started in 2006. In Pakistan it started one year later. It should be noted that despite

Figure 2. Gross Outflow of Workers (Index, 2001=100)

the strong increase in new deployments from Bangladesh, Nepal and Pakistan between 2005 and 2008, these countries still lag considerably behind Sri Lanka and especially the Philippines in terms of the extent of annual gross migration outflows relative to the size of the population.

Table 3. South Asia and the Philippines: Population, Migration, and Remittances

	Bangladesh	India	Nepal	Pakistan	Sri Lanka	Philippines
Population (2007, in millions)	159	1,125	28	162	20	88
Population growth (2007, in percent)	1.7	1.3	1.7	2.2	0.6	1.9
Population growth (1988-92 average, in percent) 1/	2.3	2.0	2.4	2.6	1.3	2.4
GDP per capita (2007, in U.S. dollars)	431	1,046	367	879	1,616	1,639
Registered new deployments (in thousands)						
2002	225		105	147	204	892
2005	253		159	142	231	989
2008	875		244	430	252	1,236
Remittances (in percent of GDP)						
2002	5.7	3.3	11.0	4.8	4.5	9.0
2005	7.0	3.0	13.8	3.9	7.1	10.8
2008	11.0	4.2	19.5	4.2	6.5	9.7
Share of remittances from GCC-countries (percent of total)						
2002	77			44	60	18
2008 2/	63	24		54	60	15

Sources: Country authorities, CEIC, and World Bank, *World Development Indicators*

1/ The average growth of the population during 1988-92 can be used as a proxy for the current growth of the labor force.
2/ Estimate for India is based on RBI Monthly Bulletin March 2009, p.410.

9.   **Longer time series of the remittances to GDP ratio of the six countries in this study show increasing importance of the GCC countries as the source of remittances** (Figure 3). In recent years, spearheaded by the United Arab Emirates, GCC countries have liberalized their economies, adopted outward-oriented development strategies and embarked on ambitious medium-term investment programs in infrastructure. The strong growth of the GCC economies triggered an increase in the demand for migrant workers. As a result, the ratio of remittances to GDP from GCC countries has been rising faster or declining less[4] than the ratio of remittances to GDP from other countries.

10.   **There is also an important "September 11, 2001" effect**. In most countries, the remittances to GDP ratio jumps in 2002 following the adoption of anti-money laundering laws to clamp down on informal remittances effected through Hawala/Hundi intermediaries and generally increased scrutiny of cross-border financial flows following the terrorist attacks on the United States (Box 1). For example, recorded remittances from non-GCC

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[4] The decline in the ratio of total remittances to GDP in Sri Lanka and the Philippines in 2007 and 2008—despite continued strong growth of the total U.S. dollar amount of remittances (Tables 2 and 3)—reflects the appreciation of these countries' real exchange rates.

countries to Bangladesh were steady at around 1 percent of GDP until 2001. Since then, this category of remittances saw a sustained rise.

Figure 3. Countries in South Asia and the Philippines: Composition of remittances (in percent of GDP)
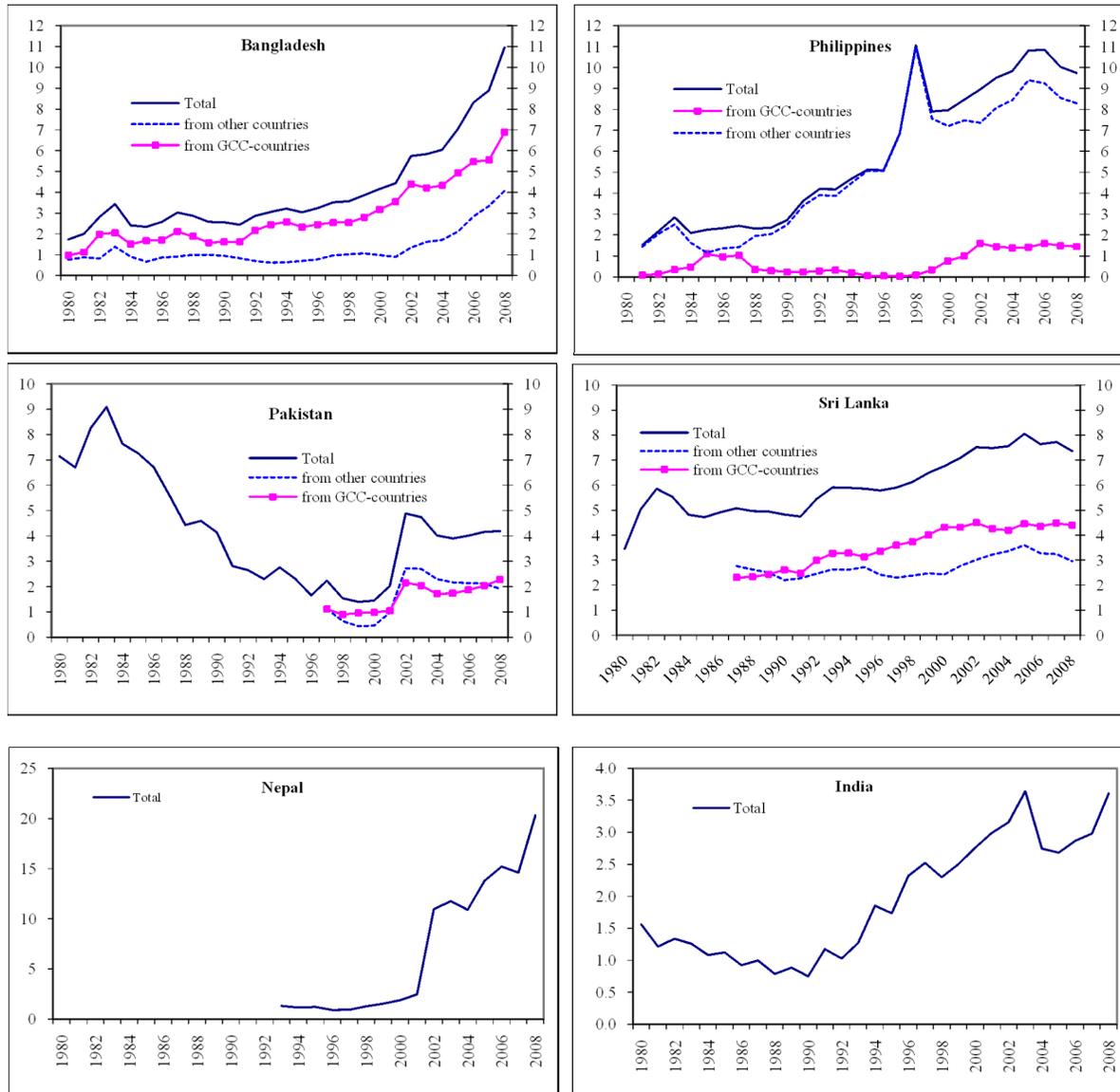
Box 1. Informal Remittances Through Hawala/Hundi Intermediaries

During the 1980s and 1990s informal remittances increased substantially. However, with informal remittances the foreign exchange can remain outside the destination country and can become a vehicle for capital flight from a destination country with a closed capital account and tight controls on foreign exchange for current international transactions. Figure 3 illustrates the flows of funds in case a Bangladeshi migrant worker in a host country makes a transfer to a relative at home through a Hawala/Hundi intermediary. The intermediaries in different countries may be linked through an informal network. However, in the illustrative example no foreign exchange flows into Bangladesh as a result of the transfers of funds.

