

Is there any Growth Spillover Effect from Partner Countries to Bangladesh?

By

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1. Abstract

This paper examines the pattern of growth dependence of Bangladesh vis-à-vis her eleven major trade, remittance, foreign aid, and FDI partner countries by using Vector Autoregressive process and annual data ranging from 1972 till 2015. Out of eleven partners selected in this study only three of them named USA, India, and Japan has significant growth spillover effect on the economy of Bangladesh. Most of the newly added countries in the list of partnership with Bangladesh are yet to offer any significant growth spillover effect. Bangladesh being a small but moderately open economy in the world the result is striking in the sense that all types of partnerships do not turn out to be growth enhancing. Bivariate Granger Causality Test, Multivariate Vector Auto regression result and Impulse Response Analysis do not provide any robust nature of growth relationship. In all the three tests we find that only Japan has two-way growth relationship with Bangladesh, which is trade and concessional loan driven channel. If we consider the graduation of Bangladesh from LDC to middle income country by 2021 then the growth channel is expected to face serious challenge in terms of high borrowing interest rate.

2. Background of Bangladesh's Growth

- Got independence from Pakistan in 1971 as a self sustaining village society
- Having serious instability in political regime with minimal trading or other relationship with only few partners
- Growth got momentum during the regime of privatization
- During the plan period the journey is from 4-7% only in less than five decades
- Increased growth is contributing towards poverty reduction at the cost of increased inequality
- How much of it is coming from other partners?
- Is there any spillover from partners to Bangladesh?

3. The pattern of growth in six plan periods of Bangladesh

Plan	Period	Actual Real GDP Growth (Average)
First Plan	1973-1978	4.0
Second Plan	1980-1985	3.8
Third Plan	1985-1990	3.8
Fourth Plan	1990-1995	4.2
Fifth Plan	1997-2002	5.1
Sixth Plan	2011-2015	6.3

Source: Seventh Five Year Plan, Government of Bangladesh, p.2

4. Literature on growth linkages and spillovers

- The empirical literature on growth spillovers deals with three interrelated questions: What is the size of growth spillovers? Which countries or regions are the main sources of growth spillovers? And, what are the main channels of transmission of growth spillovers?
- **Arora and Vamvakidis (2006)** using a long run (five-year average) panel regression approach for 101 countries over 1960–1999 find much larger spillovers. In most specifications, roughly 1-point increase in U.S. and EU growth is associated with, respectively, a roughly 1-point and $\frac{2}{3}$ point increase in other countries' growth (while Japan has an insignificant effect). However, the results could capture forces beyond short-term demand and business cycle effects transmitted via trade channels, such as technology spillovers and are not directly comparable to those of Helbling et al. (2007).
- **Helbling et al. (2007)** find that international spillovers are relatively small under standard transmission channels. This study finds a limited extent of U.S. growth spillovers into other regions excluding the euro area and Japan and even smaller effects of spillovers from the euro area or Japan, when controlling for possible channels of transmission including commodity prices (terms of trade) and financial conditions (LIBOR interest rate).

Literature on growth linkages and spillovers (contd.)

- **Bayoumi and Swiston (2009)** focus on short run dynamics across industrial regions during 1970–2006. Their main results suggest significant U.S. spillovers to other industrial regions, including the euro zone, Japan, and a group of smaller advanced economies (of one-quarter to one-half the size of the U.S. shock after two years). Bayoumi and Swiston (2009) find that the largest estimated contributions to spillovers come from financial rather than trade variables
- From the existing literature it is revealed that the spillover studies on developing countries in general and Bangladesh in particular is missing whereas many developing countries including Bangladesh are becoming globalized through increasing trade, remittance, foreign aid, investment and other channels. The process is perceived to be one-way in some cases and two-ways in other cases.
- To fill up this gap, we aim to investigate the potential relevance of growth dependence of Bangladesh vis-à-vis her major partner countries. We examine the volume of export, import, remittance, foreign aid, and FDI of Bangladesh from 1972 to 2015 and based on these volume, we select eleven countries with whom Bangladesh share a significant trade, aid, FDI and remittance relationship.

