

ADB Working Paper Series on Regional Economic Integration



Terms of Trade, Foreign Direct Investment, and Development: A Case of Intra-Asian “Kicking Away the Ladder”?

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Abstract

In this paper, we address in more detail the question raised in Wacker (2011b): why does foreign direct investment (FDI) generally have a positive impact on developing countries' terms of trade except in the case of South Asia? After arguing that such a negative relationship is generally detrimental for a country's growth strategy in a globalized context, we present some stylized facts about the Asian development experiences and the theoretical and empirical background for our question concerning the relationship of FDI and terms of trade in the development context. From there, we argue that South and East Asia have largely pursued different world market integration strategies that have been fostered by different types of FDI: While horizontally motivated FDI has helped East Asia achieve some market power in certain higher-value product niches, late-coming South Asian economies have successfully operated in global industries via price competitiveness, fueled by vertically motivated FDI. Different endowments in human capital provided a breeding ground for these differing development experiences. Our evidence suggests that latecomers in international markets cannot simply follow the same pathway to development as more advanced countries, but rather they must employ adapted alternatives. In addition, globalization might perpetuate traditional North–South patterns in increasing South–South interactions.

Keywords: Foreign direct investment (FDI), terms of trade, development, Prebisch–Singer hypothesis

JEL Classification: F23, O11, O57

1. Introduction

Foreign direct investment (FDI) by multinational corporations (MNCs) is the most relevant form of private capital flows to developing and most emerging economies. It is also seen as the most favorable form of capital inflows (Furceri et al. 2011, 2012) and widely believed to be growth promoting (Borensztein et al. 1998). This positive picture of FDI, however, has been cast into doubt by contributions from Herzer et al. (2008), who find no evidence of FDI supporting growth in developing countries, and Kinoshita (2012), who emphasizes that the volatility in international capital flows also applies to FDI flows. In the Asian context, Li et al. (2007) raised specific concerns that large FDI inflows were responsible for the deterioration in the People's Republic of China's (PRC) terms of trade.

Negative terms of trade effects of inward FDI would be harmful for the host country since terms of trade reflect a country's export prices relative to its import prices and, hence, their decline implies a decreasing purchasing power of a country's exports. All other things being equal, this would directly cause the real income of an economy to decline and would increase the import price of other investment goods (De Long and Summers 1991; Levine and Renelt 1992), therefore hampering economic growth in the longer-run (Barro 1996; Mendoza 1997; Harrison and Rodriguez–Clare 2009, p. 53).

The purchasing-power-of-exports interpretation can be seen as the standard viewpoint in the literature since the seminal work of Prebisch (1950) and Singer (1950), although it might be argued that falling terms of trade could also be supportive of a country's growth strategy in that they could simply reflect the price competitiveness of the economy's export goods. Against this background, the main contribution of this paper is to discuss through which strategies (Asian) countries integrate into the world economy and, more specifically, which role FDI plays in this context.

In case favorable terms of trade are supportive of developing countries' growth, policymakers that follow an inward-FDI promotion strategy face a policy trade-off if the concern of Li et al. (2007) is correct; that is, if FDI has a negative effect on terms of trade. Some economic arguments reviewed in section 3.1 support the validity of this concern. Based on empirical work by Wacker (2011b), however, we show in section 3.2 that negative terms-of-trade effects of FDI are generally not present, except in the case of South Asia.

We therefore look into the case of South Asia in more detail in section 4, and compare it to East Asia, which does not suffer from an adverse impact of FDI on terms of trade.¹ We demonstrate that both regions attracted somewhat different forms of FDI and were differently successful in conquering global market segments with corresponding pricing power. Our main policy conclusion, discussed in more detail in section 5, concerns the complex interactions at each stage of an export-oriented development strategy and the design of a well-planned policy strategy, especially one focusing on the build-up of

¹ We follow the World Bank regional classification, which groups Bangladesh, India, Pakistan, and Sri Lanka into South Asia and the People's Republic of China, Indonesia, Malaysia, Philippines, and Thailand into East Asia.

human capital endowment in line with an overall development strategy. This paper concludes in section 6.

2. Some Stylized Facts for Asia

When comparing the South Asian experience to that of East Asia, it is remarkable that the average trade-to-gross-domestic-product (GDP) ratio in South Asia has grown slowly over the past 30 years and never exceeded 50%. Conversely, this ratio has increased rapidly in East Asia since the mid-1980s (see Figure 1 for regional averages and Appendix A for individual countries).²

FDI inflows to South Asia remained at low levels of around 0.5%–1 % of GDP throughout the 1980s and 1990s before rising in advance of the 1997/98 Asian financial crisis. These inflows surged again in the mid-2000s, peaking at 2.5% of GDP in 2008 before the global financial crisis and then declining to less than 1% in 2011.³

FDI inflows have been much more dynamic in East Asia, with rapid growth in the late 1980s and early 1990s leading to regional averages well above 3% of GDP. Downturns in FDI inflows predictably followed the 1997/98 Asian financial crisis and the recent global financial crisis.⁴

Overall, FDI and exports are highly correlated, as Figure 2 emphasizes. This is not surprising since theoretically FDI can influence the trading pattern of the host economy by substituting imports (horizontal FDI), creating exports because of international value chains (vertical FDI), and setting up local export hubs (export platform FDI).

Therefore, we would also expect FDI to have an impact on net barter terms of trade (NBTT). NBTT were volatile in South Asia between 1980 and the late 1990s, fluctuating (cyclically) by around 20%. The most striking observation, however, is the rapid decline by almost 40% in the decade following the 1997/98 Asian financial crisis. A closer look shows that this development was mainly driven by Bangladesh and Pakistan, and to a lesser extent Sri Lanka. India's terms of trade dropped in the aftermath of the Asian financial crisis, but then began rising steadily in 2004 to levels well above their pre-crisis value. A similar, yet weaker, decline in net barter terms of trade (NBTT) since 1998 can be observed in the East Asian economies of Thailand, the Philippines, and the People's Republic of China. While Indonesia has seen an unprecedented rise in terms of trade over the same period, figures in Malaysia have remained roughly constant.

² Of course, South Asian and, especially, East Asian countries are heterogeneous entities. For example, although levels of trade openness are lower in South Asia than in East Asia, Sri Lanka stands out as being more open. Furthermore, the upward trend in the 1980s was especially pronounced in Malaysia, the Philippines, and Thailand. The People's Republic of China, on the other hand, has long had levels of openness almost as low as the South Asian average, passing the 50% threshold only in the early 2000s.

³ Sri Lanka stands out again, having experienced positive inflows in the 1980s when inflows to other South Asian countries were negligible. Within South Asia, FDI inflows have been the lowest in Bangladesh.

⁴ Within the region, the People's Republic of China, Malaysia, and Thailand have attracted the most FDI relative to GDP and experienced a slight stabilization in inflows following the global financial crisis.

3. The Economic Relationship between FDI and Terms of Trade

With the main Asian trends relevant for our work in mind, we now provide an economic rationale for the relationship between FDI and terms of trade before providing the empirical evidence.

