ECONOMICS

REMITTANCES AND ECONOMIC GROWTH: EMPIRICAL EVIDENCE FROM BANGLADESH INDIA AND SRI LANKA

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Abstract:
In many developing countries, remittance payments from migrant workers are increasingly becoming a significant source of export income. This paper investigates the causal link between remittances and economic growth in three countries, Bangladesh, India and Sri Lanka, by employing the Granger causality test under a VAR framework (Granger 1988). Using time series data over a 25 year period, we found that growth in remittances does lead to economic growth in Bangladesh. In India, there seems to be no causal relationship between growth in remittances and economic growth; but in Sri Lanka, a two-way directional causality is found; namely economic growth influences growth in remittances and vice-versa. The paper also discusses a number of policy issues arising from the results of the analysis in relation to remittances in association with liberalisation of financial institutions, gender issues, regulation and enforcement, investment and savings schemes, and promotion and education.

Remittances and Economic Growth:
## Empirical Evidence from Bangladesh, India and Sri Lanka

1.   Introduction

South Asia has been an important source of migrant workers for countries suffering from labour shortages and migrant workers' remittances have become an increasingly important source of export income for this region. Within South Asia, Bangladesh, India, Pakistan and Sri Lanka have been the main suppliers of migrant workers who are spread over almost all over the world. Remittances sent by these migrant workers to their home countries have played an important role to promote economic development in these countries. This paper is a modest attempt to examine the impact of remittance income on economic growth in three South Asian countries, namely, Bangladesh, India and Sri Lanka[1]. Figure 1 indicates that remittance income in Bangladesh, India and Sri Lanka has increased significantly in the last 30 years, with some minor fluctuations. All three countries show three periods where their remittance activities increased substantially, the periods surrounding 1980, post 1993 and 2001. These three trends in remittance, as well as others, such as the period of stagnation visible in remittances to India between 1980 and 1991, are investigated in more depth in Section 4.

Increases in remittance flows have greatly assisted these countries to minimize the problem arising from shortages of foreign exchange reserve which is badly needed to pay the import bills. It is undeniable that during their earlier stage of development, developing countries like Bangladesh, India and Sri Lanka need the scarce foreign exchange to pay for its import requirements. The immense increase in remittance payments over this period may be attributed to two significant factors. First, immigration between developing and developed countries has increased dramatically in the past 20 years (World Bank 2007). Second, transaction costs have declined as technological improvements have allowed for faster, lower cost mechanisms for the international transfer of payments between individuals (Guiliano & Ruiz-Arranz 2006).

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[1] Initially, we intended to also include Pakistan in our study. However, due to lack of reliability of data on relevant variables considered in this study, Pakistan was eventually dropped from our analysis.

Figure 1: Aggregate Remittances to Bangladesh, India and Sri Lanka: 1975-2006
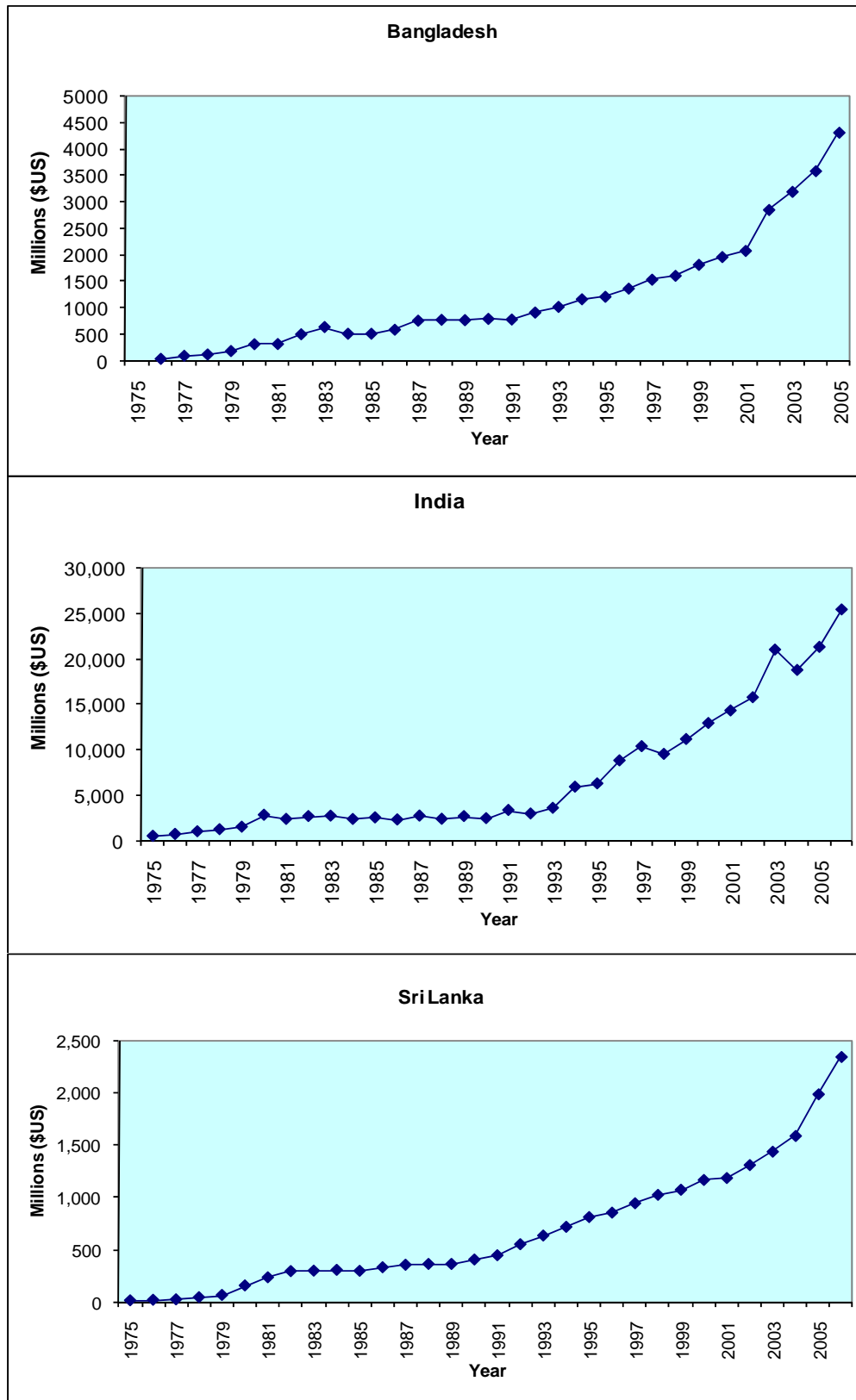
Source: Derived from Table A1, Appendix A.

