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The role of migrant workers remittances in fostering economic growth: The four Asian developing countries' experiences

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Abstract

Purpose – The purpose of this paper is to examine the macroeconomic impact of migrant workers' remittances on economic growth in four developing Asian countries namely: Bangladesh, India, Pakistan and Sri Lanka.

Design/methodology/approach – This study utilizes annual time series data over the period 1976-2012 and the ordinary least squares as an analytical technique for parameters estimation.

Findings – Empirical results support the existence of a significant positive relationship between migrant workers remittances and economic growth. The other control variables such as foreign direct investment, openness to trade and infrastructure are also found to be statistically significant with expected signs.

Practical implications – The findings of this study are expected to guide policy makers in formulating the right and relevant policies through which migrant workers' remittances can be made more productive and its benefits for both migrants and the country of origin are maximized. Consequently, it will foster economic growth and development.

Originality/value – This paper provides some valuable evidences on the significance of migrant workers remittances as a source of economic growth. Moreover, the study differs from the erstwhile studies in terms of control variables, time period and method of estimation. Finally, the empirical results established are relatively robust.

Keywords Economic growth, Open economy, Workers remittances

Paper type Research paper

1. Introduction

The significance of migrant workers remittances in the process of economic development in developing countries is certainly an important area of research. Remittances simply refer to money that migrants send to their country of origin. Migrant workers remittances resulting from international migration have certainly drawn the attention of the academicians and policy makers to its important impact on the macroeconomic variables of the country of origin. For example, UNCTAD (2008, 2011) reports that workers' remittances are part of households' private financial resources in home countries of migrants. However, they cannot be acknowledged as a replacement for foreign direct investment (FDI), official development assistance or other public sources of finance for development. The study of Siddique *et al.* (2012) note that South Asia countries such as Bangladesh, India, Pakistan and Sri Lanka have been the foremost suppliers of migrant workers spread almost all over

JEL Classification — C32, F24, F41, O40

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the world. An important role has been played by their remittances sent to their home countries in the promotion of economic development of these countries.

The term migration has been expounded by sociologists in terms of the "push-pull" models which encompass push and pull factors. Whereas, push factors are usually considered negative aspects for the country of origin, the pull factors are considered positive aspects for the country of destination. Folks left their country for different push and pull factors. Push factors are concerned with the country of origin from where folks seek to shift abroad while the pull factors are concerned with the country of destinations where the folks intend to shift to. Push factors are associated with paucity of jobs, nepotism in jobs, low wage, unfavorable working environment, poverty, civil conflict, social unrest, dismal economic circumstances, political and religious harassment, etc. On the other hand, the attractions for jobs, labor demand, improve education, health facilities, friendly working environment, better wages, improved standards of living, political and religious freedom, etc., in abroad could pull people to migrate.

Usually, for the remittances transferring purpose, two channels, i.e. formal and informal are used. Formal channels involve financial intermediaries/banks, money transfer organizations and postal services. Many people opt to send cash through friends or family or travel to deliver their own payments in person. Mobile phone-based, "mobile money" services that can send funds electronically across the country are also used for this purpose. However, electronic payment services like mobile money or bankcards are only commonly available in limited countries in South Asia. The informal channels including Hawala or Hundi for money transfer tends to operate in physical cash and is less expensive, it is swifter, more trustworthy and is more convenient relative to the formal channel. Massive migrants have sent or have received remittances and payments domestically through an informal system of money exchange. The message may be brought in person to the recipient, by a friend, family member or non-official third party, or received in person or through another person informally. Almost two-thirds of remittance recipients in South Asia region have reported using informal channels to make transfers of money, with very few using both informal and formal methods (Kendall *et al.*, 2013). This reveals that the actual inflows of remittances are considerably more than those registered in official data sources. Whenever, the immigrants transfers their money, they keep in mind the total transfer cost, access, security, speed and the duration of the money transfer.

1.1 Remittances and economic development

Theoretically, migration has two aspects which are loses and gains. Conceivably, gains are more than losses. Losses are usually considered costly to the country of origin and besides, brain drain associated with migration is normally considered detrimental to national economic development. One view is that developing countries invest in education and training in order to improve human capital to foster their own country's economic growth, but instead, that generates return to other countries. Brain drain could lead to skill shortages in the developing domestic countries. Apart from brain drain, Golinowska (2008) notes that those children whose parents are residing abroad could be in a sound financial position but may experience stern emotional problems and they more often commit petty crimes. In the same vein, Markova (2010) also expounds that the social effects of migration among others comprise of change in family composition, family separations and the relinquishment of old people, child outcomes in terms of labor, health and education. Some previous studies have disclosed that migrant workers remittances might not be beneficial because they are used for consumption purposes and not for investment; they also increase dependency problem and inflation (Looney, 1990; Ellerman, 2003). However, it has been observed that most immigrants are semi-skilled and unskilled workers from the countries under study while the number of intellectuals is few. The international labor market is dominated by unskilled and semi-skilled workers (Wickramasekera, 2002). Moreover, in a study, Siddiqui (2007) shows that the growing economies of South East Asia also rely largely on unskilled and semi-skilled workers particularly from other Asian countries. It is also pertinent to mention that the migrants usually invest major portion of their total earning in their country of origin.