3.1 Theoretical Considerations

3.1.1 Prebisch' and Singer's Original Contributions

In 1949, Hans Singer published a series for the United Nations (UN) showing that the price of primary commodities deteriorated relative to manufactured goods over the period 1876 to 1938. This series initiated the Singer–Prebisch hypothesis.⁵ Although his seminal interpretation of this finding (Singer 1950) has been widely cited in economics, only a few have paid attention to the title: *The Distribution of Gains between Investing and Borrowing Countries*. Thereby, Singer clearly meant FDI and raised concerns that it would bring along a certain “type of foreign trade” (Singer 1950, p. 483) that kept the FDI-importing developing country in an export-specialization poverty-trap through falling terms of trade (Singer 1950, p. 477).

Prebisch's (1950, 1959) interpretation of labor market asymmetries between a highly organized North and a Lewis-type South has found more attention in the literature. However, it has barely been noticed that Prebisch (1950, pp. 13–14) himself thought of these asymmetries as merely bringing into force an underlying mechanism of profit transfer (in the form of FDI and other capital flows) that operates through the business cycle. More precisely, during the upswing, a part of profits from the entrepreneurs at the center (that is, not absorbed by wage increases) is transferred to the primary producers of the periphery. During the downswing, however, resistance to a lowering of wages is high at the centers and the pressure thus moves towards the periphery: “The less that income can contract at the center, the more it must do so at the periphery” (Prebisch 1950, p. 13).

3.1.2 Microeconomic Relationships

As Wacker (2011a, p. 9) argues, Prebisch's (1950) ideas could also be re-interpreted in a modern context as a multinational firm's “hold-up problem,” which constitutes a main theoretical motivation for vertical FDI: if a vertically integrating corporation in an industrialized country faces an imperfect input good (upstream) market in a developing country, the upstream firm will produce too low a quantity in order to maximize profits. The downstream firm will have incentive to enter the upstream market (if it can do so) because marginal production costs would be lower than the price it actually pays for the input. Left aside, the problem of transfer pricing, the entry of a foreign firm into the upstream market will thus increase the produced quantity and accordingly lower the price for the upstream good. As quantity effects are not considered in NBTT, this transnational engagement will *ceteris paribus* lead to a fall of the upstream, i.e. the developing country's terms of trade.

⁵ For the origins of the hypothesis, see Toye and Toye (2003).

On the other hand, most micro-economic considerations suggest a positive relationship between FDI and terms of trade; it is well-known that MNCs pay higher wages than domestic firms (Lipsev 2002) and to the extent they are reflected in the final good's (export) price, this leads to more favorable terms of trade for the FDI host country. Since MNCs usually also produce more sophisticated goods than domestic producers and demand more sophisticated inputs, their presence may generate upgrading effects in the host economy. If these effects are not taking place between product groups but rather within a product group, this violates the assumption of homogeneous goods that is necessary to construct consistent price indices and the upgrade will show up as a terms of trade increase. (See IMF 2009, and Silver 2010 for details on the calculation of unit values which are the basis of NBTT.) Finally, structuralist reasoning about terms of trade (Emmanuel 1972; Raffer 1987) highlighted the multinational's market power for terms of trade formation. According to this viewpoint, Northern producers' pricing power enables them to depress developing countries' prices and leads to a terms-of-trade decrease for the latter. Following this rationale, we would expect FDI to have a positive impact on developing countries' terms of trade since by establishing an affiliate in a host country, the firm also exports its proprietary asset—and, thus, the pricing power—to the developing country.

This effect could not only take place via the export channel but also through the import channel. For example, Joseph Stiglitz recently raised concerns with Indian efforts to liberalize FDI in the multi-brand retail sector, arguing that MNCs might use their monopsony power and their ability to access cheap goods from the People's Republic of China, which would give them a competitive advantage. Since this would decrease import prices, terms of trade would improve. More generally, MNCs might have favorable supply channels for input goods, potentially circumventing the problem in many developing countries that arises when investment surges also cause input prices to increase (Collier 2010).

3.1.3 Macroeconomic Relationships

Macroeconomic theory establishes a completely different relationship between FDI and terms of trade that dates back to the discussion between Ohlin (1929) and Keynes (1929) about the German transfer problem: as an income transfer, FDI will lead to higher purchasing power for the host country.⁶ If the marginal propensity to spend in the host country is in favor of imported versus domestic goods, the relative demand for domestic goods will decrease, resulting in a decrease in terms of trade.

Although other studies have reflected the transfer problem of monetary flows (Bhagwati et al. 1983; Martínez-Zarzoso et al. 2009; Darity Jr. et al. 2010), it should be stressed that the problem assumes the recipient's demand to be large enough to influence world market prices and it is thus more than questionable whether developing countries' excess income generated by FDI is relevant enough to significantly influence global goods prices. Probably more important than the demand effect of FDI is its supply

⁶ From a balance-of-payments approach, FDI is obviously not a transfer. However, insofar as FDI generates supplementary income via spillover effects and higher wages in the host economy, it will have similar impacts as a transfer.

response; assuming that FDI does not simply replace domestic production, the relative supply of the developing country's export goods will increase if the FDI is vertical in nature, as discussed above, and will decrease in the case of horizontal FDI since in the latter case the MNC will produce the industrial country's export goods, thereby decreasing the relative quantity of the developing country's export goods. Given that the global supply of MNCs is relevant in size, the relative price of the developing country's export goods—the country's terms of trade—will decrease in the first case but increase in the latter.

3.1.4 Terms of Trade in the “Long-Period”

Since most of these arguments only concern the short-run, Findlay (1980) set up a long-run equilibrium model—where growth is the same in the North and the South—to explain terms-of-trade movements. Interestingly, he finds that they are independent of the North's mark-up. However, in his framework, savings equal investment for both regions separately so that there is no international capital transfer, which he considers as one of the major limitations of the model.

In an attempt to overcome this problem, Darity Jr. (1990) derives a “long-period” model where capital moves (from North to South) and profit equalization among all industries is the equilibrium condition. The equilibrium terms of trade are then equal to the ratio of the respective marginal product of capital:

$$TOT^* = \frac{f'(k_N^0)}{\pi'(k_S^*)} \quad (1)$$

where π is the intensive form of the South's aggregate production function, k is the capital-to-labor ratio and hence $\pi'(k_S^*)$ is the marginal product of capital in the South.

Equation (1) is remarkable for two reasons: First of all, Darity Jr. shows that it has a representation that includes the Northern mark-up but that the direction of the effect is theoretically unclear because it depends on other parameters of the model that are not predetermined. Secondly, the impact of *FDI* on $\pi'(k_S^*)$ is also unclear: as long as *FDI* does not simply crowd out domestic investment, the capital-intensity of the South will rise. Under $\pi'(k_S) > 0, \pi''(k_S) < 0$, this leads to a decrease in the denominator, whereas we would expect *FDI* to also bring along more sophisticated techniques of production that lead to an increase in the marginal product of capital and, a priori, we do not know which of the two effects will be more important.

In summary, economic theory suggests that there exists a relationship between *FDI* in developing countries and their terms of trade. But the direction and magnitude of this relationship remains unclear. The next part of the paper explores empirical aspect of this relationship and section 4 sheds more light on its possible economic channels for the case of Asian economies.