Low international oil prices during 1998–2001 curtailed government spending in the GCC countries. This, in turn, put downward pressure on recorded remittances from the GCC countries. The weakness of recorded remittances coincided with anemic growth of exports. To alleviate the resulting scarcity of foreign exchange in Bangladesh, the government undertook to channel a larger share of remittances through formal channels, thereby reducing the funding of unauthorized capital account outflows through Hawala/Hundi intermediaries. Accordingly, the draft Money Laundering Prevention Act was finalized in March 2001. The law was enacted in 2002 amid increased global awareness and scrutiny of money-laundering practices following the attacks on September 11, 2001.

Figure 3. Flows of funds: Remittances from a host country to Bangladesh through Hawala/Hundi intermediaries
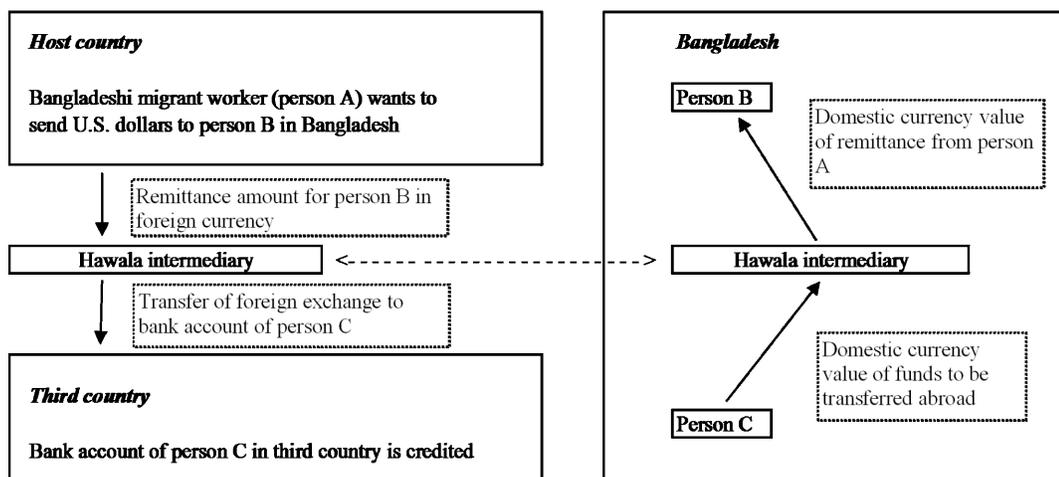
From the point of view of Bangladesh, a notional foreign exchange inflow facilitates a notional capital outflow. However, the involvement of the Hawala/Hundi intermediaries allows the foreign exchange to remain off shore and Bangladesh's balance of payments records neither the inflow of remittances nor the capital outflow

Person A: Bangladeshi migrant worker in a host country who wants to remit funds to person B in Bangladesh
Person B: Recipient of remittance in Bangladesh
Person C: Resident of Bangladesh who is looking to transfer money to a third country

[5]Hyder (2003) estimates that total remittances (formal and informal) to Pakistan at the end of the 1990s amounted to about US$ 8 billion per annum. However, recorded remittances amounted to only about US$1.5 billion per annum. The decline in the remittances to GDP ratio during the 1980s and 1990s (Figure 3) largely reflects a shift to informal channels.

C. Empirical Investigation of the Determinants of Remittances

11.   **The specification of the equation for the determinants of remittances in this study is similar to that estimated in other papers** (see e.g. IMF (2005), Chami et al. (2008) and Singh et al. (2009)). Accordingly,

- The dependent variable is defined as the remittances to GDP ratio. Total remittances here refer to the 3 components of remittances identified in the balance of payments—workers' remittances, compensation of employees and migration transfers. However, for five of the six countries in our sample, workers' remittances represent the only meaningful component of remittances. The other components are either zero or have relatively insignificant amounts. An exception is the Philippines. For the Philippines, the remittance time series includes the workers' remittances plus compensation of employees working abroad adjusted for expenses.[5]

- The independent variables are real GDP in the home country, real GDP in the host country, the real effective exchange rate of the currency of the home country (REER), and the real interest rate differential between the home country and the host country (weighted by the share of total remittances). To address possible endogeneity concerns[6] we use the lagged value of home GDP and the lag of the REER.

12.   **In line with the possible altruistic motive of remittances, the expected sign for the variable capturing home real GDP is negative**. In particular, when adverse economic shocks decrease income in the home country, migrant workers can be expected to remit more money to cushion the effect of those shocks on their families.

13.   **The expected sign for the variable capturing host real GDP is positive**. Stronger growth in the host country can be expected to improve the earnings of migrant workers,

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[5] Based on the fifth edition of the IMF's Balance of Payments Manual (BPM5), statistics on total remittances have three components: workers' remittances, compensation of employees and migrant transfers (for a fuller discussion see Chapter 2 of Chami et al. (2008) and Box 2.4 in IMF (2005). Workers' remittances refer to current transfers by migrants who are employed and are residents in the host countries. A person is considered a migrant if he stays or is expected to stay for at least a year in the host country. Workers' remittances are included in current transfers. Compensation of employees refers to wages, salaries and benefits (in cash or in kind) earned by nonresidents for work performed for and paid for by residents in the host country. These workers include border and seasonal workers and other nonresident workers such as local staff of embassies. This item is recorded under income in the current account. Migrant transfers are contra-entries to flow of goods and changes in financial items that arise from the migration (change of residence for at least one year) of individuals between two countries. These items are recorded as capital transfers under other (non-government) sectors.

[6] Lueth and Ruiz-Arranz (2007) note that many of the attempts to establish a relationship between workers' remittances and a set of macroeconomic variables suffer from a number of pitfalls, including ignoring issues of endogeneity and reverse causality.

allowing them to increase their remittances. Stronger growth in the host country will also boost the demand for migrant workers, further improving the prospects for remittances.

14.   **For the GCC countries we use non-oil GDP rather than total GDP to construct the host GDP variable**. For each of the six countries in our sample host-country real GDP is constructed using the shares in total remittances as weights. However, unlike for the other host countries, for the GCC countries we use non-oil real GDP rather than total real GDP. Our focus on non-oil GDP in GCC countries is a key contribution of this study. As far as we know, no other study has done this.[7]

15.   **For the GCC countries, non-oil GDP is arguably a better proxy for the earnings capacity of migrants and the demand for migrant labor than total GDP.** The vast majority of migrant workers in GCC countries from South Asia work in the non-oil sector. And developments in the overall economy are only loosely related to fluctuations in oil and gas production. In particular, the production of oil by GCC countries varies with OPEC production quotas while the output of gas typically varies with production capacity. When production quotas are adjusted downwards to support prices, oil-GDP of the GCC countries declines. However, the other sectors of the economy may continue to be buoyant as the resulting sustained high oil prices allow the governments to continue to implement their budgets.

16.   **In line with the possible altruistic and investment motives of remittances, it is expected that countries with an overvalued exchange rate (i.e. a higher value of the REER index) will receive less remittances.** Rajan and Subramanian (2005) observed that countries with an overvalued exchange rate tend to receive smaller amounts of remittances. A plausible explanation is that migrant workers respond to an overvalued exchange rate by sending goods instead of cash or by reducing remittances in anticipation of a downward correction of the REER. Similarly, in line with the possible investment motive of remittances it is expected that higher real interest rates in the home country or lower real interest rates in the host country will, all other things equal, lead to larger flows of remittances to the home country.