With the increase in remittance income, practitioners in development economics have shown curiosity in examining its impact on economic growth in both the host and country of origin of the expatriate workers. With regard to its impact on economic growth in the country of origin of the expatriate workers, opposing views have emerged – some argue that remittances have a positive impact on economic growth while others hold the opposite view. The purpose of this paper is to examine the impact of remittances on the economy of Bangladesh, India and Sri Lanka. Together, Bangladesh, India and Sri Lanka have remained an important source of expatriate workers. The number of expatriate workers has increased significantly over the years. In the process, remittance income has emerged as one of dominant sources of foreign exchange earnings for these nations. Thus, these three countries offer a unique opportunity to examine the linkages between remittance income and economic growth. The findings of the study have important policy implications not only for these three countries, but also for other developing countries that depend on remittance income.

The organisation of the paper is as follows. Section 2 gives an overview on the debate surrounding the relationship between remittances and economic growth. Section 3 looks at the motivation behind our paper and introduces our research mechanism while Section 4 of the paper examines the importance of remittances to Bangladesh, India and Sri Lanka. In Section 5 we present a preliminary time-series data analysis of remittances and economic growth data in these three countries, and in Section 6 we investigate the direction of causality under a VAR framework. In the final section we present our concluding statements and provide recommendations according to our findings.

2.   Remittances and Economic Growth: An Overview

As mentioned above, whether remittances promote economic growth is an important issue of debate amongst economists. Those that believe remittances do not contribute to economic growth point to their expenditure on conspicuous consumption (Rahman et al. 2006) and that any savings are being spent on consumption rather than for the accumulation of productive assets (Stahl and Arnold 1986), and the theoretically low marginal propensity to consume out of transitory income. Those that argue for the positive developmental effects of remittances focus on the multiplier effects of consumption (Stahl and Arnold 1986), development of the financial institutions that handle remittance payments (Aggarwal et al. 2006), use of remittances as foreign exchange (Ratha 2005), and the role of remittances as an alternative to debt that helps alleviate

individuals' credit constraints in countries where micro-financing is not widely available (Guilamo and Ruiz-Arranz 2006). These arguments may be separated into the classical opposing camps of development economists; those who believe in a top-down approach to poverty alleviation placing primary focus on the development of institutions, and those who argue for a bottom-up approach in which the individual is first lifted out of the poverty trap from which point society follows.

Many studies have attempted to address the impact of remittances on economic growth and poverty alleviation. Pradhan et al. (2008) find that remittances have a small, positive impact on growth in a 36 country cross-sectional study using a linear regression model in which remittances form one of five variables. Aggarwal et al. (2006) conducted a study of 99 countries over the period 1975-2003 and find that remittances have a positive effect on bank deposits and credit to GDP. The authors then interpolate the positive effect on development by invoking existing studies showing the positive impact of these two variables on economic growth. Taylor (1992) and Faini (2001) also find a positive association between remittances and economic growth. Taylor (1999) find that every dollar Mexican migrants send back home or bring back home with them increases Mexico's GNP from anywhere between US$2.69 and US$3.17. In contrast, Spatafora (2005) finds that there is no direct link between per capita output growth and remittances. Meanwhile, in one of the larger cross country surveys, Chami et al. (2003) conclude that remittances have a negative effect on economic growth across a sample of 113 countries. Several other published studies in relation to remittances have focused specifically on the alleviation of poverty rather than overall economic growth (for example, see Adams & Page 2003).

3.   Motivation for the Current Study

In the above studies, the null hypothesis has been a statement of correlation and not causation. The question itself is framed around whether remittances are a statistically significant factor in determining economic growth. Another important question in relation to remittances and economic growth should be that of causation. Such a question asks whether economic growth causes remittances or visa-versa. In addition, the results from the above studies are also based on panel-data consisting of a number of countries. This may be suitable for answering greater questions on average, but is of little consequence to individual countries seeking to manage domestic policy. Such policy questions include the opportunity cost attributable to the emigration

of skilled workers, the financial treatment of recipients of remittances, the composition of domestic institutions for the transmission of remittances and the style and placement of investment incentives targeting remittance recipients. Furthermore, most of the other studies have qualitatively considered the impact of remittances on an economy in terms of social measures such as education, health and democratization (Rahman et al. 2006), and development budget increases. Nor has any quantitative analysis on the causality between remittances and economic growth been conducted. We believe this study will help to fill such a gap.

With this aim in mind, the main objective of this paper is to employ the Granger Causality Framework (Granger 1988) in order to investigate the directional linkage between economic growth and remittances in the context of Bangladesh, India and Sri Lanka. The benefit of the use of such an approach lies in its ease of application for policy makers in developing countries and the demonstration of (non-) causality for an individual country given time series of only two variables; remittances and economic growth.

4.   Importance of Remittance in the Economies of Bangladesh, India and Sri Lanka

In this section we examine the importance of remittances in the three economies under our investigation. For the sake of brevity we discuss the importance of three areas: trends in remittances, the link between remittances and economic growth, and the importance of remittances as a source of foreign exchange in these economies.

Figure 2 presents the growth in remittances for Bangladesh, India and Sri Lanka during 1977-2006 and Table 1 presents the average growth rates for various sub-sample periods. As can be seen, the growth rate fluctuates from time to time but is almost a constant during some periods. Growth in remittances across these countries appears to have stabilized somewhat over the last two decades with the variance of fluctuations reducing dramatically relative to the period 1976 – 1985. This reduction in the variance of remittance growth could be related to the stabilization of government policy and currencies over time. An example of such instability affecting remittance flows is the Sri Lankan case where in 1977, the election of the United National Democratic Party led to a change in migration policy, causing a surge in labour exports and thus remittances (Eelens & Speckmann 1990). This, combined with government reforms of the Sri Lankan exchange rate system during the same period resulting in a currency devaluation (Balakrishnan 1980), an economic boom in the labour-scarce oil producing economies of the middle east, and

the push factors of prolonged ethnic conflict and slow growth in the rural economy (World Bank 2004), explains the spiking nature of remittances in the late 1970's and growth thereafter.