3.2 The Evidence

Against the theoretical background that suggests the effects of *FDI* on developing countries' terms of trade are unclear, Wacker (2011b) empirically investigated this relationship using data on more than 50 developing countries between 1980 and 2008. Using fixed effects, random effects, and GMM panel data methods for different sets of control variables, he finds that *FDI* had an economically relevant and statistically significant positive impact on developing countries' *NBTT* in the model

$$\ln(NBTT)_{it} = \varphi \ln(NBTT)_{i,t-1} + \beta FDI / GDP_{it} + X_{it} \bar{\theta} + \varepsilon_{it}, \quad (2)$$

where $\ln(NBTT)$ is the log of *NBTT*, FDI/GDP is the rate of *FDI* stock to *GDP*, and X includes a wide set of control variables mainly capturing the industry structure, labor market developments, and main macroeconomic developments—such as the exchange rate, real interest rate, inflation, current account balance, and trade openness—as well as country and time fixed effects.

The estimated $\hat{\beta} = 0.0014$, with a lagged dependent variable of 0.82, translates into a long-run coefficient of 0.74 ($= \beta/[1-\varphi]$), meaning that a 1 percentage point increase in the *FDI*-stock-to-*GDP* ratio causes the *NBTT* to increase by 0.74%. Considering the 32 out of 53 countries included in specification (6) for which observations are available between 1980 and 2008, a simple time trend of -0.63% is estimated for the logarithm of *NBTT*.⁷ This would mean that a 1 percentage point increase in the *FDI* stock-to-*GDP* ratio could more than offset developing countries' structural tendency for deteriorating terms of trade. In fact, between 1980 and 2008, the *FDI*-to-*GDP* ratio in these countries increased from 15.6% to 31.9%, an average increase of 0.58 percentage points per year. Put differently, the observed increase of *FDI* in developing countries between 1980 and 2008 countered their terms-of-trade decrease by $(16.24 \times 0.74\%) / -0.239 = 50.3\%$, where 0.239 is the decrease in the logarithm of *NBTT*. There can thus be no doubt that the positive impact of *FDI* on developing countries' terms of trade is of a magnitude that is highly relevant.

4. The Special Case of (South) Asia

From there, Wacker (2011b) performs a series of robustness checks, including one testing for regional heterogeneity. Model (2) above is re-estimated in the form

$$\ln(NBTT)_{it} = \varphi \ln(NBTT)_{i,t-1} + \sum_{j=1}^6 \beta_j FDI / GDP_{it} + X_{it} \bar{\theta} + \varepsilon_{it}, \quad (3)$$

For $j = 1 \dots 6$, six regions, as classified by the World Bank, are used: East Asia and Pacific, Europe and Central Asia, Latin America and Caribbean, Middle East and North

⁷ $\ln(NBTT)_{it} = bt + \varepsilon_{it}$. Ziesemer (2010) finds a -0.42% per year long-run decrease of *NBTT* for low-income countries.

Africa, South Asia, and Sub-Saharan Africa. The hypothesis of equality of β -parameters for all regions is investigated and the model is sequentially tested down (from general to specific) using F -tests, likelihood ratio tests, and other standard model selection criteria. The overwhelming evidence from this statistical exercise is that the only β -parameter that stands out is the one for South Asia, covering observations for Bangladesh, India, Pakistan, and Sri Lanka.⁸ From a statistical perspective, the model that is best (or most likely to be true) for explaining dynamic developments in terms of trade is of the form

$$\ln(NBTT)_{it} = \varphi \ln(NBTT)_{i,t-1} + \beta_{SA} FDI / GDP_{it} + \beta_{RDW} FDI / GDP_{it} + X_{it} \bar{\theta} + \varepsilon_{it}, \quad (4)$$

where β_{SA} is a separate parameter for South Asia and the parameter β_{RDW} describes the impact of FDI for the rest of the developing world (RDW). The results of this exercise, together with the list of control variables (See Wacker 2011 for technical details) are depicted in Table 1.

The results show a strongly negative (and highly significant) impact of FDI on terms of trade for South Asia of -2.1% and a positive (and weakly significant) impact of 0.31% for the rest of the developing world (both long-run parameters) in the first column of the table.⁹ Concerning the control variables, few of them turn out to be statistically significant, although standard errors are often of reasonable size compared to the estimated parameters. The distributed lag specification of the current account balance (motivated by the findings of Santos–Paulino 2010) and the differing prefix on the lag structure support a dynamic response of terms of trade to the current account. There is some evidence that the actual deviation from the long-run growth rate positively impacts terms of trade, supporting an economic relationship between business cycle fluctuations and terms of trade that is beyond the scope of this paper (Prebisch 1950; Thirlwall and Bergevin 1985). Membership in a regional trade agreement—either the Central American Free Trade Agreement (CAFTA), Mercosur, or the Association of Southeast Asian Nations (ASEAN) Free Trade Agreement (AFTA)—seems to increase pressure on developing countries' export prices, supporting the arguments and findings in Lutz and Singer (1994) that fallacy of (export) composition in developing countries might worsen their terms of trade.

Because of many control variables lacking statistical significance, we test for joint significance (Wald test) of all variables with a p-value of the initial t-statistic being above 0.5. This concerns the control variables GDP , manufacturing exports, the real interest rate, and the lagged deviation from the long-run growth rate, which are omitted from the regression in the second column of table 1. As one can see, there is only a minor quantitative impact on the central variables of interest (FDI in South Asia and the rest of the world, lagged dependent variable). Since the t-statistic of the deviation from the long-run growth rate has a p-value above 0.5 in this specification, it is omitted from the regression depicted in column 3, which again has a negligible impact on our finding

⁸ There are more countries in the overall sample.

⁹ It was also investigated whether the different impacts on South Asia is driven by individual countries. For this purpose, one South Asian country at a time and any set of two South Asian countries at a time have been excluded from the regression. In each case, a similar picture emerged, rejecting the suspicion that the effect is driven by individual countries.

concerning the overall positive impact of *FDI* on developing countries' terms of trade with the exception of a negative relationship in South Asia.

To provide further evidence of the differing effects of *FDI* on terms of trade between South Asia and the rest of the world, we estimate a functionally different unconditional cross-country model using the same data set as in Wacker (2011b):

$$g(tot)_i = \alpha + \beta \times avg(FDI\ flow / GDP)_i + \varepsilon_i \quad (5)$$

where g is the average annual growth rate over the sample period and avg is the mean for each country over the sample period. In essence, this is a between-effects estimator that does not make specific assumptions about the dynamics of the underlying process. While it might seem simplistic, the between-effects estimator is intuitive to interpret and has generally shown to perform well for long-run estimations, especially in the context of parameter heterogeneity in dynamic settings (e.g., Baltagi and Griffin 1984; Pesaran et al. 1995; Pirotte 1999; Hauk and Wacziarg 2009; Stern 2010). Although our exercise is mainly for descriptive purposes, it nevertheless reinforces the claim that "South Asia is different" because Wacker (2011b) identifies variation over time within countries, while this identification is across countries. Figure 4 shows the upward sloping fitted line for the whole set of developing countries. The figure also includes the single observations for South Asia (green) and East Asia and the Pacific (orange). While there is no obviously clear pattern for the East Asian economies, South Asian countries are apparently clustered below the regression line β , indicating that their terms of trade development would benefit less from *FDI* than the overall sample of developing countries does.

