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ARTICLES

KAHANDAKAR M. A. MUNIM Food Security: Determinants and Efficacy of Alternative Measures	1
A. F. M. ATAUR RAHMAN AND CHAOWDHURY NAWSAD FAROOQUI Bilateral Trade Flow and Aid: Evidence from Bangladeshi Data	15
M. NAZMUL HUQ, SHUSHIL RANJAN HOWLADER, M. A. KABIR, AND DIPIKA PAUL Paying Out of Pocket for Health Care of Bangladesh-A Burden on Poor?	25
S. M. MUSTAFA KAMAL, MD. AYNUL ISLAM, AND M. ANISUR RAHMAN Prevalence and Socio Demographic Determinants of Unintended Pregnancy among Young Women in Four South Asian Countries	35
MD. MAHMUDUL HASSAN, MD. SHARIFUL ISLAM, AND LAILA HASEEN Overseas Remittance, Foreign Trade and Growth Nexus in Bangladesh: An Empirical Inquiry	51
NAHID SULTANA, AND KHANDAKER M. A. MUNIM Revisiting the Implications of Socio-economic Factors for Child Mortality in Low and Lower-middle Income Countries	63
AYESHA SIDDIKA, REJOANA ISLAM, AND REFAT FERDOUS Relative Effectiveness of the Monetary and Fiscal Policy on the Economy of Bangladesh	75
MOHAMMAD JAHANGIR ALAM, SHINJI KANEKO, AND MOHAMMAD MAHBUBUR RAHMAN The Decreasing Trend of Agricultural Land in Bangladesh: Myth and Facts	85
SHAPAN CHANDRA MAJUMDER, MOHAMMAD NASIR HOSSAIN, AND DILRUBA AKTER The Effects of Exchange Rate on the Economic Growth of Bangladesh: Using the Granger Causality Approach	97
S. M. WOAHID MURAD, MD. SHAJAHAN, AND IMAM HUSSAIN Are Exports and Imports of Bangladesh Cointegrated?	107
NABILA NUZHAT Remittances and Per Capita GDP Nexus: A Time Series Evidence from Bangladesh and India	117
MOHAMMAD SAFIQUIL ISLAM Revisiting Inflationary Episodes and Policy Responses in Bangladesh	129
MIR TANZIM NUR ANGKUR, AND FARZANA ISLAM Foreign Aid and Economic Growth: An Empirical Study on Selected South Asian and Sub-Saharan Countries	155
ASRARUL ISLAM CHOWDHURY The Nash Equilibrium: Reflection in Memory of John Nash	155



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Overseas Remittance, Foreign Trade and Growth Nexus in Bangladesh: An Empirical Inquiry

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Abstract

Export, import and remittance play important role in economic development and growth. Especially over the past decades, remittances have grown to become one of the leading sources of financial flows to developing countries. Bangladesh is not an exception of this. This paper investigates whether foreign trade and remittances have growth impact on Bangladesh economy and also attempts to see the direction of causal link. The paper uses a theoretically reliable technique to investigate legitimacy of the export led growth (ELG) hypothesis for Bangladesh considering the variable import as well. What we find is no long run relation exists among the variables. And there is one way causality running from export to GDP and remittance to GDP.

Keywords: Remittances, Economic growth, Granger causality, Export led growth

1. Introduction

During the most recent 10-year period, remittance flows amounted on average to about one third of export earnings, more than twice private capital flows, almost 10 times official capital flows, and more than 12 times official transfers. Remittances have even recently become as large as foreign direct investment (FDI) flows to developing countries. Remittances are an important source of foreign income for developing countries, increasing dramatically in size over recent decades. Remittances now account for more than two and a half times the global level of Official Development Assistance (ODA) having accounted for less than five percent of the level of ODA in 1971 (World Bank, 2011a, 2011b). A sizable number of Bangladeshi labor force is employed abroad of which a total of 419 thousand Bangladeshi workers went abroad for employment during FY 2010-2011. The remittances of the expatriate workers stood at US\$ 11650.32 million in FY 2010-11. To secure smooth flow of remittances, the government has taken a range of measures which include among others establishment of Probashi Kalyan Bank, introducing arrangements for remittance through mobile phone, providing CIP facilities to the large remitters.