5. Methodology and Data

- Due to two-way causality relationship of economic growth across major partners we choose to use Vector Autoregressive process (VAR) with proper diagnostics (SIMs, 1980). The advantage of using VAR is that it does not require any theoretical premise in the set up. To analyze the dynamic impact of random disturbances on the system of variables, VAR methodology superficially resembles simultaneous-equation modeling (SEM) where we consider several endogenous variables together.
- Each endogenous variable is explained by its lagged values and the lagged values of all other endogenous variables. Here we only use real GDP growth rates of Bangladesh and her partners in the set of endogenous variables. The time period of analysis is yearly data from 1972 to 2015.
- Data on country wise export receipts, import payments, FDI, bilateral foreign aid and inward remittances are collected from Monthly Economic Trend of Bangladesh Bank, and then based on the volume of export, import, remittance, foreign aid and FDI, the major partners are selected accordingly. Data on GDP growth rate of these major partners are taken from World Bank's Data Bank. The major eleven partners of Bangladesh over the time period is found as US, UK, UAE, France, Germany, Saudi Arabia, Singapore, Malaysia, China, India and Japan.
- We could group them separately based on the criterion of export, import or remittance etc. but it has a potential problem. One partner may belong to different criterion and it would be difficult to isolate the nature of spillover whether it is coming from aid, trade, FDI or remittance. That's why it would be reasonable to include all the major partners from all the major areas in one package together and conduct the VAR analysis. This is expected to overcome the overlapping effect among partners.

6. ADF Unit Root Test

Null Hypothesis: BD, US, UK, UAE, FRA, GER, SAU, SGP, MYS, CHN, IND, JPN contain a unit root

Variable	ADF Test Statistic		p-value
	<i>t-statistic</i>		Probabilities
BD	-12.3*		0.0000
US	-4.78*		0.0003
UK	-5.31*		0.0001
UAE	-4.68*		0.0005
FRA	-4.39*		0.0011
GER	-5.41*		0.0001
SAU	-4.18*		0.0020
SGP	-5.44*		0.0000
MYS	-5.43*		0.0000
CHN	-3.20*		0.0269
IND	-6.45*		0.0000
JPN	-4.50*		0.0008

Note: * denotes the rejection of null hypothesis at 5% level of significance. The series BD is trend-stationary. Adequate controls are used in the ADF equation.