On the other hand, the favorable impacts of migrant workers remittances on economic development have been well documented. Remittances can be used for both consumption and investment purposes which further encourages the demand for goods and services, and contributes to economic development. It has played a positive role in enhancing the social and economic conditions of the recipient's families and consequently contributes to the gross domestic product (GDP) (Barai, 2012). Migration can have both positive and negative economic, social and cultural implications for countries of origin. Apart from money benefit, remittances are also associated with more human development outcomes across a number of areas including education, health and gender equality. Therefore, this money act is a lifeline for the poor people, thus increasing the income for individual and families (Ratha, 2013).

The study of Rapoport and Docquier (2005) showed that workers remittances inflows are usually utilized to repay loans taken to finance migration or education, insurance and strategic motives. The study concludes that migration and remittances have positive impact on economic performance of countries of origin in the long run. Larger amount of remittances are welcomed by migrant worker to be sent to their home countries as it represents streams of income which can be used for consumption and investment (Gupta *et al.*, 2007). Pant (2008) argues that there are various channels through which migrant worker remittances can generate a positive effect on the economy such as consumption, investment, growth, savings, poverty and income distribution. At the aggregate level, remittances inflows contribute extensively to GDP. However, these beneficial impacts are particularly robust for those countries where remittances inflows are more than 3 percent of GDP (Bugamelli and Paterno, 2006). Adams and Cuecuecha's (2010) findings show that the households receiving remittances spend more at the margin, on investment goods, particularly on housing and education and spend less at the margin, on food items in both rural and urban Guatemala. Singh and Hari (2011) provide some evidences that remittances are ones of the relatively less volatile inflows in either the current or capital accounts of India's balance of payment. They conclude that remittances are one of the most fruitful panaceas to get rid of poverty problems. Thus, increases in migrant remittances considerably have influenced on the foreign exchange reserve of India with the potential of affecting many of the macroeconomic variables of the country.

Mr Hongbo, UN Secretary General for Economic and Social Affairs, unveils that migration, when governed fairly, can make a fruitful contribution to economic and social development both in the countries of origin and in the countries of destination. He claims further that migration broadens the opportunities available to individuals because it broadens access to resources and alleviates poverty (United Nation Information Service, 2013). In a recent study, Julca (2013) notes that immigrant remittances are significant sources of income and finance for developing countries.

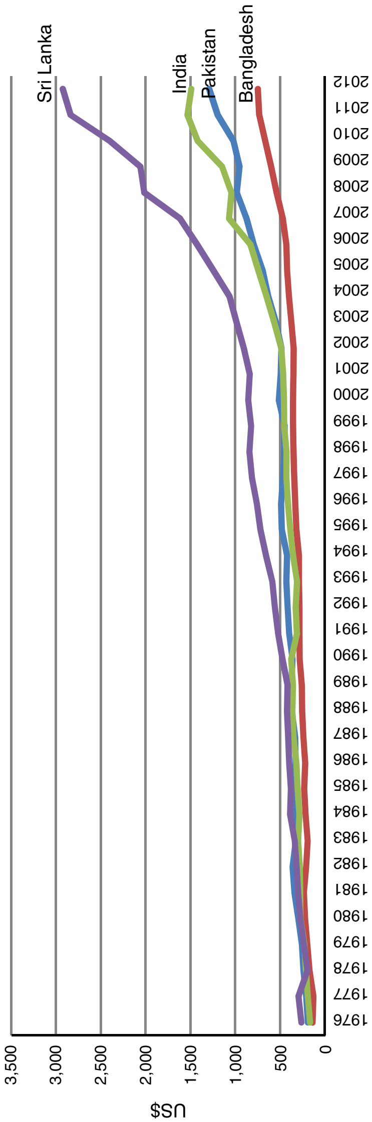
1.2 Stylized fact and trend analysis in remittances

Migrant workers' remittances seem to be one of the largest external sources of finance for most of the developing countries as discussed earlier. In 2013, total international migrants living abroad worldwide were estimated at 232 million or 3.2 percent of the world's population, though 175 million were documented in 2000 and 154 million in 1990.

The data statistics demonstrates that the international migrant stock increases by an average of 4.5 million yearly in the first decade of the twenty-first century and by four million yearly between 2000 and 2013. Irregular migrants recoded were 20 million, including 11 million in the USA and over 500,000 each in Italy, Malaysia, Thailand and the UK. In 2013, total migrants in Europe were estimated at 72 million, followed by 71 million in Asia. The USA remains the most popular destination to the migrant, where the numbers of migrant recorded were 46 million. This was followed by Russian Federation, Germany, Saudi Arabia, UAE, UK, France, Canada, Australia and Spain with 11, 10, 9.1, 7.8, 7.8, 7.4, 7.3, 6.5 and 6.5 million, respectively. Top recipients remittances countries in 2013 included India, China, Philippines, Mexico and Nigeria with US$71, US$60, US$26, US$22 and US$21 billion, respectively. These five countries received more than half of remittances to developing countries. The other large recipients included Bangladesh, Pakistan, Ukraine and Vietnam (World Bank, 2013). Malaysia attracted more migrant from other countries estimated to be around 380,000 in 1990 and 2-4 million in 2010. While the total registered workers were estimated at around 1.8 million, the rest were unregistered. Indonesians migrant recorded were 55 percent which was relatively more compared to Philippines which recorded 20 percent.