On the contrary, Export-led growth (ELG) is an economic development approach in which export and foreign trade in broad play a vital role in a country's economic growth and development. There has been a wide-ranging comprehensive swing towards the ELG tactic in recent years. Export growth is said to result in augmented output, employment and consumption, all of which lead to a boost in the demand for a country's output (Jung and Marshall, 1985). Besides, a strong export sector enlarges the domestic market so that firms achieve economies of scale and thus lower unit costs. This may be likely because an export

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sector allows a country to trade along its lines of comparative advantage, (Tyler, 1981:127). This leads to efficient resource distribution. This efficiency forces firms to implement modern know-how and bring into being quality products that congregate the demands of stylish consumers in global markets (Mayer, 1995). Besides, trade may also help a country with positive export externality which leads economic growth (Bradford, 1994; Feder, 1983; and Sengupta and Espana, 1994). Moreover, trade may facilitate a developing country to overcome the ax-ante saving-investment gap and the ax-ante import-export gap (Chenery and Strout 1966 ;).

These reimbursement of the ELG strategy have led, not only to the adoption of this strategy by many countries, but also to a burgeoning of many studies to test the pragmatic legitimacy of the premise (see Shan and Sun, 1998; Marin, 1992; and Islam, 1998; Ghatak, Milner and Utkulu, 1997; Ghatak and Price 1997; and Ukpolo, 1994). Nonetheless, there are still questions as to whether the ELG tactic will also be advantageous to the small resource-based economy of Bangladesh. The paper focuses on this question.

Issues such as whether remittances cause economic growth and what is the causal direction between economic growth and remittances are not resolved. The same goes for export and import. This paper aims to examine the causal link between remittances and economic growth as well as export, import and economic growth in the context of South-Asian country Bangladesh. The objective of this paper is to assess whether export revenues and remittances can lead to noteworthy economic growth in a country like Bangladesh. To achieve this, the paper uses time series econometric analysis to test the causal relationship.

The rest of this paper is prepared as follows: after being introduced issues in section 1, section 2 provides literature review, while section 3 postulates the data and methodology. The analysis of the result is presented in section 4. Finally, section 5 provides the summary and conclusion of the present study.

2. Review of the Literature

2.1 Theoretical Debate

2.1.1 Remittance and Growth

Overseas remittance represents one of the sources of monetary flows to developing countries. Remittance is different from other external capital inflow like foreign direct investment, foreign loans and aids due to its stable nature, (Kapur, 2006; Shahbaz et al, 2008). Remittance have an effect on economic growth and development through micro and macroeconomic activities. The potential channels of the positive impacts of remittance inflows on the growth and development prospects of developing economies include how these remittances impact on domestic investment, balance of payments, ease domestic credit constraints, exports, diversification of economic activities, levels of employment and wages, human capital development and technological progress. Barajas et al (2009) indicated three channels through which remittance could affect economic growth and development, using growth accounting framework. Firstly, by directly financing an increase in capital accumulation relative to what would have been observed if the recipient economies had been forced to rely only on domestic sources of income to finance investment. Secondly, by labor inputs through labor force participation and thirdly, may affect total factor productivity (TFP) growth through

On the other hand, remittances can hinder economic growth. This can happen if the remittances received are used by recipients to reduce their labour supply to the economy (Chami et al, 2005). When this happens, the recipients who are supposed to be part of the active labour force will automatically become dependent on the migrant for survival. Remittances inflows lead to so much appreciation of the local currency, it can also harm the economy of the country as it discourages export thus reduce entrepreneurial competition in the recipients country (Lopez et al, 2007).

2.1.2 Trade and Growth

Though the theoretical links between trade and economic growth have been discussed for over two centuries, debate still persists regarding their actual effects. The initial wave of favorable arguments with respect to trade can be traced to the classical school of economic thought that started with Adam Smith and which was subsequently developed by the endeavor of Ricardo, Torrens, James Mill and John Stuart Mill in the first part of the nineteenth century. Since then, the justification for free trade have been widely discussed and are well documented in the economic literature (Bhagwati, 1978; Krueger, 1978).