7. Granger Causality Test Result

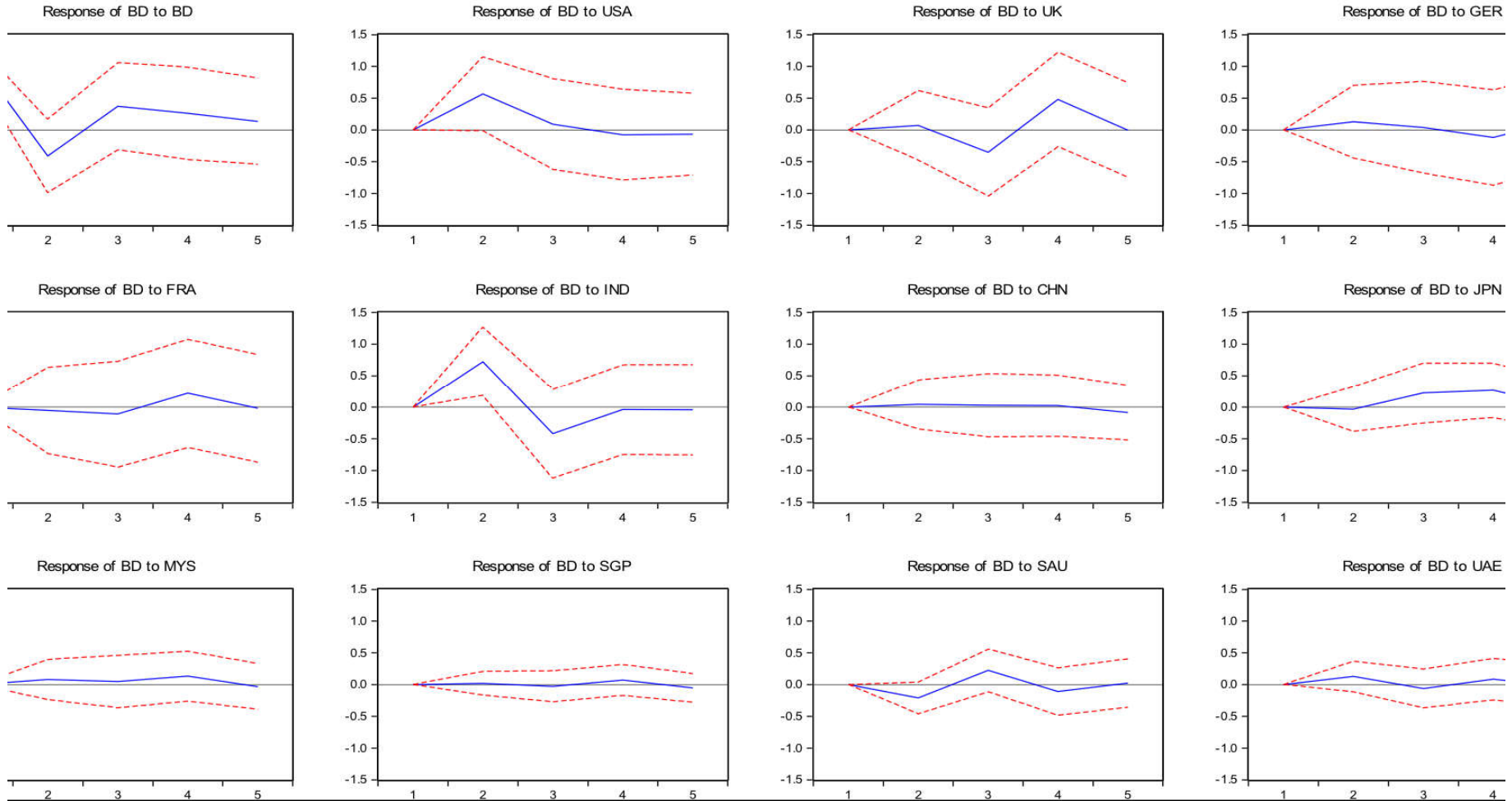
Null Hypothesis	Direction of Causality	χ^2	p-value
US growth does not Granger cause BD growth	US → BD	3.86	0.17
BD growth does not Granger cause US growth	BD → US	3.64	0.16
UK growth does not Granger cause BD growth	UK → BD	1.84	0.40
BD growth does not Granger cause UK growth	BD → UK	1.06	0.59
GER growth does not Granger cause BD growth	GER → BD	1.15	0.56
BD growth does not Granger cause GER growth	BD → GER	0.60	0.74
FRA growth does not Granger cause BD growth	Fra → BD	0.71	0.70
BD growth does not Granger cause Fra growth	BD → Fra	0.03	0.99
IND growth does not Granger cause BD growth	IND → BD	9.03*	0.04
BD growth does not Granger cause IND growth	BD → IND	1.31	0.52
CHN growth does not Granger cause BD growth	CHN → BD	0.64	0.73
BD growth does not Granger cause CHN growth	BD → CHN	1.64	0.44
JPN growth does not Granger cause BD growth	JPN → BD	5.89*	0.05
BD growth does not Granger cause JPN growth	BD → JPN	7.81*	0.03
MYS growth does not Granger	MYS → BD	0.30	0.86