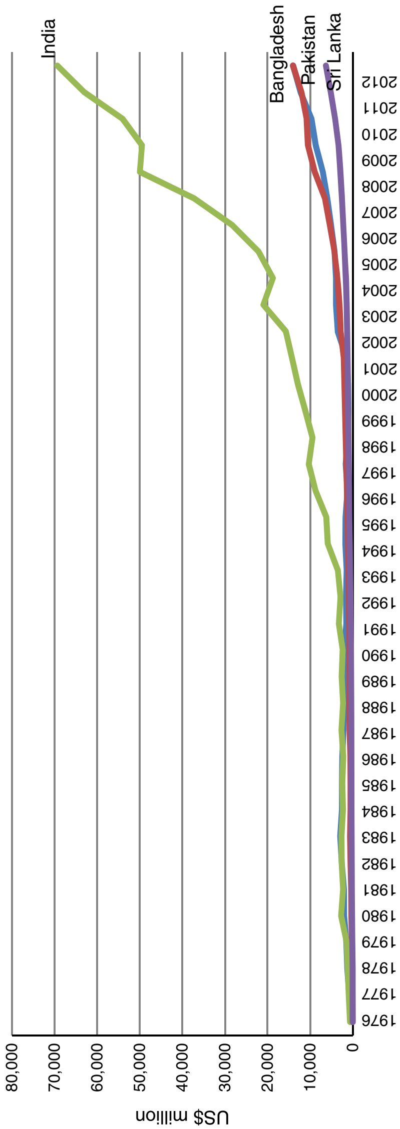
Migrant inflows from other ASEAN countries to Malaysia have also increased. The inflows of migrant remittance to South Asia are likely to reach almost US$114 billion in 2013. Workers remittances to India are to be increased and it is projected at US$71 billion in 2013. Similarly, the inflows of remittances to Bangladesh and Pakistan were moderately higher in the first seven months of 2013 than a year earlier and are expected to increase gradually. Remittances are significant in Sri Lanka, surpassing 10 percent of GDP and are projected to accelerate up to the end of the year (World Bank, 2013). According to the United Nation Department of Economic and Social Affairs (2013) report, almost 3.2 million people from Bangladesh have settled down in India. Albeit, India is the favorite destination for Bangladesh migrants while Indians prefer to migrate to the Persian Gulf countries. Two favorite Middle East destinations for Indians are UAE (with 2.9 million Indian immigrants) and Saudi Arabia (with 1.8 million Indian immigrants). Until now, around 2.1 million Indians, 2.2 million Chinese and two million Philippines are in USA. Almost seven million Pakistanis have migrated to almost 80 countries, mostly employed in the Middle East, Europe and North America. Middle East countries have emerged as the preferred migration destination for most of the Pakistanis, where more than five million blue-collared workers were engaged (Hamdani, 2013). In 2013, around 1.7 million Sri Lankans were estimated to be working abroad, including 600,000 in Saudi Arabia.

The World Bank's (2013) "Migration and Development" reported that in 2013, developing countries were expected to receive US$414 billion in remittances which is 6.3 percent more than the last year amount. It is projected to increase to US$540 billion by 2016. The largest recipients of workers remittances countries are India, China, the Philippines and Mexico. In 2012, higher remittance flows to Bangladesh and Pakistan boosts South Asia to appear as the leading recipient region. Figure 1 shows that during 1976, GDP per capita were estimated at US$136, US$190, US$164 and US$261 for Bangladesh, Pakistan, India and Sri Lanka, respectively. The, GDP per capita of Bangladesh, Pakistan, India and Sri Lanka have improved to US$747, US$1290, US$1489 and US$2923, respectively in 2102. Therefore, if the economic developments of these countries are measured by GDP per capita, these figures therefore, reveal that relatively Sri Lanka left Bangladesh, India and Pakistan behind. The process of economic development on the basis of GDP per capita demonstrates that the Pakistan's economy performance is relatively inactive when compared to the other countries under study. It is evident from Figure 2 that remittances inflows to India are growing at



Source: Data gleaned from the World Bank, World Development Indicator (2013)

Figure 1.
Trend in GDP per capita: a comparison



Source: Data gleaned from the World Bank, World Development Indicator (2013)

Figure 2.
Migrant workers
remittances inflows:
a comparison

faster rate after 1993 as compared with Bangladesh, Pakistan and Sri Lanka in the region. Presumably, as the population statistics of migrant are more from India in the other countries and their earning sent also become large, it is also reported by UNCTAD (2011) that the growing number of migrants from India has added to the workers remittances inflow over the years. In addition, workers remittances to India have increased due to depreciation in Indian rupee by over 20 percent and these will continue to make a major contribution to India's economy (World Bank, 2013). The data demonstrates that remittances inflows to Bangladesh are more than Pakistan and the inflows to Sri Lanka is the lowest relatively. Figures 1 and 2 present the statistics which gives prolific insights into migrant remittances, countries of destination and the country of origin.

Though, some studies have been conducted using time series and panel data for different periods and different set of countries, indicating that there are growing literatures available on the impact of migrant workers' remittances on economic development. However, in the context of Bangladesh, India, Pakistan and Sri Lanka, the empirical work with time series data on the role of migrant workers remittances is yet at a nascent stage. Therefore, to contribute to the growth of these literatures, the present study makes an attempt to analyze the impact of migrant workers' remittances on economic growth. These countries are selected for this study because they are low and lower middle income countries and have similar characteristics. Most probably, this study makes a valuable addition to the body of literature on the impact of migrant workers remittances on GDP per capita growth in four developing Asian countries. Therefore, the outcomes of the study will positively help the policy makers in devising prudent policies to encourage and utilize these external inflows more efficiently in order to further accelerate economic growth of these countries.