Although most models emphasized the nexus between trade and growth, they stressed that trade is only one of the variables that enter the growth equation. However, the advocates of the ELG hypothesis have stated that trade was in fact the main engine of growth in South-East Asia. They argue that, for instance, Hong Kong (China), Taiwan Province of China, Singapore and the Republic of Korea, the so-called Four Tigers, have been successful in achieving high and sustained rates of economic growth since the early 1960s because of their free-market, outward-oriented economies (see e.g. World Bank, 1993).

2.1.3 Empirical Studies

There is a large and growing research literature on the economic impacts of remittances in developing countries. A number of empirical studies have looked at the impact of remittance inflows on the economic growth rates of developing countries. Chami et al. (2003), IMF (2005) and Barajas et al. (2009) find a zero or negative association between remittances and growth. Faini (2002), Ang (2007) Catrinescu et al. (2009), Jongwanich (2007) and Pradhan et al. (2008) find some evidence of a positive association while other studies find that the impact varies according to a country's educational attainment, financial market depth and quality of institutions (Giuliano and Ruiz-Arranz, 2009; World Bank, 2006; 2008). Other studies have examined impacts of remittance inflows on known drivers of growth. Hildebrandt and McKenzie (2005), Lopez-Cordova (2006), Acosta et al. (2008) looked at impacts on human capital, Aggarwal et al. (2011) and Demirgüç-Kunt et al., (2011) were concerned with impacts on financial development, Chami et al. (2003) and Jackman et al. (2009) examined impacts on investment volatility and Amuedo-Dorantes and Pozo (2004) investigated the impacts on the real exchange rate. Thus, the empirical evidence on the causal link between remittance and economic growth is varied.

2.1.4 The Bangladesh Perspective

In Bangladesh, a considerable share of overseas income is spent for consumption purposes, acquisition of assets, investment in trade and business and to finance import of capital goods. It positively affects the socio economic state of migrant families. Few of the early studies (Salim, 1992 and Matin, 1994) concentrated on the macroeconomic impact of remittances in Bangladesh. Nonetheless, remittances are not devoid of adverse effects. Manpower exports are alleged to deprive the country of their services and upsetting the normal functioning of the economy (Mahmood, 1985).

Stahl and Habib (1989) point out that there is a multiplier effect of remittances. They elucidate that remittances add to savings, which then increase growth. Mahmud (2003) and Siddique (2004) claim that remittances foster growth in Bangladesh. Paul and Das (2011) discovers a long-run positive relationship between remittances and GDP, but find no evidence on remittance-led growth in the short run. On the other hand, Rahman et al. (2006) and Rahman (2009) conclude that remittance seems to have insignificant and ambiguous effects on Bangladesh's GDP. Ahmed (2010) finds that flow of remittances to Bangladesh have been statistically significant but have a negative impact on growth. Siddique, Selvanathan and Selvanathan (2010) also find that growth in remittances does not lead to economic growth in Bangladesh.

During the eighties and early nineties, Bangladesh underwent many trade related structural reforms. This has impact on the overall trade pattern and economic growth. Love and Chandra (2005) use annual data on GDP, export and import in a multivariate framework to investigate export-led growth hypothesis for Bangladesh and conclude in favor of short and long-run unidirectional causality from income to exports. Mamun and Nath (2005) explores time series evidence to investigate the link between exports and growth in Bangladesh. With the quarterly data for a period from 1976 to 2003, the research finds that production and exports are cointegrated. The results of an error correction mode (ECM) suggest that there is a long-run unidirectional causality from exports to growth in Bangladesh. Clarke and Ralhan (2005) find support in favor of causal nexus between export and growth for Bangladesh using annual data from 1960 to 2003. Shirazi and Manap (2005) examine the export-led growth (ELG) hypothesis for five South Asian countries including Bangladesh using cointegration and multivariate Granger Causality tests. They found feedback effects between exports and GDP and imports and GDP for Bangladesh.

The objective of this paper is to examine the causality among exports, imports and growth in Bangladesh. Bangladesh provides a good case for studying this relationship because of significant dependence of its economy on exports (i.e. readymade garments), remittances and imported inputs for exportable products. There is hardly any study that looked at ELG with remittance as a variable.