17.   **Estimation results, summarized in Table 4, are broadly in line with those reported in other studies and consistent with the expected theoretical relationships**. Also, the magnitude of the coefficients is similar to that of other studies that have included a larger sample of developing countries. Results are fairly robust to dropping variables with insignificant coefficients and to using various regression specifications. They are also robust to dropping one country at a time. OLS estimation results for the panel of 6 countries are reported in the first column of Table 4. For instance, a one percent increase in real

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[7] Non-oil GDP for the GCC countries is available in the WEO database starting from 1990. We extended the series back to 1980 based on real GDP data for the oil and non-oil sectors reported in individual GCC countries' Article IV reports and accompanying papers on Recent Economic Developments or Statistical Appendices.

remittances-weighted host-country GDP is associated with a 2.1 percent increase in the remittances to GDP ratio. Lagged real home-country GDP has the expected negative sign and the real interest rate differential has the expected positive sign. However, the coefficient for the real interest rate differential is only statistically significant when India is included in the panel (the first and third column in Table 4).[8] The coefficient for the REER has the expected negative sign but is not statistically significant. Estimation results with fixed effects (FE), to take into account possible differences in the intercepts for each country in the panel, broadly confirm the results of the OLS regressions.

Table 4. Determinants of remittances: regression results for a panel of 6 countries 1/ 2/

Dependent variable	total remittances/GDP				
Explanatory variables	OLS	OLS	FE	FE	FE
Home GDP (lagged one period)	-1.29 ***	-1.41 ***	-1.61 ***	-0.95	-2.67 ***
	(6.62)	(4.72)	(3.11)	(1.54)	(4.93
Host GDP (non-oil GDP for GCC countries)	2.12 ***	2.58 ***	3.01 ***	1.79 **	
	(8.85)	(9.26)	(4.90)	(2.59)	
Advanced countries' GDP					0.37
					(0.44)
GCC nonoil GDP					2.68 ***
					(7.24)
Stock of migrants and overseas workers		0.21 ***		0.34 ***	0.40 ***
		(6.70)		(4.81)	(6.94)
REER (lagged one period)	-0.56	-0.35	-0.34	-0.05	0.07
	(1.34)	(0.73)	(0.86)	(0.09)	(0.13)
Real interest differential	0.02 *	0.00	0.02 **	0.01	0.01
	(1.80)	(0.04)	(2.19)	(0.98)	(0.96)
Constant	-5.01 **	-9.32 ***	-8.98 ***	-9.79 ***	-6.08 *
	(2.30)	(3.70)	(3.74)	(2.85)	(1.76)
Observations	134	94	134	94	94
R-squared	0.34	0.66	0.59	0.72	0.79
H_0: host country coefficients are equal					Reject

1/ The absolute value of t-statistics, based on robust standard errors, is indicated in brackets.
2/ ***, **, and * denote statistical significance at the 1, 5, or 10 percent level, respectively.

18.   **The stock of migrants appears to be a key determinant of the remittances to GDP ratio.** The Philippines publishes an annual time series for the stock of migrant workers. For the other countries in our sample we used the available data on the gross outflow of migrant workers to construct a proxy for the stock of migrants. In the absence of data on the number of returning migrants, and taking into account the importance of 2–3 year fixed-term

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[8] The government of India actively encourages nonresident Indians to hold deposits in the Indian banking system. Gordon and Gupta (2004) find that the accumulation of NRI deposits respond positively to changes in relative interest rates on NRI deposits.

contracts in the hiring of migrant workers in the GCC countries, we assume that one third of migrants arriving in a given year stay permanently in the host country. Of the remaining two thirds, we assume that one third returns to the home country after two years, another third returns after three years, and the final third of the two-third of the total flow of a given year would return to the home country after four years.

19.   **The highly significant independent effect of the stock of migrants on remittances provides an important insight into the reason for the relative stability of remittances compared to other foreign exchange flows.** A one percent increase in the stock of migrants raises the remittances to GDP ratio by about 0.4 percent.

20.   **A formal test indicates that trends in non-oil GDP of the GCC countries may generally be more important for South Asia's remittances than trends in advanced economies' GDP**. The last column of Table 4 reports the estimation results for a fixed-effects model in which the composite remittances-weighted host GDP is replaced by real GDP in advanced countries and non-oil real GDP in GCC countries. The reason for splitting Host GDP into advanced countries' GDP and non-oil GCC GDP is twofold:

- Amid the current downturn there is an ongoing debate about what will happen to remittances from different regions. For instance, remittances from the United States to Central America have been falling in 2008 and 2009.

- There is also a measurement issue in attributing the origin of remittances. When a bank in the Philippines receives a remittance through the headquarters of a US bank, this remittance is recorded as originating in the United States. However, some of these remittances may be from migrants working in GCC countries whose money happens to be wired through a correspondent bank in New York.
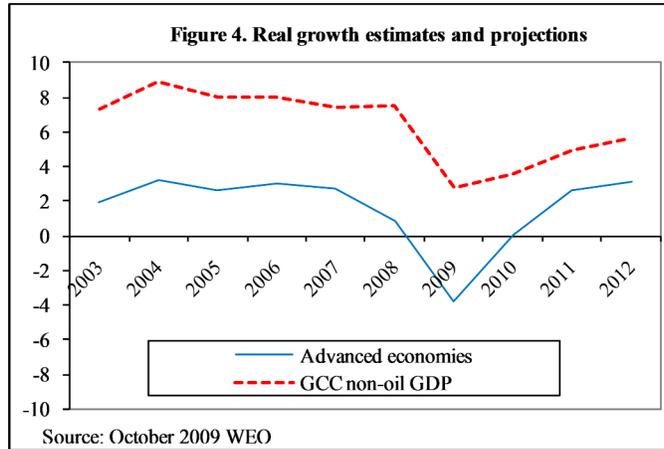
Advanced countries' real GDP is only found to be statistically significant (at the 10 percent level) in regressions which do not include the "stock of migrants" variable. These regressions are not reported in Table 4. In the regression shown in the last column of Table 4 the coefficient for advanced countries' GDP is not significant. Moreover, the null hypothesis that the coefficients for advanced countries' GDP and non-oil GCC GDP are equal is rejected.

D. The Outlook for Remittances to South Asia and the Philippines

21.   **The empirical analysis in the previous section suggests that the resilience of non-oil GDP growth in the GCC countries amid the ongoing global financial crisis along with the support provided by the large-scale hiring of migrant workers during 2006–2008 underlie the persistent strength of remittances in South-Asian countries and the Philippines in 2009**.

22.   **Accordingly, the outlook for remittances depends on the outlook for non-oil growth in the GCC countries along with recent trends in the hiring of migrant workers in the GCC countries:**

- The October 2009 World Economic Outlook projected a gradual reacceleration of non-oil output in the GCC countries to 5½ percent by 2012. This is substantially below the 8 percent average non-oil growth rate recorded during 2004–2008. On this basis, the growth in the demand for migrant workers and the growth of remittances would likely ease but remain positive. While international oil prices have strengthened in recent months, the problems encountered by some companies in Dubai to refinance their debts may put a damper on the outlook for the region.
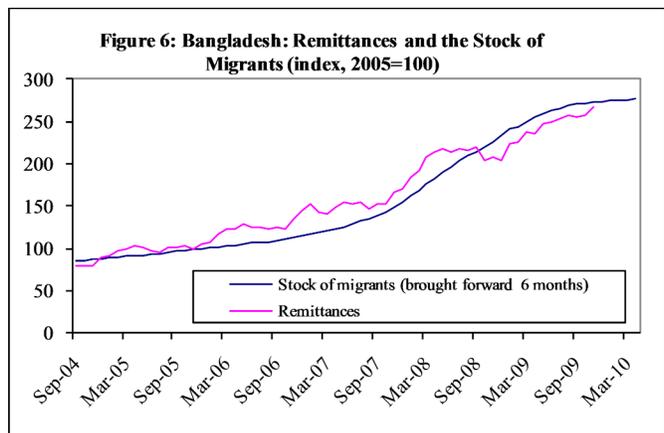

Figure 4. Real growth estimates and projections

Advanced economies
GCC non-oil GDP

Source: October 2009 WEO

- The growth in the number of migrant workers leaving Bangladesh, Pakistan, and Nepal to take up jobs in the GCC countries has decelerated from the highs in 2007–08 (Figure 5). In the case of Bangladesh year-on-year growth turned negative in September 2008. Reflecting strong adverse base effects, the year-on-year growth averaged -45 percent during the first 10 months of 2009. Data on the number of returning migrants which the Bangladeshi authorities have started to collect suggest that the stock of migrant workers is still rising, providing support to the remittances to GDP ratio in the coming years.