The rest of the study is organized as follows. Section 2 presents empirical evidences on the impact of remittances on economic growth. Section 3 deals with the methodology and data used. Section 4 reports regression results and discussion. Finally, Section 5 concludes the study.

2. Empirical evidence on the impact of remittances on economic growth

Infact, every country aims at enhancing its economic growth in order to improve social welfare, but developing countries need relatively more attention. Many factors have been found to be influencing economic growth (Solow, 1956; Romer, 1986; Barro, 1991; Nsiah and Fayissa, 2013). Though, some earlier studies examine the remittances impact on economic growth, but their results are mixed. A study by Taylor and Wyatt (1996) show that workers remittances inflows have immediate influence on income as it can constraints credit to households. In a study on developing countries covering Asia, Africa and Latin America and the Caribbean during 1980-2006, Ekanayake and Mihalis (2008) find that both remittances and FDI have significant positive effects on economic growth. Fayissa and Nsiah (2010) find that remittances boost economic growth in countries where the financial systems are not well developed by providing an alternative way to finance investment during 1980-2004 for 37 African countries. In a study, Vargas-Silva *et al.* (2009) used data for 20-27 countries and found that remittances positively affected real GDP per capita growth during 1988-2007 in Asian countries. Das and Chowdhury (2011) used panel data for 11 countries over the period 1985-2009 and found positive long-run link between remittances and economic growth. In a recent study, Nsiah and Fayissa (2013) use annual panel data from 1985 to 2007 for 64 countries (29 from Africa, 14 from Asia and 21 from Latin America and the Caribbean region) and find positive and significant relationship between remittances and economic growth for all regions as a group and for each country.

On the other hands, some earlier studies have found an inverse relationship between remittances and growth rate. For example, Chami *et al.* (2005) develop a model to test whether remittances are profit-driven or not using panel data for 113 developing countries over the period 1970-1998. The study finds that remittances have a negative impact on GDP growth, which is contradictory to the positive association of profit-driven capital flows with GDP growth. It is noted that the strong negative linkage between remittances and GDP growth demonstrates that remittances may not be proposed to serve as a source of capital for economic development. In contrary to the above studies, some preceding studies have provided evidence of no relationship between remittances and growth. For example, Barajas *et al.* (2009) did not find any robust and significant positive impact of remittances on long-term growth. However, a negative relationship between remittances and growth was found during 1970-2004 for 84 countries across the world. Similarly, Catrinescu *et al.* (2009) found that remittances revealed a frail positive impact on long-term macroeconomic growth during 1970-2003 in 12 countries.

2.1 Empirical evidence on four developing Asian countries

Empirical studies on the countries selected for the current research are few in number. Some earlier studies like Iqbal and Sattar (2005) found that real GDP growth was positively related to workers' remittances during 1972-1973 and 2002-2003. Such remittances appeared to be the third important source of capital for economic growth in Pakistan. Gupta (2006) conducted a study during 1975-2003 and found that remittances were affected by the economic environment in source countries and seemed to be countercyclical (higher during periods of low economic growth) in India. Using Autoregressive Distributed Lag (ARDL) model approach, Qayyum *et al.* (2008) find that the impact of workers remittances on economic growth was positive and significant in Pakistan during 1973-2007. The study of Siddique *et al.* (2012) empirically evaluated the causal association between remittances and economic growth during 1976-2006. The empirical reveals that there was only a one-way causal relationship from remittances to economic growth in Bangladesh. However, they found no causal relationship between growth in remittances and economic growth in India but in Sri Lanka, a two-way directional causality was found. The findings were more valid in the short run with suggested implication.

In the same vein, Rahman (2009) employs ARDL approach to re-examine the impacts of expatriates' remittances, exports and FDI on real GDP of Bangladesh, India, Pakistan and Sri Lanka using annual data over the period 1976-2006. For Bangladesh, exports show some positive influences on real GDP but statistically insignificant. FDI also shows positive effects on real GDP by similar interpretations. However, workers remittances appear to have some insignificant and unclear impacts on real GDP. For India, exports, FDI and remittances have long-run unidirectional causal flows to India's real GDP. For Pakistan, exports show positive but statistically insignificant while FDI seems to have net negative effect on real GDP. The relationship between remittances and real GDP is positive and significant. For Sri Lanka, remittances play a more prominent role than exports in exerting positive effects on the real GDP. The impact of FDI seems to be consistent with negative effects on real GDP. A study by Paul and Das (2011) show the long-run positive relationship between workers remittances and GDP during 1979-2009 in Bangladesh. Azam *et al.* (2013) findings reveal that there is a positive relationship between remittances and economic growth in five South and South East Asian countries using panel data during 1985-2011. In a study, Ahmed (2010) finds that workers remittance inflows are significant but negatively affects growth. In addition, exports show positive effect while FDI has no effect on the economic growth of Bangladesh during 1995-2006.

However, the present study is different from all prior studies in particular with studies like Rahman (2009) and Azam *et al.* (2013) in terms of control variables, time period, method of estimation and the empirical results obtained. The existing literature provides relatively more evidences to support the hypothesis that migrant workers remittances are beneficial to the recipient countries and can significantly contribute to poverty alleviation and economic development with the exception of countable studies regarding negative or no impact of remittances. Table I shows some prior selected empirical studies on the relationship between remittances and economic growth.