Ahmed and Uddin (2009) investigated the causal nexus between export, import, remittance and GDP growth for Bangladesh using annual data from 1976 to 2005. The paper uses time series econometrics tools to investigate the relationship adding import and remittance in the model. Study finds limited support in favor of export-led growth hypothesis for Bangladesh as exports, imports and remittance cause GDP growth only in the short run. The causal nexus is unidirectional.

To the best of our knowledge most of the studies on causality among exports, imports, remittance and growth have covered the time period till 2005 in Bangladesh. This paper differs from the existing studies in case of taking account the data on remittance, export and imports covering the most recent years extended to 2013. It is evident that since 2008 remittance flow has increased sharply. Hence, our research explores recent impacts of remittances and other considered variables on growth.

3. Data and Methodology

3.1 Data

The data set is annual, spanning 1978 through 2013. The dependent variable is the annualized real GDP, and the explanatory variables are the annual real export, import and remittance as well. To test if the series are nonstationary or contain a unit root, we rely on the Augmented

3.2 The Analytical Framework

3.2.1 Granger Causality Test

To examine the direction of causality among the considered variables we performed Granger Causality test due to its wide applicability. The basic idea of the Granger Causality is that X causes Y if Y can be explained better by the present and lagged values of X than by the past values of Y alone assuming that both X and Y are stationary variables. (Gujrati, 2004).

$$\begin{aligned} Y_t &= \alpha_0 + \sum_{i=1}^l \alpha_i Y_{t-i} + \sum_{i=1}^l \beta_i X_{t-i} + u_t \\ X_t &= \alpha_0 + \sum_{i=1}^l \alpha_i X_{t-i} + \sum_{i=1}^l \beta_i Y_{t-i} + v_t \end{aligned} \quad [1]$$

3.2.2 Cointegration Test

Johansen Full-Information Maximum Likelihood Method

A relevant feature of most economic time series is inertia i.e. they have the tendency to move together. Hence we need to test for the possible cointegration of the variables as a guide for model specification. In the Johansen multivariate approach, all the variables are explicitly endogenous so that no arbitrary normalization has to be made without testing. Thus, the study also employed the Johansen cointegration test technique using Trace Statistic and Maximum Eigenvalue statistic.

Johansen recommends two different likelihood ratio tests of the significance of the canonical correlations and thereby the reduced rank of the matrix: the trace test and maximum eigenvalue test i.e.

$$\begin{aligned} \lambda_{\text{trace}(r)} &= -T \sum_{i=r+1}^k \ln(1 - \hat{\lambda}_i) \\ \lambda_{\text{max}(r, r+1)} &= -T \ln(1 - \hat{\lambda}_{r+1}) \end{aligned}$$

Here T is the sample size and $\hat{\lambda}_i$ is the i^{th} largest canonical association. The trace tests the null hypothesis of r cointegrating vectors against the alternative hypothesis of n cointegrating vectors. The maximum eigenvalue test, in contrast, tests the null hypothesis of r cointegrating vectors against the alternative hypothesis of $r+1$ cointegrating vectors. Asymptotic critical values can be got from Johansen and Juselius (1990).

3.3 Empirical Methodology

To construct relation among the concerned variables i.e. export, import, remittances and growth, the following equation is considered in which constant and error terms are incorporated.

$$Y_t = \alpha + \beta_1 X_t + \beta_2 M_t + \beta_3 RMT_t + \varepsilon_t \quad [4]$$

Transforming all the variables into natural log forms, finally our baseline equation is as follows:

$$\ln Y_t = \alpha + \ln \beta_1 X_t + \ln \beta_2 M_t + \ln \beta_3 RMT_t + \varepsilon_t \quad [5]$$

The equation was estimated as an OLS regression. The estimated coefficients of the baseline equation are reported in Table 3 in Appendix 2

Testing for causality and cointegration among our considered variables is done in the following ways: First the time series properties of each variable are examined by unit root tests. In this purpose Augmented Dickey Fuller Test (ADF) was used. The null hypothesis of this test is that series are non-stationary.