Figure 5: Gross outflow of workers
(12-month percentage change in 3mma)

Philippines
Pakistan
Bangladesh
Nepal
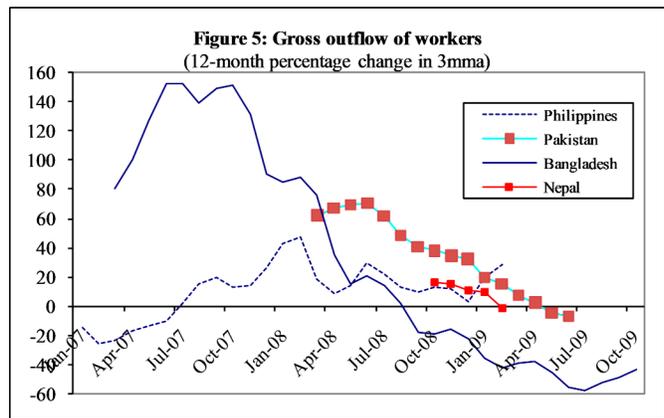
- On the tentative proxy developed in this note, the stock of migrants from Bangladesh could be expected to stabilize in the near term as many of the workers hired in 2006–2007, during the height of the boom, start to return home (Figure 6). In that case, according to the estimation results discussed in the previous section, the positive effect of an increasing stock of migrants on the remittances to GDP ratio would disappear.

Figure 6: Bangladesh: Remittances and the Stock of Migrants (index, 2005=100)

Stock of migrants (brought forward 6 months)
Remittances

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II. EXTERNAL COMPETITIVENESS AND THE REAL EXCHANGE RATE IN BANGLADESH[9]

Summary

- Bangladesh's exports of ready-made garments (RMGs) have continued to perform well despite the global financial crisis. And there appears to be scope to further boost Bangladesh's share of developed countries' imports of RMGs.

- The taka appears to be somewhat undervalued. However, various approaches to assess the equilibrium levels of the current account and the taka suggest that the REER and the current account balance remain broadly in line with macroeconomic fundamentals.

A. Introduction

23.   **The strength of Bangladesh's balance of payments in FY2009 and the first half of FY2010 raises the question as to the appropriateness of the level of the real effective exchange rate (REER) of the taka.** The trend depreciation of the REER for much of the past 30 years was halted only a few years ago. The ongoing strength of remittances and the narrowing trade deficit may suggest that Bangladesh could sustain a more appreciated REER.

24.   **This chapter discusses recent trends in the current account and merchandise exports (Section B) and presents estimates of the equilibrium REER of the taka (Section C)**. In this context, the chapter highlights that the elasticity of the current account with respect to the real exchange rate—a key variable for the estimation of the extent of over/undervaluation of the taka—varies with the composition of trade, the degree of pass-through of changes in exchange rates and international prices to import and export prices and Bangladesh's price-taking behavior are important factors. More work is needed to better understand these factors and to firm up low-income countries' exchange rate assessments. The role of remittances in the assessment needs to be investigated further as well.

B. Trends in the Current Account and Merchandise Exports

25.   **Bangladesh's current account strengthened substantially in FY2009 and looks set to remain strong over the medium term, albeit with a narrowing surplus:**

- The current account improved by almost 2 percent of GDP to a surplus of 2.8 percent of GDP in FY2009. The growth of merchandise imports decelerated from 26 percent in FY08 to 4 percent in FY09, owing to an abundant agricultural harvest, lower

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[9] Prepared by Geert Almekinders and Svitlana Maslova.

international oil and commodity prices, a deceleration of credit to the private sector, and a wait-and-see attitude in the private sector which depressed the import of capital machinery. Combined with the resilience of exports this caused the trade balance to improve by almost 1½ percent of GDP in FY2009. The inflow of private transfers, including remittances, increased by 0.8 percent of GDP. And the income balance weakened slightly.

- The current account surplus is projected to remain at close to 3 percent of GDP in FY2010. However, in later years the surplus will likely narrow, to less than 1 percent of GDP in the medium term. A further narrowing of the merchandise trade deficit is projected in FY2010, reflecting continued large year-on-year declines in merchandise imports during the first quarter of FY2010. With more favorable base effects and with a gradual return of confidence in the aftermath of the global financial crisis, the year-on-year change in imports should turn positive from November onwards and this can be expected to bring down the current account surplus over time through a widening of the merchandise trade deficit. Remittances are projected to grow slower than nominal GDP starting in FY2010 reflecting the slowdown in the hiring of Bangladeshi workers since the summer of 2008 (see Section D in the previous Chapter).

26. **Bangladesh broadly maintained its share of global exports between 2000 and 2008, owing to the strong performance of the ready-made garments (RMG) sector.** Over the past 10 years, Bangladesh has managed to steadily raise its share of industrialized countries' imports of knitted garment and woven garments (Table 1 and 2).
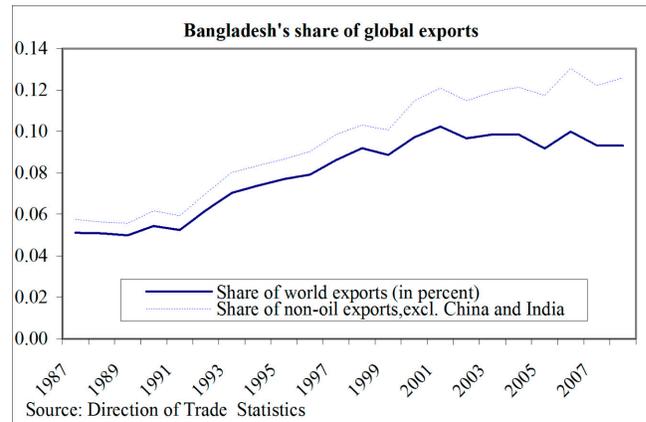
27. **Non-RMG exports have not been able to keep pace with RMG exports.** This seems to have prevented Bangladesh from keeping pace with some of its more successful regional competitors. In particular, India and Vietnam managed to increase their share of global exports in recent years thanks to their more diversified production base, more business-friendly macroeconomic and structural policies, and better-quality governance (See also last year's SIP on Export Diversification and External Competitiveness (IMF (2008)).
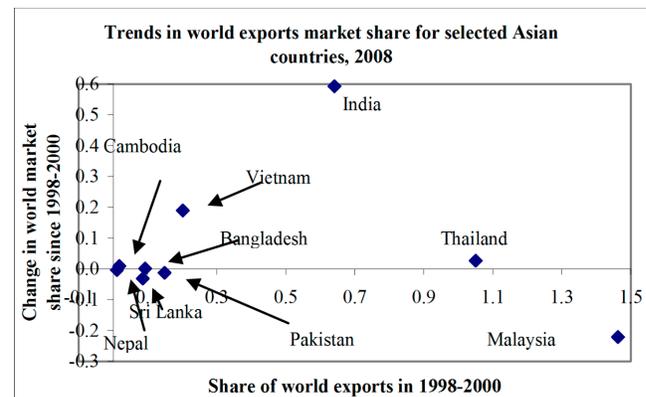
Table 1. Bangladesh: Comparator Market Shares in Knitted Garment Export Markets 1/