Figure 2: Growth in Remittances (in percentages), 1976-2006
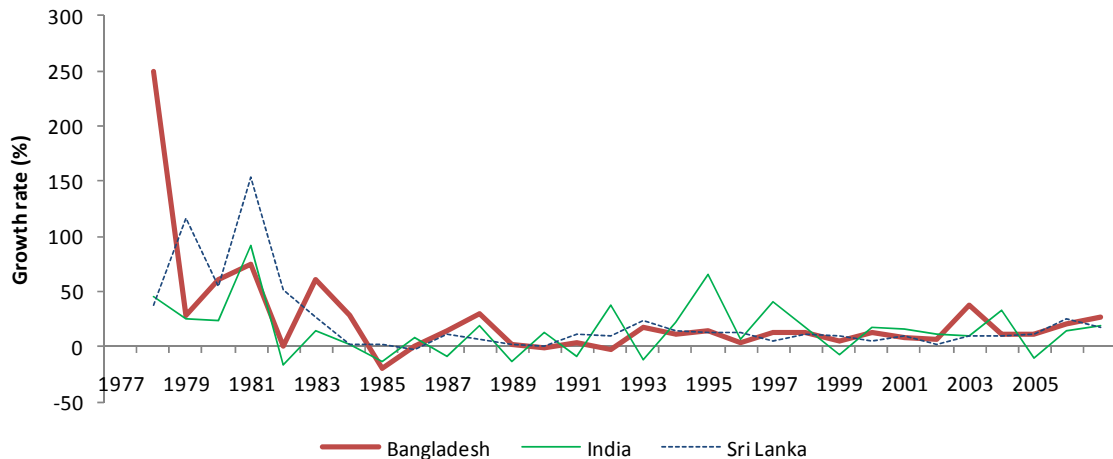
Source: Derived from Table A1.

Table 1: Average growth rates in remittances, 1976 - 2006

Period	Bangladesh	India	Sri Lanka
1977-1981	83.0	33.6	82.6
1982-1986	16.8	0.2	7.8
1987-1991	6.4	9.6	6.2
1992-1996	12.0	24.6	14.0
1997-2001	9.0	10.8	7.2
2002-2006	21.8	13.0	14.8
Mean	**24.8**	**15.3**	**22.1**

Source: Derived from Table A1.

Formal and informal remittance transfer channels could help explain why between 1980 and 1991 there is a relative stagnation in remittance growth. Informal remittance channels can involve money carried place to place by individuals or couriers, or, it could involve a hawala service network which is informal and provides cash payouts across borders at a fraction of the cost of formal methods. Formal networks such as banks and foreign exchange bureaus are more popular in robust and liberalised economies with strong financial sectors (Sander and Maimbo 2005, p.65). As India was not financially liberalised until the 1990's when multiple exchange

rate controls were lifted, there would have been an incentive to use informal means of remittance transfer up to this point (Jha et al. 2009, p.9). Using informal transfer methods would cause an under reporting of remittances in India up to the 1990's.

With nearly one half of Bangladesh's offshore labour employed in Saudi Arabia (Siddique 2004), Bangladesh too experienced the benefit from growth in West Asia during the 1970's. This explains their large growth in remittances during the late 1970's in line with the rising oil prices of the time. There was a significant plateau in remittance growth in the period leading up to and during the Gulf war from 1988-1991. This was remedied however with Bangladesh workers involvement in post-war reconstruction (Siddique 2004) which is reflected by steady remittance growth from 1992-94.

With Saudi Arabia as a majority employer, availability and quantity of work for Bangladeshi migrant workers is at the mercy of pricing fluctuations in the oil industry. When compared to crude oil prices, increases and decreases in remittance growth is correlated to increases and decreases in oil prices. The periods 1977-81 and 1988-1991, as previously mentioned, are good indicators of this, as well as the strong growth in remittances from 2002 which is in line with a sharp rise in oil prices in the same period.

Figure 3 highlights the sheer size of the proportion remittances occupy in the export earnings of Bangladesh, India and Sri Lanka, and Table 2 presents these values at sample means at various sub-periods. Bangladesh shows the greatest reliance on remittances as a form of income growing from approximately 6% of export income in 1976 to more recent times where remittances have hovered close to 50% of export income since 2003. India and Sri Lanka likewise have grown in their dependence on remittance income from humble beginnings in 1975 with both countries attributing approximately on third of their export earnings to remittances in the years surrounding 2006.

For all three countries, the period up to and including 1979 shows steady growth in remittances as a percentage of exports before a major jump in 1980, with Sri Lanka more than doubling remittances while Bangladesh and India came close to doubling over the course of one year. The rising oil price in the mid 1970's is a contributing factor to this growth, bringing increased wealth into exporting countries in West Asia and the Gulf region. As a result of this increased wealth, development programs including construction of roads, schools, hospitals, houses and

other commercial complexes were undertaken (Kuthiala 1986). Increased wealth also meant many households in oil rich areas were less willing to participate in more medial tasks such as cleaning, cooking and household maintenance and could now afford fulltime maids and grounds keepers. This resulted in a spurt in demand for semi-skilled and unskilled workers for which India, Sri Lanka and Bangladesh were well placed to meet.

