Title:
Bilateral FDI in South Asian Countries: A Panel Data Analysis Using the Gravity Model

Muhammad Nahian Bin Khaled
University of Dhaka
Bangladesh
OVERVIEW

- Objectives and research questions
- Literature review
- Research methodology
- Empirical evidences of FDI flow in SA and ASEAN countries
- Regression analysis
- Suggestions and conclusion
GRAVITY MODEL: A CONCEPT FOR FDI INFLOWS

- Tinbergen (1962) introduced the concept using the analogy of Newtonian theory of Gravitation

- The model says,

\[ FDI \propto GDP_i \times GDP_j / \text{Distance}_{i,j} \]
OBJECTIVES & RESEARCH QUESTIONS

Is the bilateral FDI inflow in South Asia low compared to other economic regions?

What are the reasons behind this low bilateral FDI inflow in South Asia?

Are the ASEAN member countries more advanced than South Asian countries in terms of FDI inflow?
LITERATURE REVIEW

Anderson (1979): a reduced-form gravity equation from a general equilibrium model and the properties of expenditure systems

Bergstrand (1985) and Deardorff, (1998): partial theoretical foundations for the gravity equation

Mukherjee, et al. (2010) : explanation on rapidly evolving economic and political climates for providing many opportunities for the success of economic integration in Asia by using a gravity model
Gould, et al. (2013): South Asia’s foreign direct investment which is the lowest among the developing country regions.

Armington (1969): critique on Gravity Model for having statistical discrepancies over the years

Mele, et. al (2012): argument on ‘Protectionism’ which plays an important role in international trade between countries that are culturally different.
EMPIRICAL EVIDENCES: FDI PATTERN IN DIFFERENT REGIONS

Figure 1. 2000-14 Average Annual FDI Inflows (as % of GDP)

Source: UNCTAD
EMPIRICAL EVIDENCES: FDI SOURCES IN SOUTH ASIA

Figure 2: Source of South Asian FDI Inflows, 2003-11 (% of total FDI)

Source: Estimates from UNCTAD Statistics and FDI markets
Note: China includes Hong Kong, SAR China, Macau and Taiwan, China.
EMPIRICAL EVIDENCES: FDI SOURCES IN ASEAN COUNTRIES

Figure 3. FDI inflows in ASEAN countries 2012-14 (% of total FDI)

- Hong Kong
- USA
- Japan
- ASEAN
- EU

Source: ASEAN Foreign Direct Investment Statistics Database
RESEARCH METHODOLOGY: DATA SOURCE

Bilateral FDI data: Bilateral FDI Statistics 2014 of UNCTAD.
Annual GDP data: Databank of World Bank.

Data for the dummies of island, common border and common languages: CEPII website.

Frequency of the bilateral FDI data is annual and it is from 2001 to 2012 for 80 countries of the world. Bangladesh, India, Pakistan, Sri Lanka, Nepal and Afghanistan are considered for analyzing the FDI flow in South Asia.
This empirical study is also based on the idea that some home and host country factors together with gravity forces are important in determining FDI flows between the countries.

\[
FDI_{i,j} = \beta_0 + \beta_1(gdp_{it}) + \beta_2(gdp_{jt}) + \beta_3(distance_{ij}) + \beta_4(border_{ij})_D + \beta_5(commonlanguage_{ij})_D + \beta_6(SouthAsia)_D + \beta_7(ASEAN)_D
\]
# REGRESSION RESULTS

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>(1) OLS Results coefficient</th>
<th>(1) GLS Results coefficient</th>
<th>(1) LSDV Results coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incountrygdp</td>
<td>0.599*** (0.012)</td>
<td>0.679*** (0.021)</td>
<td>0.421*** (0.092)</td>
</tr>
<tr>
<td>Inpartnergdp</td>
<td>0.702*** (0.014)</td>
<td>0.764*** (0.024)</td>
<td>0.361*** (0.115)</td>
</tr>
<tr>
<td>Distance</td>
<td>-0.0145*** (5.63e-04)</td>
<td>-0.133*** (1.41e-04)</td>
<td>-0.180*** (5.29e-04)</td>
</tr>
<tr>
<td>Common Language</td>
<td>0.926*** (0.077)</td>
<td>1.128*** (0.188)</td>
<td>1.370*** (0.068)</td>
</tr>
<tr>
<td>Border</td>
<td>0.822*** (0.098)</td>
<td>1.154*** (0.280)</td>
<td>1.210*** (0.075)</td>
</tr>
<tr>
<td>South Asia</td>
<td>-0.822*** (0.114)</td>
<td>-0.956*** (0.280)</td>
<td>-2.060*** (0.551)</td>
</tr>
<tr>
<td>ASEAN</td>
<td>0.625*** (0.080)</td>
<td>0.492** (0.211)</td>
<td>0.795*** (0.287)</td>
</tr>
<tr>
<td>Constant</td>
<td>-29.17*** (0.520)</td>
<td>-33.32*** (0.685)</td>
<td>-17.64*** (3.534)</td>
</tr>
<tr>
<td>Observations</td>
<td>12,449</td>
<td>12,449</td>
<td>12,449</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.283</td>
<td>0.280</td>
<td>0.645</td>
</tr>
<tr>
<td>Number of pairid</td>
<td>1,712</td>
<td>1,712</td>
<td>1,712</td>
</tr>
</tbody>
</table>

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1
All the explanatory variables are found to have expected results from all methods. All are statistically significant.

In LSDV results, comparatively high $R^2$ of 64.5% is ensued which also demonstrates the goodness of fit of the data in case of a panel data analysis.

The impact of GDP and distance on bilateral investment was found the same in several studies by Xu & Zhong (2011), Mukherjee, et al., (2010), Chaney (2011), Hattari & Rajan (2005) and Anderson (1979).
REGRESSION RESULTS: COMMENTS

Coefficients of dummies for common border, common language: expected positive signs

ASEAN dummy: expected positive sign

South Asian dummy: negative sign.

Mukherjee, et al. (2010) found the same positive sign in ASEAN dummy and even for the South Asian dummy, they got positive sign, too.
LIMITATIONS OF THE RESEARCH

Variables like government roles, nationalization risk, political support, labor cost and cultural similarities and unrest in the host countries are excluded which we had to discuss qualitatively.

General methods of moments (GMM) may give better estimations which were done in several papers.
POLICY RECOMMENDATIONS AND CONCLUSION

Low amount of FDI in South Asia is evident.

Low amount of FDI in South Asian countries proves the lack of integration in the region.

High amount of FDI in ASEAN countries proves the greater integration among ASEAN countries.

By promoting investment, trade and transparency, SAARC needs to assume a central role for the improvements in business environment.
THANK YOU!