The second step involves searching for cointegration among variables to see whether they yield any long run relationship. We relied on Johansen-Juselius cointegration technique for this purpose. Finally, causality among time series has been tested using standard Granger Causality test

4. Analysis of the Result

Table 3 in appendix A1 shows regression analysis of the considered variables. The coefficient on export is positively correlated with the growth rate. A one-percentage point increase in export is associated with a 0.1264 percentage point increase in growth. Import variable has negative sign. A one-percentage point increase of import is associated with a 0.2493 percentage point decrease in growth. That is import tends to affect our growth negatively. It has negative contribution on growth. This indirectly indicates the victory of export led growth. And we also see remittances have sound contribution on growth. A one-percentage point increase in remittances leads to 0.2870 percentage point increase in growth. Remittances seem to be more helpful for our economy than to export. Finally, R-Sq and R-Sq (adj) both show good values.

In light of the methodology presented above the time series properties of the variables involved were examined by ADF test. The lag parameters are determined by Akaike's criterion. The results are reported in Table I.

Table 1: Unit Root Tests (Augmented Dickeyfuller) for the Period 1978 To 2013

Variables	Series in Levels		First Differences	
	Without Trend	With Trend	Without Trend	With Trend
LnGDP	-1.987 [5]	-4.317* [5]	-7.343*** [6]	-7.302*** [6]
LnX	-0.80 [6]	-2.835 [6]	-6.547*** [6]	-6.547*** [6]
LnM	0.331 [7]	-2.199 [7]	-0.883*** [7]	-0.883*** [7]
LnRMT	1.194 [6]	-0.875 [6]	-4.136*** [7]	-4.136*** [7]

Notes: (i) *denotes significance level at 5% and 10%; **denotes significance level at 10% While***denotes significance level at 1%, 5% and 10%.

(ii) Figures in the parentheses represent the optimal lag length as determined by Akaike's information criteria.

The test results indicate the presence of unit roots in the original series i.e. non-stationary in their level and also confirms that all the variables are stationary in the first differenced series i.e., $I(1)$ in all cases. The results provide the basis for the test of long run relationship among the variables.

Table 2: Johansen and Juselius Cointegration Result (Lags = 2)

Hypothesis	λ_{\max}				λ_{trace}			
	$r = 0$	$r \leq 1$	$r \leq 2$	$r \leq 3$	$r = 0$	$r \leq 1$	$r \leq 2$	$r \leq 3$
Null								
Alternative	$r = 1$	$r = 2$	$r = 3$	$r = 4$	$r = 1$	$r = 2$	$r = 3$	$r = 4$
5% critical value	19.8411* (20.97)	8.3272* (14.07)	1.6195* (3.76)	7.416* (9.19)	28.7877* (29.68)	9.9467* (15.41)	1.6195* (3.76)	8.361 (10.02)
1% critical value	(25.52)	(18.63)	(6.65)	(12.09)	(35.65)	(20.04)	(6.65)	(15.39)

Notes: (i) r = number of cointegrating vectors; (ii) The lag order for each VAR is chosen by AIC as shown in parenthesis; (iii) * denote acceptance of the null hypothesis at the 5% and 1% significance level respectively meaning no cointegration i.e. no long run relation. (iii) The numbers in bold format are the calculated value of $\tilde{\epsilon}$ -Max statistics (λ_{\max}) and Trace statistics (λ_{trace}) respectively.

Table 2 above reports Johansen–Juselius Cointegration results Both the ‘trace statistic’ and ‘eigen value test’ leads to the acceptance of the null hypothesis of $r = 0$ (no cointegrating vectors) against the alternative hypothesis $r > 0$ (one or more cointegrating vectors), the null of $r \leq 1$ against the alternative of $r > 2$ (two or more cointegrating vectors) while the null of $r \leq 2$ against the alternative of $r = 3$ (three or more cointegrating vectors) and the null of $r \leq 3$ against $r = 4$. The results provide evidence that there is no cointegrating relationship among the variables in our model.