Figure 3. Remittances as a Proportion of Export Income (%): 1976-2006
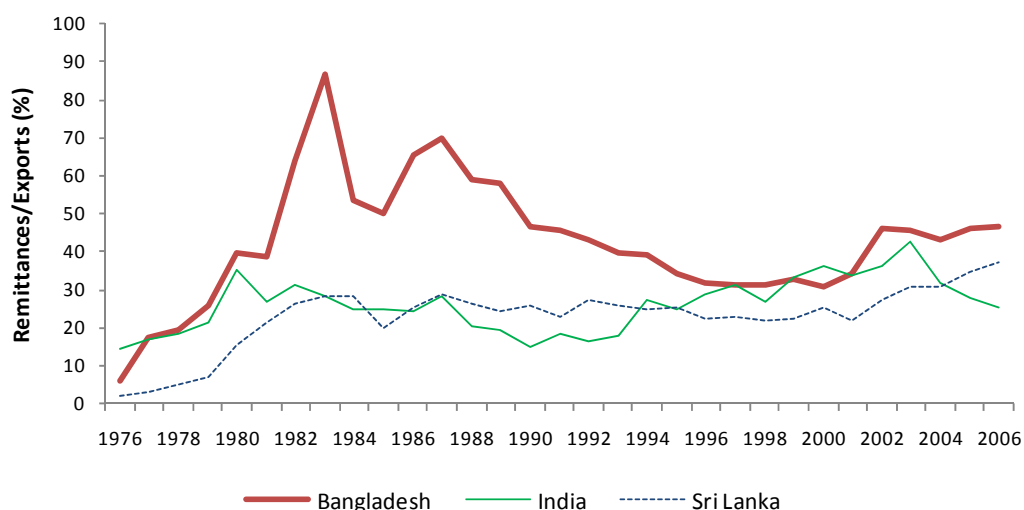
Source: Derived from Table A1.

Table 2. Average Remittances as a Proportion of Export Income (%):1977-81-2002-06

Period	Bangladesh	India	Sri Lanka
1977-1981	28.3	23.8	10.5
1982-1986	63.9	26.9	25.7
1987-1991	55.9	20.4	25.7
1992-1996	37.6	23.0	25.2
1997-2001	32.1	32.3	22.9
2002-2006	45.6	32.8	32.1
Mean	**43.9**	**26.5**	**23.7**

Source: Estimated from Table A1.

It has been found that remittances help promote growth in less financially developed countries by providing a substitute for inefficient or non existent credit markets, thus allowing consumers to reduce credit constraints and find an alternative way to finance investment (Giuliano & Ruiz-Arranz 2006). Having access to credit can help increase investment opportunities in areas of

developing countries that previously produced little, leading to growth and a positive trend relationship between GDP and remittances as shown in Figure 4 [Source: World Bank World Development Indicators (2007)].

Remittances also encourage economic growth when they are used for financing children's education and welfare expenses such as health care (Chimhowu et al. 2005). Investing in child education and welfare will increase labour productivity in the long term which in turn impacts positively on growth. This longer term approach could also help explain why the GDP appears somewhat insulated from the short term fluctuations in remittances in Figure 4. Even if the remittances are spent on consumption or real estate, there are still multiplier effects and increases in demand for goods stimulated by these activities (Chimhowu et al. 2005), once again showing the positive link between remittances and GDP.

In Figure 4, India requires some further explanation as its remittances do not trend as smoothly as Bangladesh and Sri Lanka. As discussed earlier in Section 4.1, there is a period from 1980 to 1993 where remittances in India stagnate. Apart from this anomaly there is a clear positive trend relationship between Remittances and GDP with the final exception to this being a spike in remittances per capita in 2003. An explanation for this positive spike in 2003 is Resurgent India Bonds, which were launched in 1998 and matured in 2003. A large portion of these bonds were redeemed and retained in India, instead of being repatriated abroad in foreign currency. That amount retained was thus recognized as remittances, resulting in the 2003 spike (Chishi 2007).

5. A Preliminary Data Analysis of Remittance and Economic Growth

We use annual time series data for the period 1976 to 2006 for the two variables, per capita remittances and economic growth in Bangladesh, India and Sri Lanka. The data is collected from various issues of the World Bank (2007a). Figure 4 plots the two original series for the three countries.

As can be seen from Figure 4, there is an upward trend in both series and therefore, the means of the time series are changing over time indicating that both series in their original form may not be stationary. The plots of the first-differenced series of per capita remittances and economic growth (in logarithmic form) suggest no evidence of changing means, indicating that the per capita remittances and economic growth series may be integrated of order one, that is, both time

Figure 4: Remittance per capita and GDP per capita: Bangladesh, India and Sri Lanka,
1975-2006
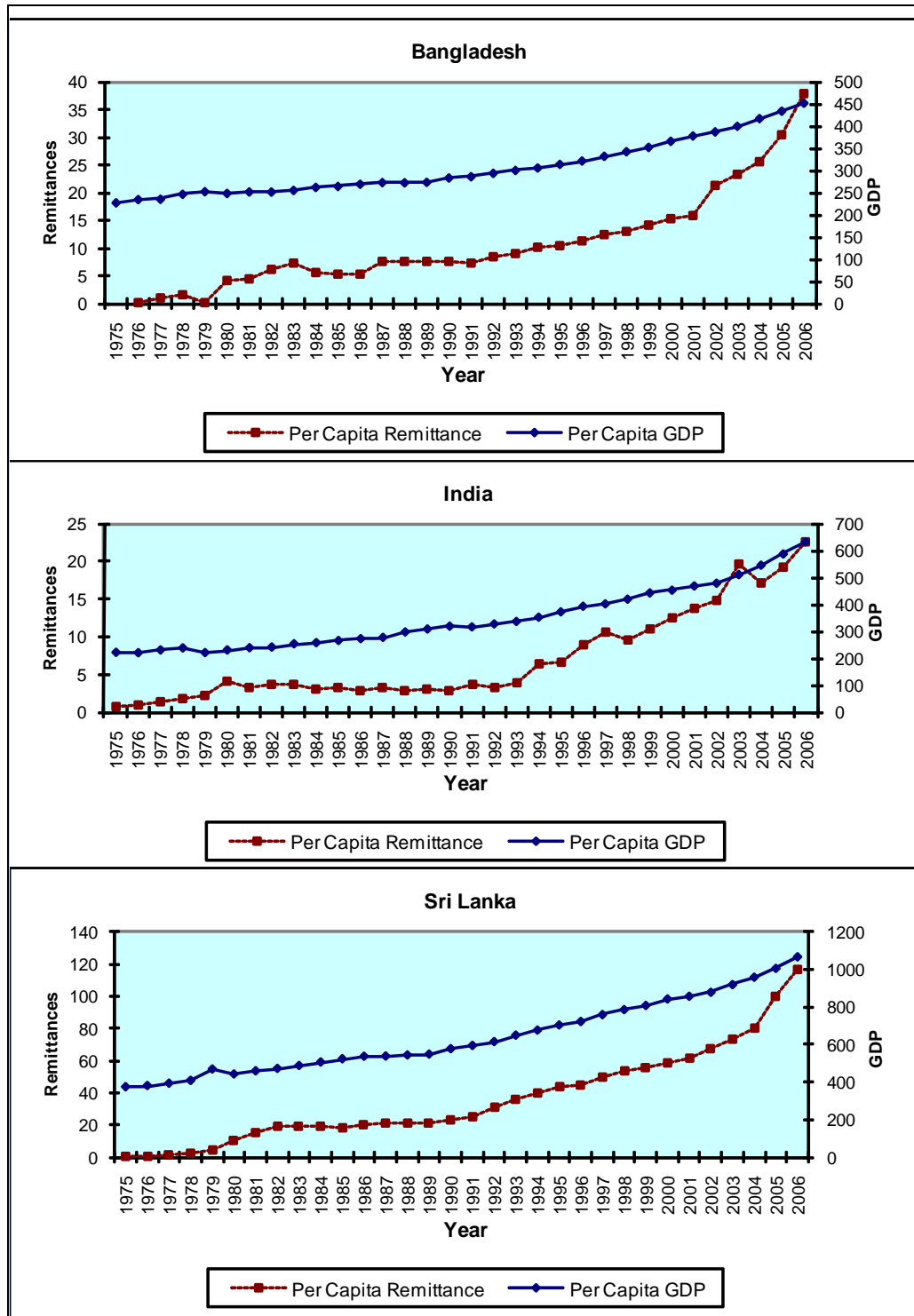
series are I(1). To statistically validate these findings, we formally test the stationarity properties of these two series using the Augmented Dickey-Fuller (ADF) unit-root test.