	1999	2005	2007	2008	H1 2008	H1 2009
	In percent of total EU knitted garment imports					
World	100.0	100.0	100.0	100.0	100.0	100.0
Bangladesh	5.2	9.1	10.0	10.7	10.7	12.4
Cambodia	0.7	1.5	1.6	1.6	1.4	1.2
China	13.4	25.7	28.1	33.8	28.1	33.2
India	4.6	6.0	6.2	5.9	7.0	6.9
Pakistan	1.4	1.2	1.1	1.0	1.1	1.0
Sri Lanka	1.0	0.8	1.2	1.2	1.2	1.3
Vietnam	0.5	0.6	1.0	1.1	1.0	1.0
	In percent of total US knitted garment imports					
World	100.0	100.0	100.0	100.0	100.0	100.0
Bangladesh	1.5	1.8	2.2	2.5	2.3	2.7
Cambodia	1.1	2.6	4.2	4.2	4.6	4.0
China	8.5	19.8	27.8	28.6	21.8	27.4
India	1.8	2.8	3.5	3.6	4.1	4.5
Pakistan	2.1	2.8	2.8	2.8	2.9	2.9
Sri Lanka	1.3	1.8	1.9	1.8	2.0	1.8
Vietnam	0.0	3.4	5.7	7.5	7.7	9.0
	In percent of total Canadian knitted garment imports					
World	100.0	100.0	100.0	100.0	100.0	100.0
Bangladesh	3.1	7.0	6.7	7.6	7.5	8.9
Cambodia	0.1	2.2	3.4	4.6	4.6	5.0
China	12.9	44.3	51.8	52.5	51.4	50.4
India	8.1	6.8	5.3	4.3	4.4	5.0
Pakistan	1.8	1.5	1.6	1.3	1.2	1.4
Sri Lanka	0.7	0.7	0.6	0.7	0.7	0.7
Vietnam	0.1	1.3	2.1	2.8	2.7	3.3
	In percent of total Japanese knitted garment imports					
World	100.0	100.0	100.0	100.0	100.0	100.0
Bangladesh	0.1	0.0	0.1	0.1	0.1	0.3
Cambodia	0.0	0.1	0.1	0.1	0.1	0.1
China	68.3	85.1	87.8	88.3	86.8	87.1
India	0.2	0.2	0.2	0.2	0.2	0.3
Pakistan	0.0	0.0	0.0	0.0	0.0	0.0
Sri Lanka	0.1	0.1	0.1	0.1	0.1	0.1
Vietnam	1.8	1.2	1.3	1.8	1.9	2.5
Memorandum items:						
Size of the market (in billions of U.S. dollars)						
EU	13.4	22.5	29.5	33.3	15.8	14.1
(Annual percent change)		9.0	14.6	12.9		-11.0
USA	23.7	33.3	38.0	37.4	16.3	14.5
(Annual percent change)		5.8	6.8	-1.5		-11.1
Canada	1.3	2.5	3.3	3.7	2.5	2.3
(Annual percent change)		10.7	16.5	11.3		-7.0
Japan	6.9	9.8	10.7	11.8	5.1	5.4
(Annual percent change)		6.1	4.6	9.6		5.9

Sources: Eurostat; US Department of Commerce; Statistics Canada; and Fund staff calculations.

1/ Data for Canada is for January-August of respective years rather than H1.

Table 2. Bangladesh: Comparator Market Shares in Woven Garment Export Markets 1/

	1999	2005	2007	2008	H1 2008	H1 2009
In percent of total EU woven garment imports						
World	100.0	100.0	100.0	100.0	100.0	100.0
Bangladesh	3.7	4.0	4.0	4.1	4.3	5.3
Cambodia	0.2	0.3	0.2	0.2	0.2	0.2
China	13.9	30.5	36.2	38.1	33.7	37.7
India	3.6	4.6	4.6	4.8	5.9	6.7
Pakistan	1.2	1.4	1.5	1.4	1.5	1.6
Sri Lanka	0.8	0.6	0.8	0.8	0.8	0.9
Vietnam	2.3	1.6	2.3	2.5	2.2	2.4
In percent of total US woven garment imports						
World	100.0	100.0	100.0	100.0	100.0	100.0
Bangladesh	4.0	4.5	5.8	6.8	6.9	8.7
Cambodia	1.2	2.2	2.2	2.2	2.3	2.0
China	13.1	27.3	35.7	37.3	34.7	39.2
India	4.0	5.7	5.1	5.0	6.3	6.4
Pakistan	0.8	0.9	1.2	1.3	1.3	1.2
Sri Lanka	3.3	2.8	2.3	2.3	2.3	2.5
Vietnam	0.1	4.1	5.7	6.6	6.0	6.7
In percent of total Canadian woven garment imports						
World	100.0	100.0	100.0	100.0	100.0	100.0
Bangladesh	2.7	6.4	6.1	6.6	6.6	9.4
Cambodia	6.0	5.4	4.2	4.0	4.3	4.5
China	26.5	46.4	53.7	54.0	54.0	54.0
India	1.2	1.9	2.4	3.0	2.7	3.5
Pakistan	1.5	1.0	0.8	0.8	0.9	0.8
Sri Lanka	1.5	0.7	0.5	0.5	0.5	0.6
Vietnam	0.3	1.7	2.0	2.0	2.0	2.0
In percent of total Japanese woven garment imports						
World	100.0	100.0	100.0	100.0	100.0	100.0
Bangladesh	0.1	0.2	0.2	0.3	0.2	0.5
Cambodia	0.0	0.0	0.0	0.0	0.1	0.2
China	75.2	81.0	81.0	81.0	79.7	80.0
India	0.9	1.1	1.2	1.3	1.9	2.0
Pakistan	0.1	0.0	0.0	0.0	0.0	0.0
Sri Lanka	0.1	0.1	0.1	0.1	0.1	0.1
Vietnam	3.4	4.0	4.6	5.1	5.1	5.9
Memorandum items:						
Size of the market (in billions of U.S. dollars)						
EU	19.8	29.6	36.1	39.2	19.7	17.2
(Annual percent change)		6.9	10.5	8.6		-12.5
USA	28.7	37.5	37.6	35.7	17.5	15.0
(Annual percent change)		4.6	0.1	-5.0		-14.0
Canada	1.6	2.9	3.5	3.7	2.6	2.4
(Annual percent change)		10.4	10.2	4.7		-7.4
Japan	7.7	10.2	10.5	11.0	5.0	5.1
(Annual percent change)		4.7	1.5	5.2		2.4

Sources: Eurostat; US Department of Commerce; Statistics Canada; and Fund staff calculations.

1/ Data for Canada is for January-August of respective years rather than H1.

28.   **RMG exports also held up better than non-RMG exports during the global crisis.** RMG exports, which make up more than 75 percent of total exports, recorded a growth rate of 15 percent in FY09, mostly owing to strong performance during the second half of 2008. However, it is important to note that the ongoing gains in the global market share of Bangladesh's RMG sector accelerated during the first half of 2009 thanks to relative strength in the lower market segment (Table 1 and 2). By contrast, Bangladesh's other key exports (frozen food and shrimp, and leather and jute products) contracted, causing non-RMG exports to decline by 6 percent in FY09.