8. VAR Estimation Results

	BD	US	UK	GER	FRA	IND	CHN	JPN	MYS	SAU	SGP	UAE
C	-3.36 (-1.89)**	3.92 (1.70)	6.48 (3.29)***	2.77 (0.88)	3.44 (1.65)	8.15 (2.04)***	9.02 (2.46)***	8.07 (2.50)***	14.1 (2.00)**	-7.49 (-0.90)	12.3 (1.98)**	1.24 (0.09)
BD(-1)	-0.35 (-1.30)	-0.60 (-1.70)	0.11 (0.37)	0.31 (0.66)	0.02 (0.07)	-0.69 (-1.11)	0.71 (1.26)	1.03 (2.08)**	1.97 (1.82)*	-0.68 (-0.54)	2.18 (2.29)***	1.11 (0.51)
BD(-2)	0.36 (1.55)	0.28 (0.93)	-0.25 (-0.97)	-0.17 (-0.42)	-0.04 (-0.14)	0.14 (0.28)	0.09 (0.18)	-0.33 (-0.79)	-0.14 (-0.16)	-1.66 (-1.54)	0.42 (0.52)	0.31 (0.17)
US(-1)	0.39 (1.91)**	0.63 (2.39)***	0.25 (1.09)	-0.13 (-0.37)	0.24 (1.00)	0.02 (0.04)	-0.03 (-0.06)	-0.19 (-0.52)	-1.15 (-1.42)	-1.66 (-1.75)	-0.71 (-1.00)	0.23 (0.14)
USA(-2)	-0.13 (-0.63)	0.02 (0.07)	0.60 (2.65)***	0.89 (2.45)***	0.48 (2.00)**	0.01 (0.01)	0.17 (0.41)	0.54 (1.46)	0.29 (0.36)	0.008 (0.09)	0.53 (0.74)	-0.96 (-0.59)
UK(-1)	-0.18 (-0.85)	0.37 (1.38)	0.49 (2.15)**	-0.25 (-0.69)	0.06 (0.24)	0.27 (0.58)	0.09 (0.21)	-0.35 (-0.93)	0.77 (0.94)	0.81 (0.84)	-0.19 (-0.26)	0.64 (0.39)
UK(-2)	-0.2 (-0.93)	0.04 (0.12)	0.24 (0.85)	0.24 (0.55)	0.23 (0.79)	0.20 (0.36)	-0.31 (-0.59)	1.10 (2.41)**	0.85 (0.85)	-0.00 (-0.00)	0.54 (0.61)	1.46 (0.73)
GER(-1)	0.18 (0.85)	0.06 (0.21)	-0.06 (-0.25)	0.33 (0.85)	-0.10 (-0.40)	-0.38 (-0.78)	0.82 (1.82)*	-0.38 (-0.96)	0.91 (1.05)	0.87 (0.85)	0.07 (0.09)	0.33 (0.19)
GER(-2)	-0.25 (-0.88)	-0.13 (-0.35)	0.18 (0.58)	-0.37 (-0.73)	-0.09 (-0.26)	-0.47 (-0.74)	-1.16 (-1.97)*	0.51 (0.29)	0.01 (0.01)	-0.24 (-0.18)	-1.25 (-1.25)	-2.14 (-0.94)
FRA(-1)	0.07 (0.22)	-0.57 (-1.32)	-0.34 (-0.93)	-0.64 (-1.09)	-0.25 (-0.64)	-0.55 (-0.73)	-1.30 (-1.90)*	-0.47 (-0.78)	-0.72 (-0.55)	-0.51 (-0.33)	-0.11 (-0.10)	0.83 (0.31)
FRA(-2)	0.30 (0.32)	0.02 (0.04)	-1.04 (-2.60)	0.44 (0.64)	0.11 (0.25)	-0.23 (-0.28)	0.91 (1.22)	-0.68 (-1.04)	-0.37 (-0.26)	0.98 (0.58)	0.92 (0.73)	1.98 (0.68)
IND(-1)	0.25 (2.24)***	0.10 (0.71)	0.00 (0.02)	0.26 (1.30)	-0.00 (-0.04)	-0.17 (-0.69)	0.11 (0.49)	0.11 (0.55)	0.40 (0.91)	-0.10 (-0.18)	0.57 (1.44)	-0.53 (-0.59)
IND(-2)	0.00 (0.00)	-0.13 (-0.86)	-0.20 (-1.57)	-0.16 (-0.78)	-0.18 (-1.32)	-0.00 (-0.00)	-0.04 (-0.16)	-0.43 (-2.07)**	-1.10 (-2.41)***	0.47 (0.87)	-1.25 (-3.10)***	-0.64 (-0.69)