We apply the ADF test to the per capita remittances and economic growth series separately. We carry out the estimation of the models using the econometric software SHAZAM and test the presence of unit roots using the systematic procedure described in Enders (1995). The results of the Augmented Dickey-Fuller (ADF) test for the stationarity of the two original series are presented in Table 3. As can be seen, both time series have at least one unit root and hence are non-stationary in their original form, except for the remittance series in Sri Lanka.

We now test the stationarity of the first difference of both series by applying the ADF test on the first difference series. The results are presented in Table 4. As can be seen, the results show that both series are stationary in their first difference form. This means both series are I(1).

Even if the two variables, per capita remittances and economic growth series, individually are I(1), it may be possible that a linear combination of the two variables may be stationary. If we are modelling a linear relationship between per capita remittances and economic growth series, even if each of them individually are non-stationary (i.e. I(1)), as long as they are co-integrated, the regression involving the two series may not be spurious. Thus, we now investigate whether the two series are co-integrated and have a long run equilibrium relationship.

We now employ the Engle and Granger (1987) procedure, which is based on testing for a unit root in the residual series of the estimated equilibrium relationship by employing the Dickey-Fuller test. Therefore, the null and alternative hypotheses are:

H_0:   The residual series has a unit root (or per capita remittances and economic growth series are not co-integrated)

H_A: The residual series has no unit root (or per capita remittances and economic growth series are co-integrated)

Rejection of the null hypothesis would mean that the two series, per capita remittances and economic growth series, are co-integrated.

The results are presented in Table 5 and clearly show that both the least square residual series are non-stationary and hence the series per capita remittances and economic growth series are not co-integrated, indicating that there is no long-run equilibrium relationship between per capita remittances and economic growth series in all three countries.

Table 3: ADF Test Results for a Unit Root on the Original Series

Model (Remittance)	Null hypothesis	Critical value	Bangladesh		India		Sri Lanka	
			Data-based value of the test statistic	Results	Data-based value of the test statistic	Results	Data-based value of the test statistic	Results
Constant and trend	$H_0: \gamma = 0$	-3.13	-3.10	Do not reject H_0	-2.43	Do not reject H_0	-4.23	Reject H_0
Constant and trend	$H_0: \alpha_0 = \gamma = 0$	5.34	5.08	Do not reject H_0	3.15	Do not reject H_0		
Constant and no trend	$H_0: \gamma = 0$	-2.57	-1.96	Do not reject H_0	-1.44	Do not reject H_0		
Constant and no trend	$H_0: \alpha_0 = \gamma = 0$	3.78	3.41	Do not reject H_0	6.01	Reject H_0		
No constant and no trend	$H_0: \gamma = 0$	-1.62	0.59	Do not reject H_0				
(Using z-distribution)	$H_0: \gamma = 0$	-11.2			-1.86	Do not reject H_0		
Conclusion			Log{per capita remittance} has a unit root and the series is non-stationary		Log{per capita remittance} has a unit root and the series is non-stationary		Log{per capita remittance} does not have a unit root and the series is stationary	

Model (GDP)	Null hypothesis	Critical value	Bangladesh		India		Sri Lanka	
			Data-based value of the test statistic	Results	Data-based value of the test statistic	Results	Data-based value of the test statistic	Results
Constant and trend	$H_0: \gamma = 0$	-3.13	0.50	Do not reject H_0	-1.04	Do not reject H_0	-2.39	Do not reject H_0
Constant and trend	$H_0: \alpha_0 = \gamma = 0$	5.34	7.88	Reject H_0	5.21	Do not reject H_0	3.13	Do not reject H_0
Constant and no trend	$H_0: \gamma = 0$	-2.57			2.78	Do not reject H_0	0.45	Do not reject H_0
Constant and no trend	$H_0: \alpha_0 = \gamma = 0$	3.78			29.32	Reject H_0	21.18	Reject H_0
No constant and no trend	$H_0: \gamma = 0$	-1.62						
(Using z-distribution)	$H_0: \gamma = 0$	-11.2			1.39	Do not reject H_0	0.26	Do not reject H_0
Conclusion			Log{per capita GDP} has a unit root and the series is non-stationary		Log{per capita GDP} has a unit root and the series is non-stationary		Log{per capita GDP} has a unit root and the series is non-stationary	

Table 4. ADF test results for a unit root on the first difference of the original series