Bangladesh: Composition of Exports

(Index, FY1997=100)

- - - - RMG exports
——— Other

Source: Bangladesh Bank
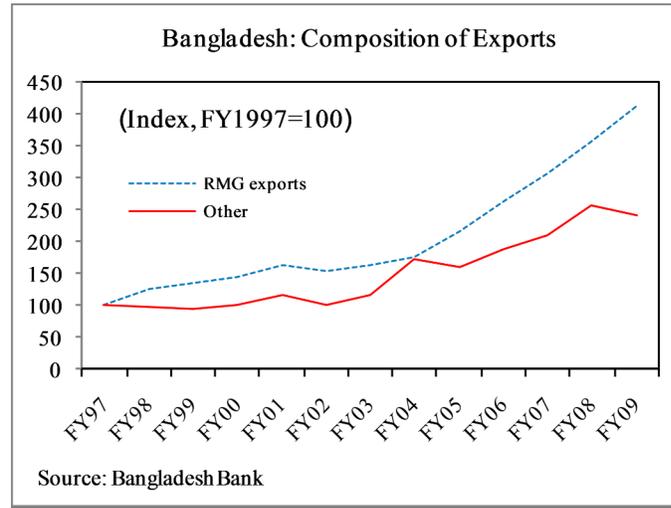
29.   **The outlook for the RMG sector remains favorable.** Production capacity has continued to expand and there are signs that Japanese retailers, which have hitherto mostly sourced from China and Vietnam, are starting to source more of their textiles and garments from Bangladesh. Gaining market share in Japan would provide a considerable boost. A slight undervaluation of the taka would help exporters to increase their market share and even the playing field with competitors in other countries who may be enjoying more business-friendly macroeconomic and structural policies, and better-quality governance.

C.   Estimates of the Equilibrium Real Effective Exchange Rate

30.   **Estimates of the equilibrium real effective exchange rate (ERER) tend to be quite sensitive to the methodology used and are particularly challenging in developing countries where the data are weaker** (see, e.g., Dunaway and others (2006) and Di Bella and others (2007)). This section assesses if Bangladesh's REER is in line with macroeconomic fundamentals. Four methodologies are used: (i) the purchasing power parity approach (PPP), (ii) the macroeconomic balance (MB) approach; (iii) the equilibrium real exchange rate (ERER) approach, and (iv) the external sustainability (ES) approach.

31.   **Overall, application of four different approaches suggests that the real exchange rate of the taka is broadly in line with its long-run equilibrium value** (Table 3). The PPP approach suggests that the taka is somewhat overvalued. The ERER approach suggests that the taka is somewhat undervalued. The ES and MB approach also suggest that the taka is undervalued: Bangladesh's current account balance projected for the medium term is higher than the current account "norm" derived according to the MB approach; it is also higher than

the current account balance that would stabilize Bangladesh's NFA to GDP ratio over the medium term. The extent of undervaluation in the case of the ES and MB approach crucially depends on the estimated level of the elasticity of the current account with respect to the real exchange rate (Appendix I). Applying assumptions used to derive this elasticity for developed countries suggests a relatively small elasticity. Accordingly, a real appreciation of more than 20 percent would be needed to drive the current account down toward the norm or the level that stabilizes the NFA to GDP ratio. By contrast, applying assumptions that are more fitting for the case of Bangladesh suggests a larger elasticity and hence an undervaluation of the taka of about 10 percent.

Table 3. Estimates of overvaluation of the taka	
Approach	Estimated overvaluation (in percent)
Purchasing power parity	8
External sustainability	-24 to -10
Macro balance	-23 to -9
Equilibrium exchange rate	-8

Purchasing Power Parity Approach

32.   **One way to assess the deviation of a country's real exchange rate from its long-run level is through an international comparison of price levels.** According to the theory of purchasing power parity (PPP), prices of an identical consumption basket should be the same in all countries once expressed in a common currency. However, a comparison of consumer prices across countries also needs to account for nontraded goods and differences in consumption baskets. And nontradables prices tend to rise with countries' incomes. The strong correlation between absolute price levels and income is usually attributed to the Balassa-Samuelson (B-S) effect, which relates the long-run real exchange rate to relative productivity differentials. Countries with relatively higher productivity growth in the tradables relative to the nontradables sector (compared to trading partners) tend to experience real appreciation (increase in the relative price of nontradables to tradables). In essence, higher tradables productivity pushes up wages in the tradables sector, which leads to higher wages in the nontradables sector and, consequently, to higher nontradables prices. Since tradables prices are set in international markets and do not respond to domestic market conditions, the relative price of nontradables to tradables rises in these circumstances. As the overall price level is a weighted average of tradables and nontradables prices, the higher price of nontradable goods leads to an increase in the overall CPI. Assuming that real per capita GDP differentials across countries are a reasonable proxy for relative productivity differentials, the B-S effect implies a positive correlation between relative income levels and the REER. It also suggests that as a country's (relative) income level rises over time, its REER will appreciate.

33.   **A database compiled by the 2005 International Comparison Program (ICP) suggests that the taka was valued broadly in line with its purchasing power parity in 2005**. The database was published in the context of the December 2007 release of the report

of the 2005 ICP.[10] A standard cross section regression of the price level in 146 countries relative to that in the United States on a constant and per capita GDP indicates that for every 1 percent increase in a country's per capita GDP, its price level relative to the United States is higher, and hence its REER is more appreciated, by about 0.22 percent. This database suggests that the price level in Bangladesh in 2005 was in line with what could be expected based on the level of Bangladesh's per capita GDP.

Cross-section Regression of Price Levels (Relative to the United States) on Per Capita Income
(Both in logs, for 2005)
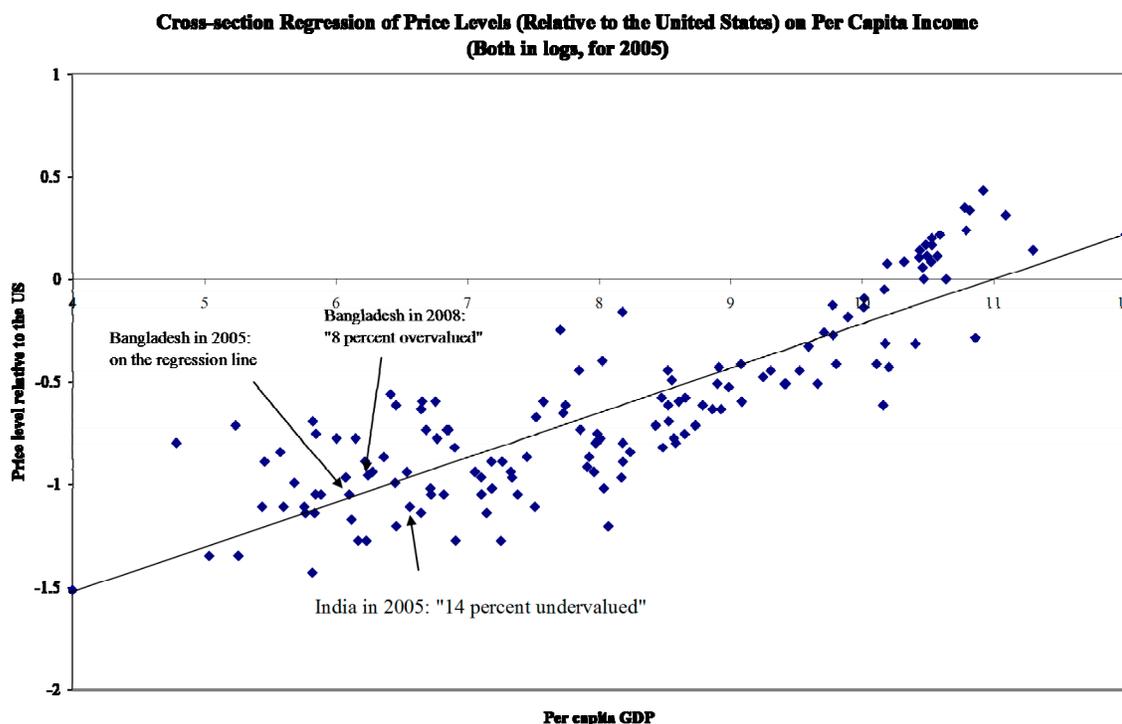
Source: *2005 International Comparison Program*, preliminary results. Price levels in each country are proxied by the GDP deflator.