3. Methodology and data

The study aims at examining the macroeconomic impacts of migrant workers remittances and some other control variables such as FDI, openness to trade and infrastructure on the

Author (s)	Country, sample periods, methodology	Response variable(s)	Regressors	Empirical findings
Jawaid and Raza (2012)	China and Korea 1980-2009 Cointegartion, ECM	Real GDP	Remittances, labor force and capital stock	China: negative impact Korea: positive impact
Cooray (2012)	South Asia[a] 1970-2008 OLS, fixed, random effects, GMM	Growth rate of output per capita	Remittances, human capital, M2 to GDP, government expenditure and openness to trade	Positive impact
Yaseen (2012)	MENA 2000-2010 OLS, fixed effects, random effects, GMM	Growth of real per capita GDP	Remittances, initial GDP per capita, human capital and financial development variable	Positive impact
Azam and Khan (2011)	Azerbaijan and Armenia 1995-2010 OLS	Log of GDP	Log of worker remittances	Positive impact
Ahmed *et al.* (2011)	Pakistan 1976-2009 ARDL	GDP	Remittances, exports and money supply (financial development)	Positive impact
Ahmed (2010)	Bangladesh 1995-2006, ADF, Johansen co integration test	Log of real GDP per capita	Remittances, gross capital formation, net private capital flows, exports and FDI	Significant but negative impact
Karagoz (2009)	Turkey 1970-2005 ADF, OLS	Per capita GDP	Remittances, exports, domestic investments and FDI	Negative impact
Ang (2009)	Philippines 1988- 2004 OLS	Change in GDP	Change in remittances, Investment and official deployment assistance	Positive impact
Chami *et al.* (2005)	113 Countries 1970-1998 OLS	Log of real GDP per capita	Log of remittances, initial income level, Investment and ratio of net private capital flows	Negative impact

Notes: ECM, error correction model; OLS, ordinary least squares; GMM, generalized method of moment. [a]India, Sri Lanka, Pakistan, Bangladesh, Nepal and the Maldives

Table I.
Selected empirical studies on the impact of migrant workers remittances on economic growth

economic growth. For empirical investigation purpose, simple multivariable regression model is used which can be symbolically expressed as follows:

$$G = \gamma_0 + \gamma_1 r + \gamma_2 ot + \gamma_3 fdi + \gamma_4 tel + \varepsilon \tag{1}$$

where G is growth rate in GDP per capita, r is growth rate in migrant workers' remittances in US$[1], ot is openness to trade and it is calculated as the total sum of exports plus imports (i.e. trade) divided by GDP, fdi is growth rate in FDI in US$, tel is telephone lines (per 100 people) proxy for infrastructure and ε is error term. It is assumed that the ε is to be independently and identically distributed $\mu_t \sim iid(0, \sigma 2)$ In Equation (1), variables such as, FDI, openness to trade and infrastructure are postulated to be positively related to the economic growth, whereas, the sign of workers' remittances is left to be determined. This study is based on the secondary data covering the period from 1976 to 2012. Data have been extracted from the World Development Indicator (2013) the World Bank data base, and the method of least squares is used as an analytical technique for parameters estimation.

4. Regression results and discussion

Probably, in time series data, some econometric problems such as serial correlation or multicollonearity problems arise. However, after employing the least squares method if the results found indicate that R^2 and adjusted R^2 are greater than the Durbin-Watson (DW) ratios, then the regression results are considered not spurious and are thus acceptable. Data were checked for stationarity through augmented Dickey-Fuller unit root test. The results of unit root show that all the variables are stationary with the exception of infrastructure variable proxy for telephone lines (per 100 people). The regression results of the estimated Equations ((2)-(5)) are presented in Table II in details. Results are statistically significant, adjusted R^2 ratios are near to one, t-ratios are high (p-values are lower), F-ratios are high, DW ratios are near to 2. Most of the variables have expected signs and are theoretically satisfactory. This indicates that the results do not suffer from any serial correlation and multicollinearity problems. Some diagnostic tests like the Breusch-Godfrey serial correlation LM, Jerque-Bera normality and CUSUM test for stability in parameters are used. These tests demonstrate that the overall model satisfies the econometric properties. Thus, the results appear to be technically and statistically acceptable and meaningful for onward policy implications.

Estimated equations:

$$\text{Bangladesh}: \ G = 0.123 + 0.219r + 0.386ot + 0.002fdi - 0.032tel \tag{2}$$

$$\text{India}: \ G = -5.734 + 0.473r + 0.338ot + 0.003fdi + 0.256tel \tag{3}$$

$$\text{Pakistan}: \ G = -0.910 + 0.285r + 0.337ot + 0.004fdi + 0.307tel \tag{4}$$

$$\text{SriLanka}: \ G = 2.304 + 0.299r - 0.298ot - 0.041fdi + 0.290tel \tag{5}$$

Migrant workers' remittances included in the model demonstrate to be important contributor to economic growth and development. The empirical results do support the positive relationship between remittances and economic growth. The estimated coefficients of 0.219, 0.473, 0.285 and 0.299 for Bangladesh, India, Pakistan and Sri Lanka, respectively are obtained for the remittances variable and they are statistically significant at the 1 percent level. These estimated coefficients indicate that one unit change in the remittances variable