Model (Remittance)	Null hypothesis	Critical value	Bangladesh		India		Sri Lanka	
			Data-based value of the test statistic	Results	Data-based value of the test statistic	Results	Data-based value of the test statistic	Results
Constant and trend	$H_0: \gamma = 0$	-3.13	-3.83	Reject H_0	-2.19	Do not reject H_0	-3.43	Reject H_0
Constant and trend	$H_0: \alpha_0 = \gamma = 0$	5.34			2.74	Do not reject H_0		
Constant and no trend	$H_0: \gamma = 0$	-2.57			-2.29	Do not reject H_0		
Constant and no trend	$H_0: \alpha_0 = \gamma = 0$	3.78			2.78	Do not reject H_0		
No constant and no trend	$H_0: \gamma = 0$	-1.62			-2.05	Reject H_0		
(Using z-distribution)	$H_0: \gamma = 0$	-11.2			-1.86	Do not reject H_0		
Conclusion			ΔLog{per capita remittance} does not have a unit root and the series is stationary		ΔLog{per capita remittance} does not have a unit root and the series is stationary		ΔLog{per capita remittance} does not have a unit root and the series is stationary	

Model (Economic Growth)	Null hypothesis	Critical value	Bangladesh		India		Sri Lanka	
			Data-based value of the test statistic	Results	Data-based value of the test statistic	Results	Data-based value of the test statistic	Results
Constant and trend	$H_0: \gamma = 0$	-3.13	-3.24	Reject H_0	-3.42	Reject H_0	-3.45	Reject H_0
Constant and trend	$H_0: \alpha_0 = \gamma = 0$	5.34						
Constant and no trend	$H_0: \gamma = 0$	-2.57						
Conclusion			ΔLog{per capita GDP} does not have a unit root and the series is stationary		ΔLog{per capita GDP} does not have a unit root and the series is stationary		ΔLog{per capita GDP} does not have a unit root and the series is stationary	

Table 5. Test for co-integration of remittances and economic growth series

Model (Residuals)	Critical value	Bangladesh		India		Sri Lanka	
		Data-based value of the test statistic	Results	Data-based value of the test statistic	Results	Data-based value of the test statistic	Results
Constant and trend	-3.50	-1.17	Do not reject H_0	-1.51	Do not reject H_0	-1.88	Do not reject H_0
Constant and trend	-3.04	-2.74	Do not reject H_0	-2.37	Do not reject H_0	-1.61	Do not reject H_0
Estimated models		$Growth_t = 5.47 + 0.13\,Remittance_t$ $Remittance_t = -26.24 + 4.93\,Growth_t$		$Growth_t = 5.27 + 0.33\,Remittance_t$ $Remittance_t = -13.58 + 2.61\,Growth_t$		$Growth_t = 5.78 + 0.21\,Remittance_t$ $Remittance_t = -21.7 + 3.86\,Growth_t$	
Conclusion		The residual series have a unit root. Hence the remittance and economic growth series are not co-integrated		The residual series have a unit root. Hence the remittance and economic growth series are not co-integrated		The residual series have a unit root. Hence the remittance and economic growth series are not co-integrated	

6   Testing for Granger Causality

From the analysis so far, we found that both of the series, remittances and growth, are I(1) and are not cointegrated. Therefore they have no long-term relationship. They may nevertheless be related in the short-run. Their short-run fluctuation can be described by their first-differences, which are stationary. The interactions in the short-run fluctuations may therefore be described by a VAR system in first differences.

We determine the optimal lag length for the VAR system by using the Schwarz (1978) Criterion (SC) and the Akaike (1974) Information Criterion (AIC). We used a VAR system of k lags and estimate it for various lag lengths and found that the optimal lag lengths for both series, Growth and Remittances, to be 4 for Bangladesh and India, and 3 for Sri Lanka. Therefore the final system to be used is a VAR(4) for Bangladesh and India, and VAR(3) for Sri Lanka. We estimate the VAR(4) system in the following form with all variables in first-difference form and test various hypotheses.

$$Rem_t = \alpha_{01} + \alpha_{11}Rem_{t-1} + \alpha_{21}Rem_{t-2} + \alpha_{31}Rem_{t-3} + \alpha_{41}Rem_{t-4}$$
$$+ \beta_{11}Growth_{t-1} + \beta_{21}Growth_{t-2} + \beta_{31}Growth_{t-3} + \beta_{41}Growth_{t-4} + e_{1t} \qquad (1)$$

$$Growth_t = \alpha_{02} + \alpha_{12}Rem_{t-1} + \alpha_{22}Rem_{t-2} + \alpha_{32}Rem_{t-3} + \alpha_{42}Rem_{t-4}$$
$$+ \beta_{12}Growth_{t-1} + \beta_{22}Growth_{t-2} + \beta_{32}Growth_{t-3} + \beta_{42}Growth_{t-4} + e_{2t} \qquad (2)$$

We test whether $Growth_{t-1}$, $Growth_{t-2}$, $Growth_{t-3}$ and $Growth_{t-4}$ do not appear in the $Remittances_t$ equation to test Growth does not cause Remittances, and $Remittances_{t-1}$, $Remittances_{t-2}$, $Remittances_{t-3}$ and $Remittances_{t-4}$ do not appear in the $Growth_t$ equation to test Remittances does not cause Growth. In the case of Sri Lanka, we use a VAR(3) model and similar arguments as above for VAR(4) are valid with 3 lags instead of 4.

Hence the null hypothesis to test 'non-causality' that 'Growth does not cause Remittances' is that

$$H_0: \beta_{11} = \beta_{21} = \beta_{31} = \beta_{41} = 0.$$

Thus, a rejection of the null hypothesis H_0 would indicate that Growth causes Remittances in the Granger sense.

Similarly the null hypothesis to test 'non-causality' that 'Remittances does not cause Growth' is that

H_0: $\alpha_{12} = \alpha_{22} = \alpha_{32} = \alpha_{42} = 0$.