34.   **A tentative extension of the PPP approach suggests that, as of end-2008, the taka was overvalued by about 8 percent.**[11] Reflecting the substantial inflation differential with the U.S. and the stability of the nominal U.S. dollar/taka-exchange rate, by end-2008, the

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[10] The ICP's global report for 2005 is based on an international effort to collect comparative price data and estimate purchasing power parities (PPPs) for 146 economies, benchmarked to the year 2005. The new PPPs, which are based on national surveys that priced nearly 1,000 products and services, replace previous benchmark estimates, some dating back to the 1980s. Comparative price levels are also included.

[11] The estimated overvaluation of the taka may be exaggerated to the extent that per capita GDP is underestimated. Bangladesh's national accounts are based on an outdated base year (1995/96) and structural changes that have taken place since then are not adequately reflected in GDP estimates. The national accounts base year was last updated in April 2000, from 1984/85 to 1995/96. At that time, the level of GDP was revised upward by about 30 percent. Higher per capita GDP would cause a shift to the right and move Bangladesh closer to the regression line, implying a smaller overvaluation or even some undervaluation of the taka.

bilateral real exchange rate vis-à-vis the U.S. dollar had appreciated by some 10 percent compared to the average for 2005. On that basis Bangladesh would now be located above the regression line that links countries' price levels to the their level of real per capita GDP. Because of Bangladesh's strong growth of per capita real GDP, it has also moved to the right in the graph. In all, the taka would now be 8 percent overvalued (measured by the vertical distance from the regression line).

The Macro Balance (MB) Approach

35.   **The MB approach calculates the difference between an estimated equilibrium current account balance (the "norm") and the projected current account balance**. The REER adjustment that would close the gap between the estimated norm and the projected current account is then calculated using the country's current account elasticity with respect to the real exchange rate (Appendix I).

36.   **A model for the current account norm fitted to an unbalanced panel of 101 developed and developing countries suggests that the taka is undervalued by between 10 and 24 percent, depending on the assumed elasticity of the current account with respect to the real effective exchange rate.** [12] We added Bangladesh to a large panel of developed and developing countries put together by Vitek (2009). We replicated his estimation of the current account balance as a function of relative old age dependency, relative income, relative income growth, the oil trade balance, the relative fiscal balance, initial net foreign assets, aid inflows, and the inflow of remittances (Table 4):

- The estimated coefficients for the explanatory variables are broadly in line with what would be expected based on economic theory. The current account norm rises with the oil trade balance, the initial net foreign assets position and the fiscal balance. The norm declines with higher relative income growth.

- The estimation suggests that the coefficients for remittances and aid flows are insignificant at commonly used levels of statistical significance. This result contradicts some recent studies (e.g. Halikias (2009)) which found that remittances are a statistically significant determinant of the current account norm.

The panel estimation results imply a medium-term current account norm of -2 percent of GDP. This is substantially weaker than the staff projection (a surplus of 0.8 percent of GDP in the medium term), suggesting undervaluation of the taka by between 10 and 24 percent.

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[12] A single-country estimation of the current account norm for Bangladesh also produces plausible results with coefficients with the "correct" sign. This approach suggests a 1 to 3 percent undervaluation in 2014. However, the robustness of this result is hampered by limited availability of data (only 20 annual observations) and structural breaks in the data.

Table 4. Estimation results for the macroeconomic balance approach

| Variable	Coefficient	T-Statistics	Coefficient	T-Statistics
Constant	0.00	0.22	0.00	0.13
Relative old age dependency	-0.11	-0.97		
Relative income growth	-0.52	-2.23		
Relative income	0.01	0.95	0.01	1.16
Dummy* Relative income			0.00	-0.22
Oil-trade balance	0.37	6.08	0.34	5.49
Dummy *Oil-trade balance			1.34	1.45
Relative fiscal balance	0.28	2.17	0.23	1.44
Dummy*Relative fiscal balance			-0.36	-0.95
Initial net foreign assets	0.05	3.60	0.05	3.01
Dummy*Initial net foreign assets			0.03	0.38
Aid inflows	0.13	0.93	0.11	0.81
Dummy*Aid inflows			1.15	1.68
Remittances inflows	0.14	0.99	0.18	1.30
Dummy*Remittances inflows			1.00	1.60
R2	0.36		0.41	
Wald test for dummies (prob)			0.0002	
Number of observations	1085		1085	

37. **Inflows of remittances and aid are relatively large for countries in South and East Asia and turn out to be significant determinants of the current account norm.** The general panel estimation suggests that aid and remittances are significant only at a 35 percent level. To test whether countries in South and East Asia behave differently we include an Asia dummy for the relevant countries in the panel (Bangladesh, Cambodia, India, Indonesia, Malaysia, Maldives, Myanmar, Pakistan, and Philippines) comprising about 250 observations. A Wald test rejects the null hypothesis that the estimated coefficients for the interaction terms with the Asia dummy are jointly equal to zero. The estimates suggest that remittances, aid inflows, and the oil trade balance have larger and more significant effects on current account norms in East- and South-Asian countries than for the rest of the world. This may reflect a tendency to add a larger share of these foreign exchange inflows to central bank reserves than is the case in countries in other regions.

38. **For the case of Bangladesh, taking into account the Asia-specific determinants of the current account norm would imply a negligible undervaluation of the taka.** The estimation results for the panel with the Asia dummy entail a current account norm for Bangladesh of a surplus of 0.5 percent of GDP, almost equal to the staff's medium-term projection, suggesting that the taka is in line with macro-economic fundamentals.

The Equilibrium Real Exchange Rate (ERER) Approach

39. **The ERER approach involves carrying out a panel regression for the REER and its determinants.** As with the MB approach, we used the database and program setup by Vitek (2009). The REER is estimated as a function of the terms of trade, relative productivity, relative government consumption and remittance flows (Table 5). The

estimated coefficient are highly significant and
their signs are in line with priors based on
economic theory. [13] We used Bangladesh's real
GDP per capita relative to its trading partners as a
proxy for relative productivity. Through the mid-
1990s, this measure of relative productivity was
adversely affected by political instability, natural
disasters, and an inward-oriented development
model. Since then, as a result of improved macro-
economic policies and a gradual move toward a
more outward-oriented development model,
Bangladesh has started to make some gains relative to its trading partners.

Bangladesh's real GDP per capita relative
to trading partners (index, 2000=1)
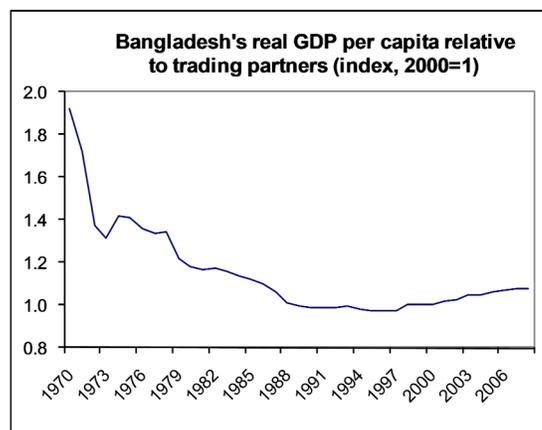
40.   **The ERER approach suggests that the taka is 8 percent undervalued.**
Remittances are a statistically significant determinant of the REER and no region-specific
effects of explanatory variables on the ERER were found. The panel used for the estimation
of the ERER approach is substantially larger than the one used for the MB approach and
includes considerably more developing countries, including ones that receive substantial
remittances. The resulting larger tilt to (remittances-receiving) developing countries than in
the smaller panel used to apply the MB approach may account for the significant effect of
remittances in the basic regression and the insignificance of the interaction terms of the
regional dummy variable with explanatory variables.[14]

**Table 5. Estimation results for the macroeconomic balance approach**

Variable	Coefficient	T-Statistics	Coefficient	T-Statistics
Constant	0.51	3.39	0.49	3.25
Terms of trade	0.32	3.59	0.32	3.51
Dummy*Terms of trade			0.02	0.04
Relative productivity	0.39	3.16	0.40	3.08
Dummy*Relative productivity			-0.24	-0.61
Relative government consumption	0.21	2.03	0.20	1.98
Dummy*Relative gvmt consumpt			-0.26	-0.29
Remittances	0.99	2.00	1.08	2.14
Dummy*Remittances			-1.47	-0.51
R2	0.45		0.45	
Wald test for dummies (prob)			0.37	
Number of observations	3098		3098	

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[13] Estimates of a single-country vector error correction model give implausible results ("wrong" signs for
remittances and openness) possibly caused by structural breaks in the data and exchange controls.