Thus, if increasing terms of trade foster economic growth, as we postulated in the motivation for this paper, South Asian policymakers trying to promote growth via *FDI* attraction face a relevant trade-off: even assuming that *FDI* in itself promotes growth, there will be an adverse growth effect via negative terms of trade impacts. Indeed, Figure 5 suggests that the positive correlation between increasing terms of trade and growth exists in the relevant sample.¹⁰

¹⁰ To explain the graph in more detail, we estimated the model

$$\tilde{g}(GDP)_i = \alpha + \beta \times g(tot)_i + \varepsilon_i, \quad (6)$$

where $\tilde{g}(GDP)_i$ is the conditional growth rate of country i that we derive as the residual from the equation

$$g(GDP)_i = \alpha + \rho GDP_{1,i} + \tilde{g}(GDP)_i, \quad (7)$$

where $GDP_{1,i}$ is the *GDP* of country i at the beginning of the sample period and $E[\tilde{g}(GDP)_i] = 0$.

That is, $\tilde{g}(GDP)_i$ is simply the growth rate of the country adjusted by the average growth rate of all countries and the fact that each country starts from a different level of *GDP*, which would entail different growth paths according to the simple neoclassical growth model. The results for the overall sample of developing countries, again with the labels for Asian economies, are depicted in Figure 5.

To understand in more detail the implications for the above-mentioned policy trade-off, we dig deeper into the question of what is driving the different relationship between *FDI* and terms of trade for South Asia.

For this reason, Table 1, also taken from Wacker (2011b), is instructive. In the underlying estimation, the parameter estimator for the impact of *FDI* on terms of trade is allowed to vary, similar to equation (3), though not for regions but rather for the issue of whether a country exceeds or falls short of the whole sample median value in educational attainment. The results indicate that countries with higher percentages of completed primary schooling obtain stronger positive effects of FDI on terms of trade (although the difference is not statistically significant) and, especially, that countries with below-median years of schooling suffer negative impacts from FDI on terms of trade and those with above-median years of schooling experience a strong positive impact. The difference between these two types of countries is statistically significant at the 5% level, as indicated by the results of an F-test reported in the rightmost column of the table. This is in line with Borensztein et al. (1998), who found that FDI flows to 69 developing countries after 1970 had a positive impact on productivity only when the host country had reached a minimum level of human capital. This supports the view that the positive impact of FDI on terms of trade is either enhanced by, or requires, a certain threshold level of education.

Low levels of educational attainment in South Asia could be one potential explanation for our finding that FDI has had a negative impact on terms of trade in this region while exercising a positive influence in all other regions. As one can see from Figure 6, the (unweighted) average primary completion rate of 15-year olds in South Asia has been well below the East Asian rate in the past 50 years, as have years of schooling. The disparities between the two regions become even more pronounced if conflict-ridden Sri Lanka is taken out of the sample. Less than 10% of 15-year olds in India and Pakistan, and only 15.8% in Bangladesh, had completed primary school in 1980. Although this gap in primary completion has narrowed over the last decade, it takes time for these changes to translate into a better-educated workforce. The fact that East Asia could thus rely on a broader skill base when FDI inflows first surged in the late 1980s may explain the differing impact that investments had there when compared with South Asia.

Another potential explanation is the possibility that vertical and horizontal FDI might have differing impacts on terms of trade, as discussed in section 3. Given that South Asian markets were moderately interesting for horizontal investment (with the exception of India), most FDI might have had vertical motives, thus leading to negative price impacts.

These two explanations are by no means mutually exclusive. On the contrary, the literature on FDI and MNCs highlights the role of human capital endowment as an important determinant of global FDI flows. More precisely, Blonigen et al. (2003) find that absolute skill differences between the FDI parent and host country reduces horizontal FDI, and Davies (2008) shows that vertical FDI increases with increasing skill difference between the parent and the host. While he finds vertical motives for the East Asian economies as well, the model would predict even stronger vertical FDI for South Asia.

This suggests that countries with different human capital endowments will integrate differently into the world economy via FDI and terms of trade: countries with a more skilled labor force will attract more horizontal FDI from industrialized countries with the motive to save on trade costs in serving the market with consumer goods, which are often further up the value chain, e.g., electronic durables. Once MNCs establish horizontal subsidies, they might consider serving nearby markets, which show up in the export figures of the host country. (For more on “export-platform FDI” see Ekholm et al. 2007.) Furthermore, the fact that these products are high up the value chain allows for a large number of backward-linkages among domestic suppliers, who are usually those who benefit most from FDI linkages (Javorcik 2004) and who might start exporting their products eventually. We call this integration strategy the “quality competitiveness approach of world market integration.”

The situation is completely different for countries with a less educated labor force: vertical FDI comes in at lower stages of the value chain to exploit cheap labor and provide upstream products to be exported to the home country of the vertically-integrating MNC. Affiliates might further serve local and nearby markets; there may even exist intra-sector spillovers due to labor market churning, but the main point remains that a fairly low-quality product is produced in a very competitive segment of the (world) market. Hence, potential productivity gains due to FDI have an impact on TFP that results in an increased production capacity, which is generally beneficial in terms of absorbing surplus labor, but such products can only be sold at low prices to be competitive in world markets. We call this the “price competitiveness approach to world market integration.”

This is exactly the type of integration of developing countries into the world economy that Prebisch (1950) and Singer (1950) had in mind. And one could argue that it is mainly the strategy that South Asia—as opposed to East Asia—followed with respect to FDI-led exports.

A 2x2 Country Investigation

It is difficult to provide convincing evidence for these differences in world market integration with respect to terms of trade and FDI because very few countries publish FDI data on the desired industry-level breakdown (especially in developing and emerging economies), and even then it is not straightforward to calculate terms-of-trade effects in corresponding export industries.¹¹ We therefore rely on the analysis of two cases per country group where data was available and remain cautious of the limitations of this approach. Furthermore, we consult trade data published by the WTO.¹²

¹¹ Even if data were available for all countries in our region of interest there would still be considerable issues of measurement and comparability. The sectoral classification varies from source to source, and while some publish actually realized FDI, others publish all FDI that has been approved by the respective authorities. Currently, there exists no publicly accessible data set that takes care of all of these problems. The most advanced approach is the investment map constructed by the International Trade Center (ITC), but for our analysis we chose primary data sources.

¹² More precisely, we analyze exports classified under ISIC Revision 3, HS 1998/92 from the World Integrated Trade Solution (WITS) to ease the comparison with the sectoral FDI data. For each country, we compare the earliest to the latest available period. The top 10 lists of the products with the highest share in world markets are calculated at the 4-digit level. These lists are available in Appendix B.

Constructing export profiles for all countries in our sample allows us to identify the most competitive sectors (measured by the share of exports relative to worldwide export shares in the respective product group) and observe changes over time.¹³ This yields a detailed picture of where each country has its strengths. It also allows for conclusions about the specific role of FDI in the country and its relevance for increases in exports. In our South Asia group, sectoral FDI data is available for Bangladesh and Pakistan.¹⁴ In our East Asia group, we take a closer look at Malaysia and Thailand.