We perform the above estimation in SHAZAM and Table 6 presents the results. As can be seen from row 1 of Table 6, (for testing the null hypothesis, H_0: Growth $\neq$> Remittances), the *p*-values are 0.59 for Bangladesh and 0.50 for India, which are greater than the level of significance, 0.05, and the *p*-value for Sri Lanka is 0.00 which is less than 0.05. Hence we are unable to reject the null hypothesis that 'Growth does not cause Remittances' at the 5% level of significance for Bangladesh and India, but reject for Sri Lanka. Looking at row 2 of Table 6 (for the testing of H_0: Remittances $\neq$> Growth), the *p*-value for this test is 0.04 for Bangladesh, 0.39 for India and 0.01 for Sri Lanka. Therefore, we reject the null hypothesis H_0: 'Remittances does not cause Growth' in favour of the alternative that Remittances cause Growth, in the Granger sense at the 5% level of significance for Bangladesh and Sri Lanka, but are unable to reject it for India.

Table 6. Results of Granger Causality Test between Remittances and Economic Growth

Null hypothesis	p-value of the F-test	Conclusion at the 5% level
Bangladesh		
(1) H_0: Growth $\neq$> Remittance $(\beta_{11} = \beta_{21} = \beta_{31} = \beta_{41} = 0)$	0.59	Do not reject H_0 That is, economic growth does not cause remittance
(2) H_0: Remittance $\neq$> Growth $(\alpha_{12} = \alpha_{22} = \alpha_{32} = \alpha_{42} = 0)$	0.04	Reject H_0 That is, remittance causes economic growth
India		
(1) H_0: Growth $\neq$> Remittance $(\beta_{11} = \beta_{21} = \beta_{31} = \beta_{41} = 0)$	0.50	Do not reject H_0 That is, economic growth does not cause remittance
(2) H_0: Remittance $\neq$> Growth $(\alpha_{12} = \alpha_{22} = \alpha_{32} = \alpha_{42} = 0)$	0.39	Do not reject H_0 That is, remittance does not cause economic growth
Sri Lanka		
(1) H_0: Growth $\neq$> Remittance $(\beta_{11} = \beta_{21} = \beta_{31} = 0)$	0.00	Reject H_0 That is, economic growth does cause remittance
(2) H_0: Remittance $\neq$> Growth $(\alpha_{12} = \alpha_{22} = \alpha_{32} = 0)$	0.01	Reject H_0 That is, remittance does cause economic growth

7.   Conclusions and Policy Implications

In this paper we have investigated the causal relationship between remittances and economic growth in Bangladesh, India and Sri Lanka using data for the period 1976 to 2006. For this investigation we employed various time series econometric techniques such as unit root test, co-

integration and causality. The analysis reveals that the two time series, remittances and economic growth, are both I(1) and are not cointegrated. We then investigated the causality between remittances and economic growth. The results show that there is only a one-way causal relationship from remittances to economic growth in Bangladesh; there is no causal relationship between growth in remittances and economic growth in India; but in Sri Lanka, a two-way directional causality is found. While our analyses in both series are stationary only in first difference and hence our findings are more valid in the short run, the results nonetheless hold important implications.

As we pointed out in the introduction, there is much debate on the role that remittances play in the economic development of less developed countries. Some argue against its impact due to conspicuous consumption. In Bangladesh's case the majority of remittance payments are in fact used for consumption purposes as opposed to investment and savings. Indeed, the IMF (2007, p8), found that while there is a close and statistically significant correlation between remittances and consumption the correlation coefficient between remittances and investment is conversely not significant. Furthermore, Bangladesh's current consumption in 2003 was estimated to comprise a large 50-60 percent of remittance spending while investment spending comprised a mere 10% (Demary, cited in Siddiqui and Abrar 2003). However, despite these facts, as the above Granger results illustrate, remittances do in fact contribute to economic growth in Bangladesh.

The causality of remittances on economic growth in Bangladesh could be due to a number of factors, including the multiplier effect, whereby injected capital through consumption indirectly contributes to economic development and growth through the flow on effect. Additionally, despite remittance spending on investment being low, even a small portion can help to alleviate liquidity constraints and directly contribute to growth. This is especially compelling for Bangladesh given that employment overseas helps somewhat in alleviating unemployment pressures at home. Our empirical results reveal therefore that appropriate policy to explore more foreign employment and more proficient use of remittances would help the economic development of Bangladesh. While a number of significant changes have been implemented already in promoting remittances, such as the floating of the exchange rate in 2003 and the increased pressure in cutting down the informal Hundi system of money transfer, it is evident that remittances are not yet being utilised in a manner conducive to maximum growth and development.

As indicated above, our results establish that remittances play a significant role in the promotion of economic growth in Bangladesh, although its importance to the economy of India is inconclusive. However, this does not undermine the importance of remittances to the economy of India. At the household level, injection of remittance income by the expatriates does significantly improve the economic wellbeing of millions of families which are not captured by a highly aggregated analysis like our study. The results regarding the link between remittance of income in the case of Sri Lanka is very convincing. There is a two way directional causality indicating that remittances promote economic growth and vice versa.

It cannot be denied that remittances are very important to the economies of Bangladesh, India and Sri Lanka. Unfortunately this important source of income and the expatriates who earn this income did not receive due attention from the policy makers. There are a number of important areas where improvements can be made and contributions from remittances to promote economic growth could be enhanced. Some of these areas are discussed below.

Transmission mechanisms and channelising the remittances

High fees charged by financial institutions, coupled with insufficient ATM's are still pushing some workers into remitting money home through the Hundi system (D8 2008). While the Bangladesh Ministry of Finance made headway in curtailing Hundi transfer when they introduced strict time limits on official transfers and promoted electronic banking, competition within the banking sector needs to be encouraged to mitigate fees and harness a greater number of formal remittances. Currently Bangladesh Bank policy denies private banks from opening branches in cities abroad where nationalised commercial banks have branches (Siddiqui 2004, p32). In order to foster greater amounts of competition and efficiency in both the private and public banking sectors, such protectionism has to be reconsidered. This need for competition is displayed through a survey of 40 central banks which found central banks would not limit remittance fees unless in response to market competition amongst other financial institutions (World Bank 2005).

Formal financial infrastructure for remittances in Bangladesh, India and Sri Lanka is needed to allow poorer rural households access to finance without the use of money launderers, shopkeepers for credit, and other informal remittance services, which inflate the final in-country portion of the transfer (World Bank 2005). The need is for the development of reliable, rapid and low cost remittance transaction support. This support should endeavour to be easily accessible not only from centralised commercial areas but also households in rural areas. This would

maximise remittances through formal channels, at the same time fostering growth in the more disadvantaged rural areas. One such recommendation by Lasagabaster et al. (2005) is allowing established financial institutions to provide services through postal networks as a cost effective financial expansion measure.