[14] Based on the Wald test we could not reject the null hypothesis that the estimated coefficients for the
explanatory variables interacted with the dummy variables are jointly equal to zero.

The External Sustainability (ES) Approach

41.   **The ES approach involves estimating the adjustment in the REER needed to stabilize Bangladesh's NFA-to-GDP ratio at a certain benchmark level**. The ES approach complements the ERER methodology by focusing on the relation between the sustainability of a country's external stock position and its flow current account position, trade balance, and real exchange rate. It consists of three steps. The first involves determining the current account balance to GDP ratio that would stabilize the NFA position at a given 'benchmark' value. The second step compares this NFA-stabilizing current account balance (ES-norm) with the level of a country's underlying current account balance. And finally, the third step consists of assessing the adjustment in the real effective exchange rate that is needed to close the gap between the underlying current account balance and the ES-norm.

Bangladesh: NFA, gross foreign assets and liabilities (in percent of GDP)
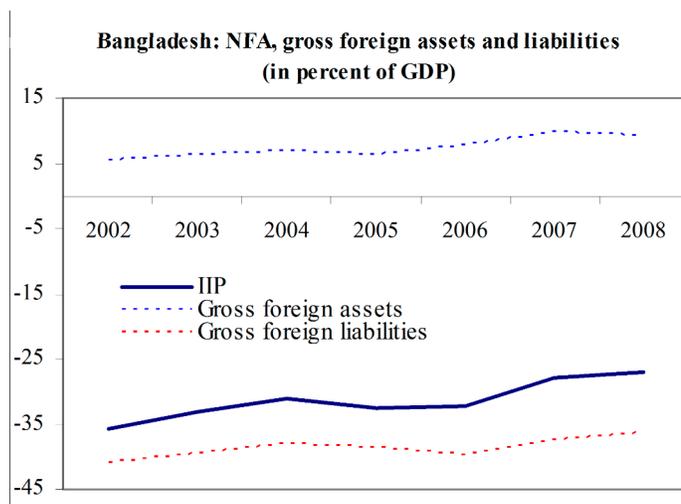
42.   **The ES approach suggests that the REER was undervalued by between 9 and 23 percent in 2008.** Using data compiled by the Bangladeshi authorities on the country's international investment position (IIP), Bangladesh's NFA in 2008 is put at -27 percent of GDP. With the U.S. dollar value of Bangladesh's GDP projected to grow by 7.2 percent annually, Bangladesh could run a current account deficit of 1.8 percent of GDP without causing the NFA to GDP ratio to fall. In staff's baseline scenario, the current account surplus is projected at 0.8 percent of GDP in 2014. Depending on the elasticity of the current account balance with respect to the REER, the gap between the NFA-stabilizing current account deficit and the projected medium-term current account surplus could be closed by a 9 to 23 percent appreciation of REER.

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Appendix I: Choice of the Current Account Elasticity for Bangladesh

The elasticity of the current account with respect to the real exchange rate is a key variable for the estimation of exchange rate misalignments under the MB and ES approaches. The last step in the estimation of the over/undervaluation of the real exchange rate involves computing the real exchange rate adjustment that would (i) close the gap between the estimated current account norm and the underlying current account balance (MB approach); or (ii) close the gap between the estimated NFA-stabilizing current account balance and the underlying current account balance (ES approach).

The IMF's Consultative Group on Exchange Rates (CGER, see Lee et al. (2008)) calculates the current account elasticities for a panel of industrial and emerging market economies. The calculations are based on estimated import and export elasticities which are derived on the back of the assumption that supplies of exports and imports are perfectly elastic. Complete pass-through of changes in foreign prices to domestic prices is assumed as well. Accordingly, the current account elasticity is calculated as *(export elasticity) x (export to GDP ratio) – (import elasticity – 1) x (import to GDP ratio)*: for a given response of export and import volumes to the real exchange rate, the impact on the trade balance and the current account will be roughly proportional to trade openness. Therefore, a country more open to trade will be able to close the current account gap with less exchange rate adjustment. Using data for FY2009, the CGER-based current account elasticity for Bangladesh is equal to 0.12 if the elasticities estimated for industrial countries are used.

The application of uniform export and import elasticities to a wide range of countries has raised some questions, in particular, given differences in the composition of exports and imports across countries. In particular, several studies suggest that developing countries may have larger trade elasticities. Therefore, similar current account gaps could be closed by smaller adjustments in the real effective exchange rate. Several attempts have been made to calculate trade balance elasticities for low-income countries and commodities exporters. However, these attempts have been hampered by data limitations and structural changes — which have been frequent in developing countries and limit the scope for using common econometric techniques.

Using current account elasticities for low-income countries and allowing for incomplete pass-through to import and export prices renders a current account elasticity for Bangladesh which is close to the CGER-based elasticity. An elasticity of 0.10 is obtained if one corrects for the incomplete pass-through observed in many low and middle income countries and applies the export and import elasticities estimated by Hakura and Billmeier (2008) for a sample of non-oil exporting low and middle income countries in the Middle East and Central Asia.

Table 1. Estimation of the trade balance elasticity for Bangladesh 1/			
	CGER for industrialized countries	Hakura-Billmeier (2008)	Tokarick (2009)
Export elasticity	-0.71	-0.67	-1.87
Import elasticity	0.92	0.66	0.33
Pass-through to exports	1	0.42	0.66
Pass-through to imports	-1	-0.71	-0.66
Trade balance elasticity	-0.11	-0.10	-0.29

Source: IMF staff estimate.
1/Export and import-shares in GDP are set at 19 and 25 percent,
respectively, as projected for 2014.

A new approach to calculate current account balance elasticities suggests that Bangladesh's current account elasticity with respect to the real exchange rate may be 0.29, substantially larger than the CGER- based elasticity and the adjusted CGER-based elasticity. Tokarick (2009) presents a new approach to calculate country-specific trade elasticities, based on a general equilibrium model. He develops an international-trade model with three different goods (an exported good, a good which competes with imports, and a non-traded good) and calculates elasticities based on the detailed Global Trade Analysis Project database. The analytical approach to the computation of current account elasticities is not hampered by the data and structure constraints of the regression analysis, which, as indicated above, is especially important for developing countries.

The composition of trade and price setting behavior are important factors:

- The importance of the composition of exports is underscored by the relatively strong performance of low value-added exports, including in the case of Bangladesh, during the current global crisis.

- Bangladesh, like many other developing countries, is a price taker on international markets**.** Therefore, "small country assumptions" (i.e. infinite export demand and import supply elasticities) need to be applied in the formula for the current account balance elasticity. Moreover, the computations need to focuses on the elasticity of the trade balance in foreign currency rather than of the trade balance in domestic currency as in the CGER (as trade data in Bangladesh is reported in foreign currency). Accordingly, the current account elasticity is calculated as *(export elasticity)* (export-to-GDP share)*(pass-through to export prices) - (import elasticity)*(import-to-GDP share)*(pass-through to import prices).* Estimates of pass-through of 0.66 for developing and emerging markets are taken from Frankel, Parsley, and Wei (2005).