Table II.
Regression results

	Bangladesh			India			Pakistan			Sri Lanka		
Variables	Coefficients	SE	*p*-Values	Coefficients	SE	*p*-Values	Coefficients	SE	*p*-Values	coefficients	SE	*p*-Values
Response variable: real GDP per capita (G)												
Constant	0.123	0.760	0.872	−5.734	1.528	0.000	−0.910	1.02	0.314	2.304	1.126	0.049
r	0.219*	0.028	0.000	0.473*	0.093	0.000	0.285*	0.030	0.000	0.299*	0.050	0.000
ot	0.386 *	0.086	0.000	0.338***	0.199	0.099	0.337***	0.179	0.087	−0.298***	0.151	0.057
fdi	0.002	0.003	0.565	0.003**	0.007	0.025	0.004**	0.009	0.026	−0.041*	0.011	0.000
tel	−0.032	0.073	0.659	0.256*	0.055	0.000	0.307*	0.065	0.000	0.290*	0.037	0.000
R^2	0.959	–	–	0.955	–	–	0.954	–	–	0.977	–	–
Adj. R^2	0.954	–	–	0.949	–	–	0.948	–	–	0.974	–	–
F-ratio	191.27	–	0.000	170.94	–	0.000	256.55	–	0.000	347.98	–	0.000
DW	1.751	–	–	1.798	–	–	1.844	–	–	1.69	–	–

Notes: SE, standard errors; *,**,***significant at the 1, 5 and 10 percent levels, respectively will bring about 0.219, 0.473, 0.285 and 0.299 percentage change in the economic growth for Bangladesh, India, Pakistan and Sri Lanka, respectively. The coefficient appears to be relatively high for India and low for Bangladesh. The positive coefficients results obtained conform to the general consensus of positive impact of remittances on growth. The result demonstrates that migrant workers' remittances have a significant positive impact on prompting economic growth in all four countries during the period under study. In this study, the strong, robust and positive impact of remittances on economic growth found is similar to those found in the prior studies such as Das and Chowdhury (2011), Azam and Khan (2011), Nsiah and Fayissa (2013), Cooray (2012) and contrary to those found by Chami *et al.* (2005), Karagoz (2009) and Ahmed (2010).

Certainly, international trade is the most important factor that contributes to economic growth. The estimated coefficients obtained for the openness to trade are significant at the 10 percent level for India and Pakistan. However, it is found to be statistically insignificant for Bangladesh but statistically significant for Sri Lanka with unexpected negative sign. FDI has emerged to be an important promoter of growth and is likely to play a pivotal role in determining the growth of recipient countries. Therefore, it has been included as a regressor in the model.The result shows that it is positively related to economic growth in Bangladesh, India and Pakistan. The coefficients of the FDI variable accurately reflect theoretical expectations. The estimated coefficients of 0.003 and 0.004 are found for the FDI variable and are statistically significant at 5 percent level for India and Pakistan, respectively. However, the impact of FDI on the economic growth of Bangladesh is found to be positively sign as expected but insignificant, while, surprisingly, for Sri Lanka, it was found to be significant but with unexpected negative sign. Undeniably, infrastructure plays an important role in the encouragement of the economic performance of any country. This study uses investment in telephone main lines (per 100 people) proxy for infrastructure as used by prior studies. The coefficient of the result obtained carries the expected positive sign that supports the hypotheses of the study. The coefficients of 0.256, 0.307 and 0.290 are found for the infrastructure variables which are significant at the 1 percent level for India, Pakistan and Sri Lanka, respectively. However, surprisingly, it is found to be insignificant with negative sign for Bangladesh. Overall, the regression result reveals that telecommunications infrastructure boost economic growth.

5. Concluding remarks

Evidently, the inflows of migrant workers' remittances have been growing rapidly to developing countries. At the same time debate is also going on whether remittances help macroeconomic variables and foster economic development of the migrant's country of origin. The main aim of this study is to examine the role played by remittances in the process of economic growth and development of four developing Asian countries. The empirical results are based on annual time series data covering the period 1976-2012. The regression results confirm the existence of positive and significant relationship between migrant workers remittances and economic growth in the countries under study. Overall, the impacts of the other control variables namely, FDI, infrastructure and openness to trade show a positive and significant impact on economic growth. Therefore, these results support the hypotheses of the study.

The main conclusions that can be drawn from the results of this study are that migrant workers' remittances are sources of economic growth. Undeniably, inflows of migrant remittances increase aggregate expenditures through consumption and investment which are needed for economic development. Thus, whether remittances are received through formal or informal channel, they represent vital sources of income that may also contribute to the national economic development of migrants' countries of origin through enhanced level of aggregate expenditures. While the issue of brain drain is though a matter of great concern to investigate, its causes are absolutely more important. Mostly, the migrants are either semiskilled or unskilled, and they usually leave their country of origin due to lack of job opportunities, low wage, low living standard and poverty. Similar reasons are prevailing in the countries under study. The findings suggest that, it is important for the policy makers to devise a right policy through which migrant workers' remittances can be made to be more productive and its benefits maximized for both migrants and their country of origin. Consequently, the enhanced level of workers remittances inflows will boost social welfare of the remittances recipient countries.

A suggestion for future research is that it might be interesting to break the long period (1976-2012) used in the present study into every ten years and fit the trend line accordingly while investigating the impact of migrant workers remittances on economic growth. Findings from such further research are likely to make the outcomes more meaningful for onward policy consideration.