The trade profiles, which are shown in Appendix B, indicate that the most successful export goods of Pakistan have remained largely the same. The manufacture of grain mill products, made-up textile articles, and the preparation and spinning of textile fibers are the most successful exports. The most significant new entrant in the top 10 is the manufacture of cement, lime, and plaster. Overall, the export portfolio of Pakistan was and still is dominated by textiles and textile-related products. FDI inflows, however, have become more diversified. Here, the most relevant sector is transport and communications (26% of the cumulative FDI inflows between 2000 and 2012). Finance and the oil and gas sectors saw considerable FDI inflows as well. The textile sector has received little to no FDI inflows.

The export profile of Bangladesh is quite similar (Appendix B). With the top three exported goods categories being different forms of textiles, the country has focused on low-cost manufacturing as a means of export-led development. The degree of specialization is very high, the top three product categories account for over 70% of all Bangladeshi exports. The most significant change is that a new entrant made it to the very top, a form of textile product that was not part of the initially most competitive products. According to Bangladesh Bank (2011), the textile sector has also received the largest amount of FDI (23% of the FDI stock in 2011). Oil and gas, together with banking and telecommunications, come in very close after that; all other sectors had negligible FDI stocks. It is noteworthy that FDI in textiles are well diversified by country of origin.

Bangladesh might therefore serve as a poster child for the price competitiveness approach, in which FDI flows into low-quality, highly competitive product segments. Nevertheless, considering the poor FDI attraction performance compared to the total amount of exports of textiles, the role of domestic companies should not be understated, which does not conflict with our claim that FDI shapes the export structure of the whole economy.

In our East Asian examples, the story is quite different. The trade profile reveals that the most successful Malaysian products are vegetable and animal oils and fats, rubber

¹³ For Pakistan, the earliest available trade data in our chosen nomenclature is from 2003 and the latest is from 2007. This rather short and recent observation period explains why the changes remain small, but does not affect our other conclusions. For Bangladesh, the first data are recorded in 1989. The latest available data is from 2007. Malaysia and Thailand both have the earliest data available from 1989 and the latest from 2011.

¹⁴ In Bangladesh, the central bank surveys foreign investors periodically and disaggregates FDI inflows by sector, component type, and country of origin. In Pakistan, the Board of Investment publishes sector-wise FDI inflows. In both countries, the data collection is generally presented according to the financial year, which runs from 1 July until 30 June. In Malaysia and Thailand, sector-disaggregated FDI data is made available by the central banks.

products and electronic valves, tubes and other electronic components (Appendix B). The most significant new entrant, however, is the manufacturing of office, accounting, and computing machinery, thus indicating a move to higher value-added products. Official data from Malaysia indicate a shift in the sectoral composition of FDI inflows over time. Bank Negara Malaysia (2009) finds that cumulative net FDI inflows in manufacturing fell from 63% in 1990–99 to 41% in 2000–09. The difference was driven by FDI in services, largely attributable to the financial sector.

Thailand has its strengths in publishing with a share of world exports of over 20% (also making it the most successful new entrant), the manufacture of grain mill products, the manufacture of starches, and the manufacture of sugar (Appendix B). The cumulative FDI inflows from 2005–11 reveal that almost 49% of FDI targeted manufacturing. Financial services were the second most important sector with 21%. A further disaggregation of manufacturing reveals that the largest recipient product groups were motor vehicles, electrical equipment, electronics and optics, and plastics. This is clear evidence that FDI flows into higher segments of the value chain in Thailand than, for example, in Bangladesh. Aside from this upward movement of the value chain we also find evidence that FDI is used as a bridgehead into foreign markets. The Japanese share of FDI inflows in the period under review was 37%. As Nguyen (2013) highlights, these Japanese FDI flows are especially export- and long-term-oriented, and are clustered in the electronics value chain. Besides their focus on Thailand, Japanese investors have more recently moved to other East Asian economies such as Indonesia and Viet Nam, with the latter explicitly targeting FDI to expand exports.

The trade profiles for all countries in our sample of developing Asia, East and South, show a strong trend of upward movement along individual value chains. However, the prospects of these value chains might differ substantially since some offer more promising outlooks than others. For example, the textiles value chain remains rather competitive while the electronics industry provides more space for quality-competitiveness-led strategies. In the case of Bangladesh, the two main export categories (both textiles) account for over 70% of exports, but neither of them exceeds a world market share of more than 3.5 %, hence creating few opportunities for pricing power.¹⁵ Thailand, on the contrary, holds world market shares of over 10% in all 10 of its main export categories despite being a small country with a well-diversified export structure. These 10 product groups account for only 20% of the country's exports. By comparison, the People's Republic of China, as a large economy, holds export shares of more than 40% in all 10 of its main export categories. Indonesia, especially, and Malaysia hold considerable export shares in some market segments as well. In East Asia, only the Philippines lags behind in this aspect, but it has also managed to develop market power in at least one category (carpentry and joinery), accounting for over 10% of world exports.

FDI can support development along value chains by first coming in with relatively location-independent forms of horizontal FDI, such as telecommunications. If the local

¹⁵ Sri Lanka does not reach 1.5% of world market share in any main export group. Pakistan performs slightly better in this respect, reaching world market shares of 4.3%–6.8 % in four export product groups. India performs generally well in this respect.

factor inputs, such as cheap labor, are complimented with a safe business environment, the next step then includes manufacturing for export, with Bangladesh as an exemplary case.¹⁶ Further down the road, manufacturing then moves to more complicated products as the textile factories move to cheaper locations. This process is almost completed in East Asia, where we now see countries working their way further up the ladder and FDI potentially going into more service-oriented sectors. To the extent these are business-supporting sectors, such as finance, they will still exercise their (potentially positive) impact on the host country's terms of trade by increasing exports in value added.

The special, negative effect of FDI on the terms of trade in South Asia could therefore also be a rather transitory phenomenon, albeit pronounced due to the similarity of the export profiles and the lagging levels of development, especially regarding educational attainment. In this context, it should be highlighted that the People's Republic of China also integrated into the world economy via low-end production goods (e.g., clothing, footwear, furniture), which are currently stagnating at market shares of 40%–50 % of US and EU imports (Nguyen 2013) as the People's Republic of China moves up the product ladder. This creates both opportunities and potential poverty traps for other developing countries.

Of course, our separation of countries into South Asia and East Asia based on World Bank groupings is rather artificial and does not suggest that a country's destiny is determined by its geography. But with this contribution, we add to the understanding of what drives the interesting heterogeneity in Wacker (2011b) and hope to shed more light on the role of FDI for developing countries' different integration strategies into the world economy. Although more detailed research—at the country and micro level, and involving more qualitative methods—will be needed in the future, this highlights how FDI and terms of trade can interact via human capital endowments for promoting a country's growth and development strategy.

5. Policy Implications

An obvious policy conclusion from this study is that FDI is certainly not a panacea, but rather only one piece that helps to solve the puzzle of development. Furthermore, the different strategies through which South and East Asia integrated into the world economy suggest that there is no single path to this process.

While none of these pathways is a priori preferable or more promising, and the two large lines outlined here have both added substantially to fight poverty and promote human development and welfare in very different parts of Asia, we see more potential in the strategy of gaining quality competitiveness than gaining price competitiveness. The former operates via a more educated workforce and jobs that are potentially at higher

¹⁶ In the Bangladeshi Export Processing Zones (EPZ), an improved business environment is supercharged with the possibility to export to the EU under the Generalized Scheme of Preferences (GSP). As a least developed country (LDC), Bangladeshi exports enjoy preferential access to the EU; exports from the EPZ are surging.

segments of the value chain and thus entail better working conditions; that is, the steps along this path not only entail instrumental but also incremental values for development.