Table 4 in appendix A2 shows Pairwise Granger Causality Tests of the variables. At first stage (equation 1) we have done the causality between GDP and export. Up to two lags, there is feedback or bilateral causality between GDP and export. However starting from lags three to lag seven we get a new result but the same. That is, export causes GDP but GDP does not Granger causes export. But at eight lags, there is no statistically perceptible relationship between the two variables. This reinforces the point that the outcome of the Granger causality test is sensitive to the number of lags introduced in the model. However our conclusion is export Granger causes GDP but GDP does not. And at second stage (equation 2) we have done the causality between GDP and import. At first lags there is feedback relation between GDP and import. But just after that up to lags seven both GDP and import are independent from each other i.e. no statistical visible relation exists. However at eight lags, we observe import causes GDP but GDP does not Granger cause import.

At third stage (equation 3) causality between GDP and remittance is shown. There is bilateral relation between GDP and remittance at lags one and two as well. Starting from lags three to lags seven we get a consistent series of result i.e. remittance Granger causes GDP but not that GDP Granger causes remittance. At lags eight the result is ambiguous. This again reminds us the point made earlier that the direction of causality critically depends on the number of lagged terms included in the model. So finally our conclusion is remittance causes GDP and GDP does not cause remittance.

5. Summary and Conclusion

In the theoretical literature that has evolved during the last three decades, there has been greater focus on the critical role of export and import as important vehicle to speed up economic growth. It is asserted that export growth emanating from outward oriented economic policies leads to boost GDP growth. Also, there is potential for reverse causality, i.e. GDP growth leads to export growth. These issues are still debatable. Through the cointegration test we see that there exists no long run relation among the variables. The result

of causality test suggests one way causality running from export to GDP. So what we think is that promoting exports via export promotion policies will contribute to economic growth in Bangladesh. In case of remittance we get the same result i.e. causal relation running from remittance to GDP. As the largest source of foreign capital, worker's remittances act as a boon to the economy. They affect economic growth positively and become an important component of the BOP. A policy implication which may be drawn from this study is that Bangladesh can improve their economic growth, not only by investing on the traditional sources of growth such as investment in physical and human capital, trade, and foreign direct investment, but also by strategically harnessing the contributions of remittances by ensuring their efficient transfers and reducing the cost of transfers by improving their governance performance.

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A1. Granger causality test:

Table 4: Causality Test

Causality between GDP and Export:

Pairwise Granger Causality Tests

Lags: 1

Null Hypothesis:	Obs	F-Statistic	Probability	Decision
LN _X does not Granger Cause LN _{GDP}	31	23.8291	3.8E-05	Reject
LN _{GDP} does not Granger Cause LN _X		3.18527	0.08514	Reject
Lags: 2				
LN _X does not Granger Cause LN _{GDP}	30	7.03659	0.00377	Reject
LN _{GDP} does not Granger Cause LN _X		3.75362	0.03754	Reject
Lags: 3				
LN _X does not Granger Cause LN _{GDP}	29	3.58403	0.03006	Reject
LN _{GDP} does not Granger Cause LN _X		1.69455	0.19731	Do not Reject

Causality between GDP and Import:

Pairwise Granger Causality Tests

Sample: 1980 2011

Lags: 1

Null Hypothesis:	Obs	F-Statistic	Probability	Decision
LN _M does not Granger Cause LN _{GDP}	31	12.5138	0.00143	Reject
LN _{GDP} does not Granger Cause LN _M		5.93219	0.02149	Reject
Lags: 2				
LN _M does not Granger Cause LN _{GDP}	30	1.20321	0.15775	Do not Reject
LN _{GDP} does not Granger Cause LN _M		0.38461	0.68467	Do not Reject
Lags: 3				

Causality between GDP and Remittance:

Pairwise Granger Causality Tests

Sample: 1980 2011

Lags: 1

Null Hypothesis:	Obs	F-Statistic	Probability	Decision
LN _{GDP} does not Granger Cause LN _{RMT}	31	6.29505	0.01817	Reject
LN _{RMT} does not Granger Cause LN _{GDP}		16.0554	0.00041	Reject
Lags: 2				
LN _{GDP} does not Granger Cause LN _{RMT}	30	4.44529	0.02230	Reject
LN _{RMT} does not Granger Cause LN _{GDP}		4.38021	0.02340	Reject