Note

1. Remittances encompass personal transfers and compensation of employees. The data initially were in US$ and was gleaned from the World Development Indicator (2013).

References

Adams, J.R.H. and Cuecuecha, A. (2010), "Remittances, household expenditure and investment in Guatemala", *World Development*, Vol. 38 No. 11, pp. 1626-1641.

Ahmed, J., Zaman, K. and Shah, I.A. (2011), "An empirical analysis of remittances-growth nexus in Pakistan using bound testing approach", *Journal of Economics and International Finance*, Vol. 3 No. 3, pp. 176-186.

Ahmed, M.S. (2010), "Migrant workers remittance and economic growth: evidence from Bangladesh", *ASA University Review*, Vol. 4 No. 1, pp. 1-13.

Ang, A. (2009), "Workers remittances and its impact on rural development in the Philippines", *Asia-Pacific Social Science Review*, Vol. 9 No. 2, pp. 63-77.

Azam, M. and Khan, M. (2011), "Workers' remittances and economic growth: evidence from Azerbaijan and Armenia", *Global Journal of Human Social Science*, Vol. XI No. VII, pp. 41-46.

Azam, M., Hassan, S. and Khairuzzaman (2013), "Corruption, workers remittances, FDI and economic growth in five South and South East Asian countries: a panel data approach", *Middle-East Journal of Scientific Research*, Vol. 15 No. 2, pp. 184-190.

Barai, M.K. (2012), "Development dynamics of remittances in Bangladesh", *SAGE Open*, pp. 1-13, doi:10.1177/2158244012439073, available at: http://sgo.sagepub.com/content/2/1/2158244012439073

Barajas, A., Chami, R., Fullenkamp, C., Gapen, M. and Montiel1, P. (2009), "Do workers' remittances promote economic growth?", International Monetary Fund WP/09/153, Washington, DC.

Barro, R.J. (1991), "Economic growth in a cross section of countries", *Quarterly Journal of Economics*, Vol. 106 No. 2, pp. 407-433.

Bugamelli, M. and Paterno, F. (2006), "Workers remittances and current account reversals", Bank of Italy Economic Research Paper No. 573, Bank of Italy, Rome.

Catrinescu, N., Leon-Ledesma, M., Piracha, M. and Quillin, B. (2009), "Remittances, institutions and economic growth", *World Development*, Vol. 37 No. l, pp. 81-92.

Chami, R., Fullenkamp, C. and Jahjah, S. (2005), "Are immigrant remittance flows a source of capital for development", *IMF Staff Papers*, Vol. 52 No. 1, pp. 55-81.

Cooray, A.V. (2012), "The impact of migrant remittances on economic growth: evidence from South Asia", *Review of International Economics*, Vol. 20 No. 5, pp. 985-998.

Das, A. and Chowdhury, M. (2011), "Remittances and GDP dynamics in 11 developing countries: evidence from panel cointegration and PMG techniques", *The Romanian Economic Journal*, Vol. 42 No. 42, pp. 3-24.

Ekanayake, E.M. and Mihalis, H. (2008), "Do remittances and foreign direct investment promote growth? Evidence from developing countries", *Journal of International Business and Economics*, Vol. 8 No. 1, pp. 58-68.

Ellerman, D. (2003), "Policy research on migration and development", Policy Research Working Paper No. 3117, Washington, DC.

Fayissa, B. and Nsiah, C. (2010), "The impact of remittances on economic growth and development in Africa", *The American Economist*, Vol. 55 No. 2, pp. 92-103.

Golinowska, S. (2008), "The impact of migration on welfare systems and social services-European sending countries", research note, Centre for Social and Economic Research (CASE), Warsaw.

Gupta, P. (2006), "Macroeconomic determinants of remittances: evidence from India", *Economic and Political Weekly*, Vol. 41 No. 26, pp. 2769-2775.

Gupta, S., Pattillo, C. and Wagh, S. (2007), "Impact of remittances on poverty and financial development in Sub-Saharan Africa", IMF Working Paper, WP/07/38. N.W., Washington, DC 20431.

Hamdani, R. (2013), "Remittances from Middle East register exponential growth", The News International, available at: www.thenews.com.pk/Todays-News-3-196968-Remittances-from-Middle-East-register-exponential-growth (accessed August 21, 2013).

Iqbal, Z. and Sattar, A. (2005), "The contribution of workers' remittances to economic growth in Pakistan", Research Report No. 187, Pakistan Institute of Development Economics, Islamabad.

Jawaid, T. and Raza, S.A. (2012), "Workers' remittances and economic growth in China and Korea: an empirical", *Journal of Chinese Economic and Foreign Trade Studies*, Vol. 5 No. 3, pp. 185-193.

Julca, A. (2013), "Can immigrant remittances support development finance?", *Panoeconomicus*, Vol. 3, Special Issue, pp. 365-380.

Karagoz, K. (2009), "Workers' remittances and economic growth: evidence from Turkey", *Journal of Yasar University*, Vol. 4 No. 13, pp. 1891-1908.

Kendall, J., Standish, M., Liu, D. and Naurath, N. (2013), *Remittances, Payments, And Money Transfers: Behaviors of South Asians and Indonesians*, Gallup Inc.

Looney, R.E. (1990), "Macroeconomic impacts of worker remittances on Arab world labor exporting countries", *International Migration*, Vol. 28 No. 1, pp. 25-45.