Moreover, once a society has appropriated such values as education and good jobs, they can use them for their own sake and are less prone to suffer from the increased volatility and vulnerability that increased integration into the world economy might entail.

On the downside, distributional challenges could arise if only a narrow fraction of the population benefits from the newly created opportunities. Accordingly, a high level of social mobility has to be ensured. This is not only important to prevent social conflicts but also to avoid cronyism in these sectors and to allow people to form domestic linkages with MNCs. We want to emphasize the latter point (see also Blonström and Kokko 2003; Long 2005, p. 321) that generally requires the standard toolkit of creating a favorable business environment, including access to finance, transparent tax and other regulations, and high quality institutions. Generally, the literature has highlighted this factor when comparing the Asian development miracle to Latin America's experience (e.g., Balassa 1988, p. 287).

Both of the outlined strategies require an educated workforce, although the specific skills and educational needs might differ. It is advisable to generate these skills at an early stage before completely opening the country because afterward the increased demand for tradables will also increase wage pressures for civil servants (e.g., working in the education sector despite a rather unchanged productivity) (Sen 1999, p. 41f, 48) has generally emphasized how important pursuing human resource development before embarking on wider development goals has historically been for Asian economies such as Meiji Japan; the Republic of Korea; and Taipei, China.

As McLeod and Mileva (2011) demonstrate, an undervalued real exchange rate can help in the process of workers' reallocation toward export industries with positive "learning-by-doing" externalities. However, it should be clear that this can only be a temporary measure that can help facilitate labor market transitions and does not substitute for domestic policies, most notably to attain a certain level of education of the domestic workforce before reaping the potential "bowl of cherries" (Rodrik 1999) from globalization. Although even such a temporary measure might have negative spillover effects on other economies, this has to be balanced against the growth surge that such a policy could fuel in the undervaluing economy, which might thus boost imports from other economies in both the short- and the long-run.

The complex interactions at each stage of each growth path highlight the need for a well-planned and pro-active policy strategy that should not interfere with market incentives, but rather intervene in the case of informational frictions and large externalities. It includes the identification of those sectors and jobs that are most beneficial at each stage of the process (World Bank 2012) and the creation of a stable macroeconomic and institutional environment.

6. Conclusions

In this paper, we provided theoretical and empirical evidence of why and how FDI could impact developing countries' terms of trade. We have studied in more detail the question of why this relationship is a negative one in South Asia while it is a robust positive one for the rest of the developing world. We have argued that educational attainment and the wider strategy of world-market integration matters in this context and that FDI works as a catalyst in this regard. More precisely, we have argued that South Asia followed a price competitiveness approach of world market integration, while East Asia followed a quality competitiveness approach. Our policy implications have tried to highlight the complex interactions that can arise at every stage of this process.

In our view, the world-market integration strategy of South Asia relative to East Asia (and other developing countries) is not necessarily determined by geography. Rather, it accidentally coincides with the World Bank regional classification. Nevertheless, it is appropriate to raise the question as to what extent less developed countries can fully shape their own growth strategy when integrating more deeply into the world economy. As more countries move up the ladder of product development, more and more of the rungs above them become occupied. This seriously casts into doubt a viewpoint of economic development in which the more industrialized countries show the less developed an image of their own future (Marx 1867).

The former, however, clearly set their stamp on the latter's development path. When the economic early birds of East Asia joined the party of export-oriented development, many of the upper product branches were still available to alight on and they could thus integrate via a quality competitiveness strategy. Supported by FDI, they could occupy upper segments of the value chain and enjoy market power to achieve favorable terms of trade in these product segments. The opposite is true for South Asian economies, which had to integrate via more competitive markets, potentially through price competition. Since causality in Figure 5 is not clearly identified, the fact that South Asian economies cluster above the average fitted line can be interpreted in one of two ways: (i) they either managed to achieve good growth rates given their terms of trade for whatever reason, or (ii) their growth rates are associated with (relatively) negative terms of trade development (price competitiveness).

We picture this difference in Figure 7. In the left panel, we regress the conditional growth rate (as the residual term in equation [7]) on the mean of FDI inflows/GDP over the sample period, which shows the expected positive relationship between FDI and GDP (without drawing inference on causality). In the right panel, we further purge the terms of trade developments from the growth rate and regress it on FDI.¹⁷ We now see that the South Asian, but not necessarily the East Asian, countries generally move somewhat down the ladder. This means that once one controls for different terms of trade

¹⁷ We take the residual term v from the equation

$$g(GDP)_i = \alpha + \rho GDP_{1,i} + \theta_{SA} g(tot)_i + \theta_{EA} g(tot)_i + \theta_{RDW} g(tot)_i + v_i \quad (8)$$

where most variables are explained above and the long-run terms of trade can have different relations with long-run growth in South Asia (SA), East Asia (EA), and the rest of the developing world (RDW).

developments, the relationship between FDI and growth is no longer as strong for South Asian economies. Or, put differently, had its economies been able to use the potential productivity increases through FDI without needing to adjust prices downwards as much, they would have achieved the growth rates in the left panel instead of those in the right panel.

In the most radical generalization, our line of argument would suggest that empirical findings about how countries successfully integrated into the global economy are of no use for countries that later integrate into the world economy because the upper rungs of the ladder of economic development have since been taken. Of course, we would not go this far but rather argue that successful development strategies of open economies of the past cannot be used as a blueprint for other economies today. Economists cannot stop at quantitative, econometric assessments in an environment where the data-generating process changes, but have to fully investigate and understand the qualitative, historical context of the cases studied. This can provide general guidelines for less advanced countries that are integrating into the world economy at later points in time. These countries must seek alternative paths up the development ladder in accordance with their dynamic comparative advantages. Nepal is a current prime example of such a challenge.

Finally, our findings cast serious doubts on overly optimistic expectations toward increasing South–South interactions as an engine to promote development. While such South–South cooperation can help in identifying alternative pathways to development, our results also raise caution that globalization might perpetuate traditional North–South patterns in future South–South relations.