Gender Issues

There are also significant gender issues that must be addressed if migration and remittance payments are to be effectively utilised. Women are of particular concern in the workforce. Currently, women migrants are an immensely unutilised asset. This is largely due to government restrictions on the number of unskilled and semi-skilled women who can migrate. However, problems are also faced by those women who manage to migrate (whether legally or not), with many reported cases of exploitation. The United Nations notes that female migrants frequently face demands for higher payments from recruitment agents and are also often subject to assault by employers (UNIFEM 2003). Therefore, in order to capitalise on this untraditional market effectively the government must promote and empower women in the workforce. Restrictions on female migration should be lifted, and there should be strict enforcement of minimum labour standards that ensure protection of workers overseas. Governments should, in conjunction with active women's agencies, educate and train women, thereby increasing their capacity to cope with potential exploitation while gaining additional skills that can be used in the workplace.

Regulation and Enforcement

Another point that warrants further attention is the amount of illegal migration that still occurs. With the creation of the Ministry of Expatriates' Welfare and Overseas Employment (MoEWOE) in 2001, the Bangladesh Government attempted to curtail the amount of undocumented migration. India and Sri Lanka also have laws against human trafficking however the concern is the capacity for developing countries to enforce the laws effectively. Due to a number of loopholes and disjointed efforts among different anti-trafficking groups there is still insufficient regulation of recruitment agencies and human traffickers (Islam 2009). While promotion of formal remittances would likely help, the governments must show persistent vigilance against human trafficking through coherent and strictly enforced law. There should also be increased cooperation between origin countries and countries of destination so that there is a more coordinated and uniform effort in regulation of migration and enforcement of ethical practices and laws.

Investment and Savings Schemes

It is also important that institutions introduce new savings instruments as well as further opportunities whereby migrants can channel their remittance funds into productive sectors of the economy (World Bank 2005). Education in financial planning and business development/management would be effective in harnessing the development impact of remittances. As mentioned earlier, remittance income is used primarily for consumption purposes. While this is valuable to the economy via the multiplier effect, further economic progress would be expected if there was broader development. Migrant workers investing their remittances in business opportunities within their local towns would create employment and growth opportunities, however, for this to happen incentives need to be offered by the government. These incentives could include public infrastructure and development in region centres to encourage remittances investment in these areas, as well as tax incentives for certain projects deemed suitable for development.

Promotion and Education

As well as encouraging migration by women, a broader promotional regime endorsing migration by a greater portion of the Bangladesh, India and Sri Lankan populace is suggested. Additionally, given that the development of the banking sector and crackdown on the Hundi system has only in recent years come into effect, it comes as no surprise that migrant workers and their families would be unfamiliar with the formal remittance process. Financial education would help migrants in countries such as Bangladesh, India and Sri Lanka overcome misconceptions and social conditioning regarding the use of financial institutions and allow migrants to better manage their assets (Lasagabaster et al. 2005). Utilisation of the media and use of other means of disseminating information should be explored to promote best practice in relation to the migration and remittance processes. This would also increase awareness of, and confidence in, the formal systems.

There is some evidence to suggest households receiving remittances have greater access to financial resources to start with, compared to poorer households, creating more migration opportunities for such households. While it is clear that remittances improves welfare, it is the households that are better able to afford the initial cost of the overseas migration that benefit the most (World Bank 2007). Policy initiatives such as the expansion of social programs in microfinance and skills development, and the lowering of interest rates on pre-departure loan

schemes (World Bank 2005) could provide the necessary help for struggling households not yet meeting the initial cost of migration. .

As of 2005 there were only 22 training centres in Sri Lanka to provide prospective migrant workers with the skills needed to successfully migrate and remain employed (World Bank 2005). Expanding these training institutions, especially beyond city boundaries would increase the skill base of prospective migrants as well as provide access to training for the more disadvantaged households on city outskirts. Similar initiatives in Bangladesh and India would also increase their remittance earning potential. Combined with policies encouraging remittance income to be spent on child education, an attempt can be made to curb perpetual educational imbalances. Working to eliminate these imbalances will result in an increase in skilled migration in the long term, thus reducing burden on publicly funded education initiatives over time.

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Appendix: The Data

Table A1: Remittances and Exports 1975 – 2006

Year	Remittances (Millions $US)			Exports (Millions $US)		
	Bangladesh	India	Sri Lanka	Bangladesh	India	Sri Lanka
1975	-	429	8.5	-	4355	569
1976	24	642	13	401	5548	572
1977	83	934	18	476	6378	761
1978	107	1165	39	548	6670	845
1979	172	1437	60	659	7806	981
1980	301	2757	152	759	8586	1067
1981	305	2301	230	791	8295	1094
1982	491	2618	289	769	9358	1030
1983	628	2660	294	724	9148	1066
1984	500	2295	301	931	9916	1451
1985	500	2469	292	999	9140	1293
1986	576	2240	326	880	9399	1215
1987	748	2665	350	1067	11298	1368
1988	764	2315	358	1291	13325	1479
1989	758	2614	358	1305	15846	1545
1990	782	2384	401	1671	17969	1912
1991	769	3289	442	1689	17727	1987
1992	902	2897	548	2098	19628	2455
1993	1009	3523	632	2545	21572	2859
1994	1154	5857	715	2934	25022	3208
1995	1202	6223	809	3501	30630	3798
1996	1355	8766	852	4249	33105	4095
1997	1525	10331	942	4832	35008	4639
1998	1599	9479	1023	5121	33437	4809
1999	1807	11124	1072	5497	35667	4594
2000	1955	12890	1166	6389	42379	5430
2001	2071	14273	1185	6080	43361	4816
2002	2848	15736	1309	6149	49250	4699
2003	3192	20999	1438	6990	58962	5125
2004	3584	18750	1590	8305	76427	5757
2005	4314	21293	1991	9297	99375	6347
2006	5485	25426	2349	11802	120254	6886

Source: World Bank, World Development Indicators (2007)

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