Markova, E. (2010), "Effects of migration on sending countries: lessons from Bulgaria", Hellenic Observatory papers on Greece and Southeast Europe, GreeSE Paper No. 35, The Hellenic Observatory, London School of Economics and Political Science, London, available at: www.lse.ac.uk/collections/hellenicObservatory/pdf/GreeSE/GreeSE35.pdf

Nsiah, C. and Fayissa, B. (2013), "Remittances and economic growth in Africa, Asia, and Latin American-Caribbean countries: a panel unit root and panel cointegration analysis", *Journal of Economics and Finance*, Vol. 37 No. 3, pp. 424-441.

Pant, B. (2008), "Mobilizing remittances for productive use: a policy-oriented approach", Working Paper Serial No. NRB/WP/4, Research Department, Nepal Rastra Bank.

Paul, B.P. and Das, A. (2011), "The remittance-GDP relationship in the liberalized regime of Bangladesh: cointegration and innovation accounting", *Theoretical and Applied Economics*, Vol. XVIII No. 9(562), pp. 41-60.

Qayyum, A., Javid, M., and Arif, U. (2008), *Impact of Remittances on Economic Growth and Poverty: Evidence from Pakistan*, University Library of Munich, available at: http://mpra.ub.uni-muenchen.de/22941

Rahman, M. (2009), "Contributions of exports, FDI and expatriates' remittances to real GDP of Bangladesh, India, Pakistan and Sri Lanka", *Southern Economic Review*, Vol. 36 No. 1, pp. 141-154.

Rapoport, H. and Docquier, F. (2005), "The economics of migrants' remittances", Discussion Paper No. 153, IZA, Bonn.

Ratha, D. (2013), "The impact of remittances on economic growth and poverty reduction", Policy Brief No. 8, Migration Policy Institute, September, World Bank Development Prospect Group, Washington, DC.

Romer, P. (1986), "Increasing returns and long-run growth", *Journal of Political Economy*, Vol. 94 No. 5, pp. 1002-1037.

Siddique, A., Selvanathan, E.A. and Selvanathan, S. (2012), "Remittances and economic growth: empirical evidence from Bangladesh, India and Sri Lanka", *Journal of Development Studies*, Vol. 48 No. 8, pp. 1045-1062.

Siddiqui, T. (2007), "Temporary labour migration as a contribution to development: low skilled migration and measures to combat irregular migration", Civil Society Day, Global Forum on Migration and Development, The King Baudouin Foundation.

Singh, S.K. and Hari, K.S. (2011), "International migration, remittances and its macroeconomic impact on Indian economy", Research and Publications Working Paper No. 2011-01-06, Indian Institute of Management, Ahmedabad.

Solow, R.M. (1956), "A contribution to the theory of economic growth", *The Quarterly Journal of Economics*, Vol. 70 No. 1, pp. 65-94.

Taylor, J.E. and Wyatt, T.J. (1996), "The shadow value of migrant remittances, income and inequality in a household-farm economy", *Journal of Development Studies*, Vol. 32 No. 6, pp. 899-912.

UNCTAD (2008), *UNCTAD XII: Accra Accord and the Accra Declaration*, United Nation publication UNCTAD/IAOS/2008/2, United Nations New York and Geneva.

United Nations Conference on Trade and Development (UNCTAD) (2011), Impact of remittances on poverty in developing countries. UNCTAD/DITC/TNCD/2010/8. New York and Geneva.

United Nation Information Service (UNIS/INF/488) (2013), 232 Million International Migrants Living Abroad Worldwide-New UN Global Migration Statistics Reveal. Press Releases, available at: www.unis.unvienna.org/unis/en/pressrels/2013/unisinf488.html (accessed September 11, 2013).

United Nation Department of Economic and Social Affairs (2013), United Nations, Department of Economic and Social Affairs, Population Division (2013). International Migration Report 2013. ST/ESA/SER.A/346, United Nations, New York.

Vargas-Silva, C., Jha S. and Sugiyarto, G. (2009), "Remittances in Asia: implications for the fight against poverty and the pursuit of economic growth", ADB Economics Working Paper Series No. 182, Manila.

Wickramasekera, P. (2002), *Asian Labour Migration: Issues and Challenges in the Era of Globalization*, ILO, Geneva.

World Bank (2013), "Migration and development brief", World Bank, Washington, DC, April 19.

World Development Indicator (2013), "The World Bank database", The World Bank 1818 H Street, NW, available at: http://data.worldbank.org/products/wdi

Yaseen, H.S. (2012), "The positive and negative impact of remittances on economic growth in MENA countries", *The Journal of International Management Studies*, Vol. 7 No. 1, pp. 7-14.

Further reading

Faini, R (2003), "The brain drain: an unmitigated blessing?", UNU World Institute for Development Economics Research (UNU/WIDER), Discussion Paper No. 2003/64 Katajanokanlaituri 6 B, 00160 Helsinki.

Luckanachai, N. and Rieger, M. (2010), "A review of international migration policies", International Institute for Labour Studies, Geneva.

Ratha, D. and Mohapatra, S. (2007), *Increasing the Macroeconomic Impact of Remittances on Development*, The World Bank, Washington, DC.

World Bank (2006), *Global Economic Prospects: Economic Implication of Remittances and Migration*, World Bank, Washington, DC.

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