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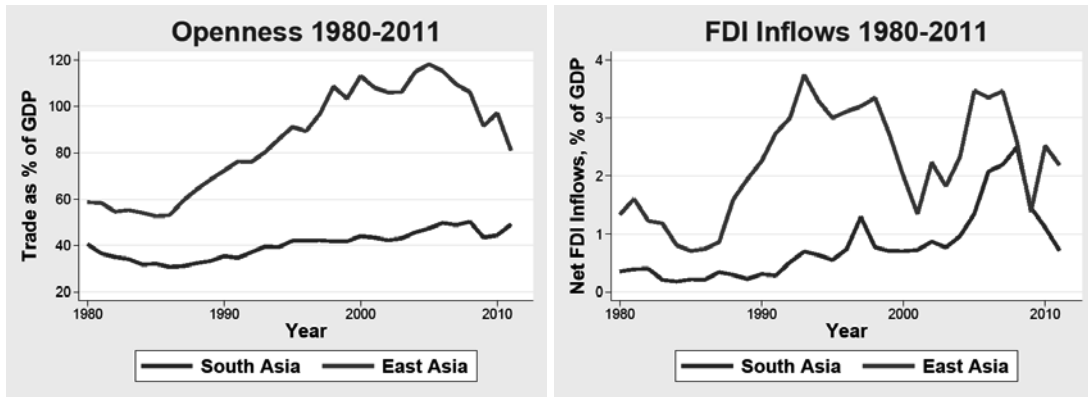
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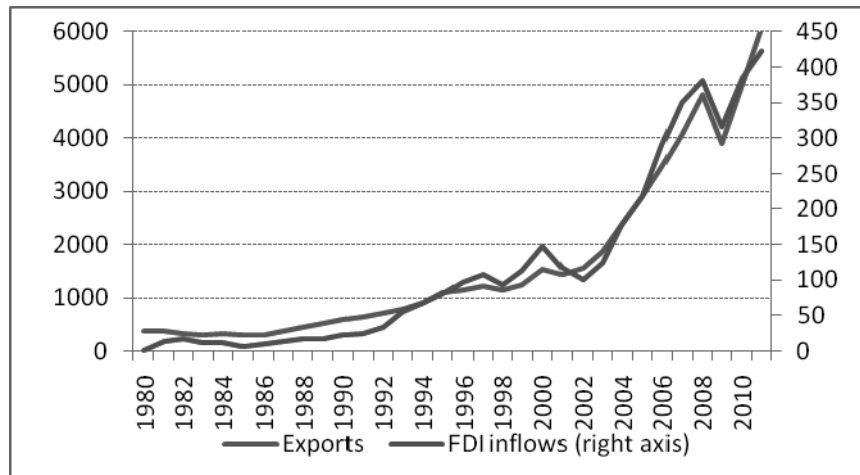
Figure 1: Trade Openness and FDI Inflows in South and East Asia



FDI = foreign direct investment; GDP = gross domestic product.
 Note: Values computed as unweighted averages for Bangladesh, India, Pakistan, and Sri Lanka (South Asia) and for the People's Republic of China, Indonesia, Malaysia, Philippines, and Thailand (East Asia).

Source: World Bank (2012).

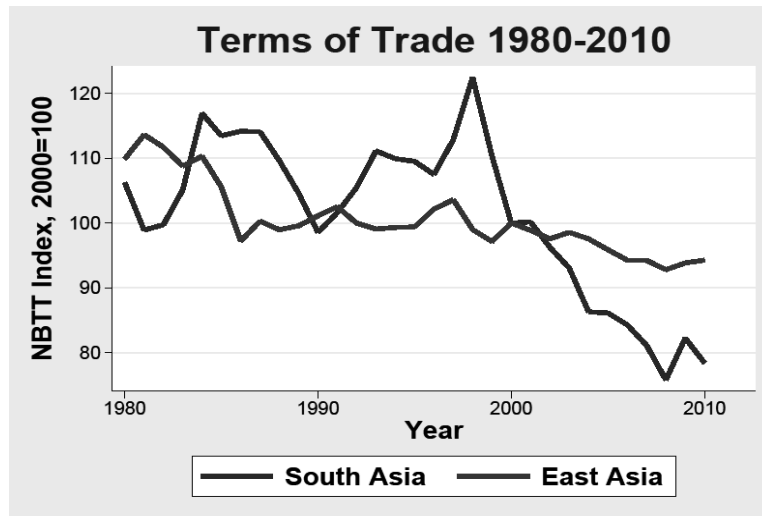
Figure 2: FDI Inflows and Exports in Developing Asia



FDI = foreign direct investment.
 Note: The classification of Developing Asia follows UNCTAD. Values are \$ billion at current prices and exchange rates.

Source: UNCTAD.

Figure 3: Terms of Trade in Asia

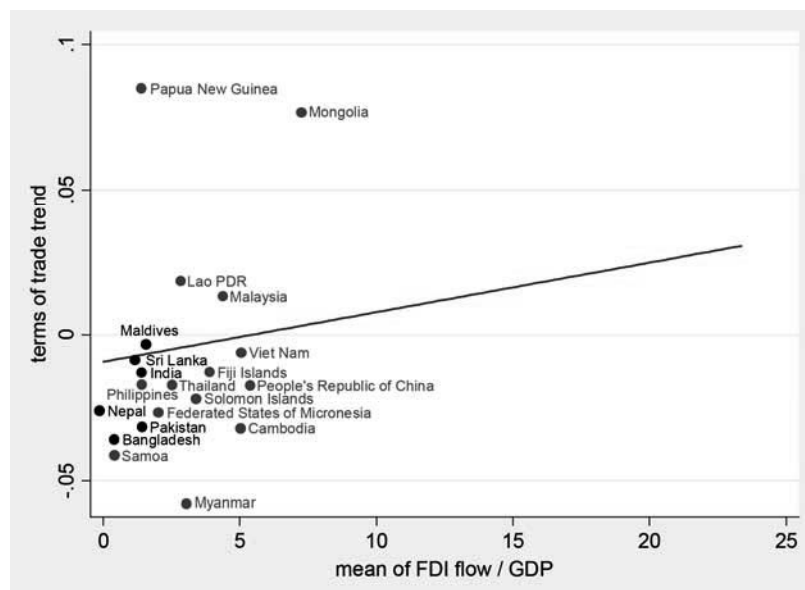


NBTT = net barter terms of trade.

Note: Values computed as unweighted averages for Bangladesh, India, Pakistan, and Sri Lanka (South Asia) and for the People's Republic of China, Indonesia, Malaysia, the Philippines, and Thailand (East Asia).

Source: World Bank (2012).

Figure 4: NBTT and FDI-to-GDP Ratio

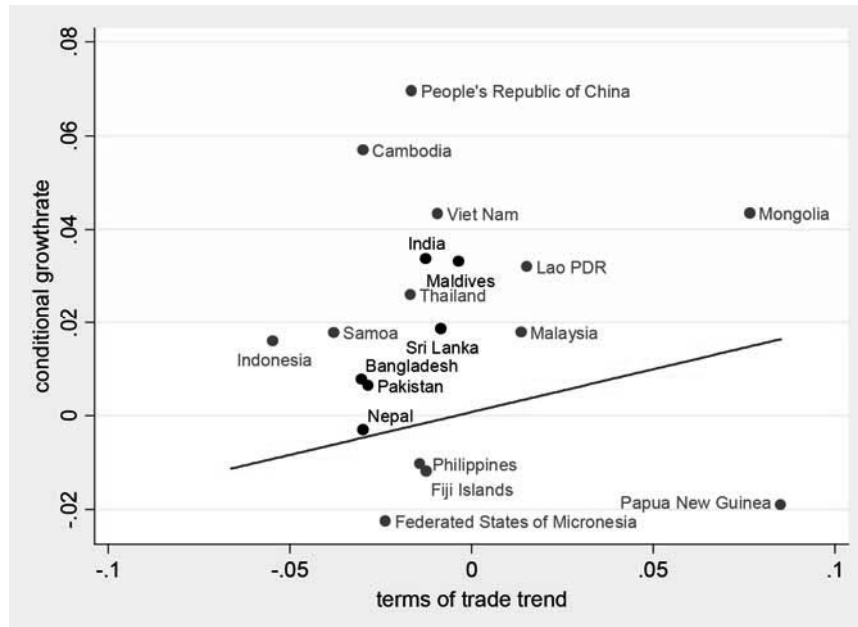


FDI = foreign direct investment; GDP = gross domestic product; Lao PDR = Lao People's Democratic Republic; NBTT = net barter terms of trade.