9. Impulse Response Function

Response to Cholesky One S.D. Innovations ± 2 S.E.



10. Interpretation of IRF

- A growth shock from US has a positive and significant effect on the growth of Bangladesh, which implies that a higher growth in US triggers a higher growth in Bangladesh, and the effect lasts for two time periods.
- A positive growth shock in India enhances growth in Bangladesh, and the effect of this shock lasts for two time periods. This means that a higher growth in India, which is one of the major import and FDI partners of Bangladesh, boosts up growth in Bangladesh. However, the effect appears to fade away after the second time period.
- Bangladesh appears to respond positively to a growth shock from UAE. However, the size of the effect is very small, and then it fades away after the second time period.
- A positive growth shock from Japan stimulates growth in Bangladesh. However, it takes some time for the effect to take place. A higher growth in Japan in period t enhances growth of Bangladesh in period $t+3$.

Interpretation of IRF (Contd.)

- Bangladesh appears to respond negatively to a growth shock from Saudi Arabia. However, the size of the effect is very small, and then it fades away after the second time period.
- All other growth shocks from the rest of the countries seem to be statistically insignificant.
- Here we add UAE in the list but it did not sustain because middle-eastern remittance channel is coming up as a major option whereas its sustainability is still questionable.
- The remittance channel is probably temporary whereas other channels of growth are permanent and long term.

11. Conclusion and Policy Suggestions

- According to our study, Bangladesh shares a unidirectional causality relationship with India and Singapore and bidirectional causality with Japan.
- The causality analysis could not identify USA, which is one of the most important trading partners of Bangladesh. However, in VAR analysis USA, Japan and India have been found to have significant impact on Bangladesh. However, only Japan has been found to have bidirectional relationship with Bangladesh.
- To get additional insight into the exploration we conduct Impulse Response Analysis (IRA) for the same set of variables. Using IRA we find that USA, India and Japan are the main growth drivers of Bangladesh. However, in terms of sustainability Japan is retained as having the most robust relationship.
- This result may be considered as a bane not boon in the wake of graduation from LDC to middle income country. The result identifies one crude reality that Bangladesh has to go a long way in framing diversified partnership relationship with countries and areas with cautious approach.

Conclusion and Policy Suggestions (Contd.)

- If we combine all the three approaches we find Japan as the robust growth driver in determining the growth transmission of Bangladesh because it has been found as the key driver in all the three approaches.
- This finding has important policy implication in the context of Bangladesh in the sense that the country is in the process of graduation from LDC to middle-income country status. We should strive to find alternative partnership because concessional loan will cease to exist in the long run.
- Trading and investment channel should get more priority in the future policy making strategies of Bangladesh. As far as the sustainability is concerned remittance channel is not very encouraging whereas it has short-term impact but it seems to be transitory.
- The following incentives could be provided to attract FDI and trade from more developed countries:
 - Providing cash incentives and export subsidies on FOB values for selected products
 - Providing funds for export promotion and operating export guarantee scheme
 - Allowing full repatriation of dividends and capital to protect foreign private investment

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