Note: Figure 4 depicts the slope of the regression coefficient β from equation (5) with corresponding standard errors and the observed data points for Asian economies.

Source: Wacker (2011).

Figure 5: Growth and Terms of Trade

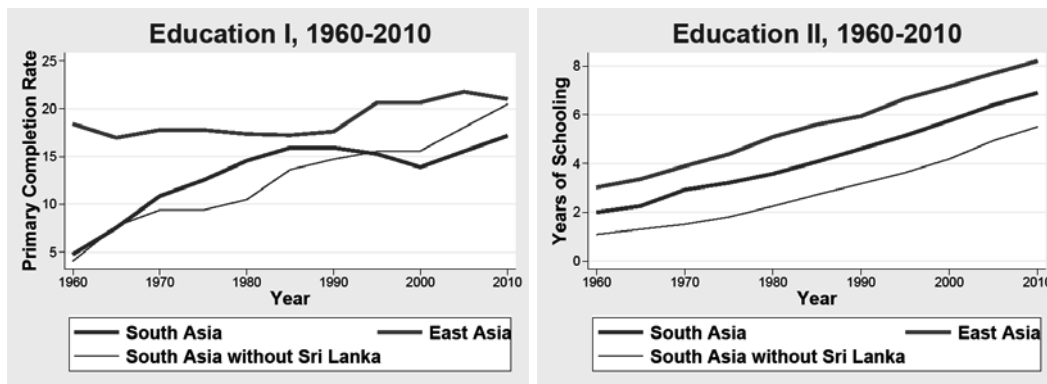


Lao PDR = Lao People's Democratic Republic.

Note: Figure 5 depicts the slope of the regression coefficient β from equation (6) with corresponding standard errors and the actually observed data points for Asian economies.

Source: Wacker (2011).

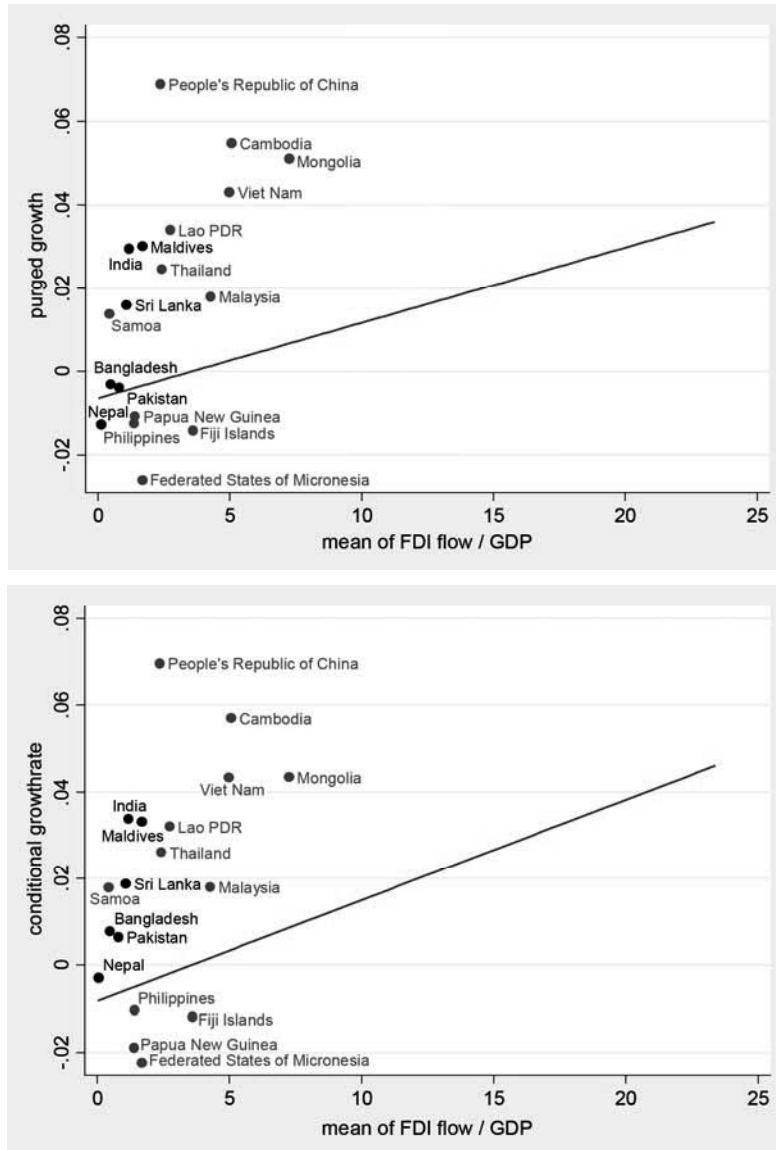
Figure 6: Educational Attainment in Asia



Note: Values computed as unweighted averages for Bangladesh, India, Pakistan, and Sri Lanka (South Asia) and for the People's Republic of China, Indonesia, Malaysia, the Philippines, and Thailand (East Asia).

Source: Barro and Lee (2010).

Figure 7: FDI and Growth (unconditional on terms of trade)



FDI = foreign direct investment; GDP = gross domestic product; Lao PDR = Lao People's Democratic Republic.

Data source: Wacker (2011).

Table 1: Regression Results

Dependent Variable: ln(NBTT)			
ln(NBTT)	0.7076***	0.7065***	0.7238***
(-1)	(0.2084)	(0.2439)	(0.1903)
FDI stock / GDP	-0.0060***	-0.0062***	-0.0063***
For South Asia (-1)	(0.002)	(0.0022)	(0.0022)
FDI stock / GDP	0.0009**	0.0009**	0.0009**
For Rest of World (-1)	(0.0003)	(0.0004)	(0.0004)
Agricultural and raw	0.0020	0.0019	0.0018
Material exports (%)	(0.0016)	(0.0018)	(0.0015)
Current account balance	0.0058***	0.0057	0.0045***
(% of GDP)	(0.0015)	(0.0040)	(0.0015)
Current account balance	-0.0028*	-0.0029	-0.0020
(% of GDP) (-1)	(0.0014)	(0.0028)	(0.0014)
Real GDP p.c.	0.0000		
	(0.0000)		
Inflation (annual %)	0.0000	0.0000	0.0000
	(0.0000)	(0.0000)	(0.0000)
Manufacturing exports	-0.0000		
(%)	(0.0003)		
Real interest rate	-0.0000		
	(0.0006)		
Services value added	0.0004		
(% of GDP)	(0.0008)		
Deviation from long-run growth	0.4356**	0.4453	
	(0.1682)	(1.5110)	
Deviation from long-run growth	0.0258		
(-1)	(0.2118)		
Unemployment rate	0.0013	0.0015	0.0012
	(0.0010)	(0.0015)	(0.0008)
Regional Trade Agreement	-0.0351**	-0.0378**	-0.0414***
Membership	(0.0172)	(0.0187)	(0.0142)
No. of instruments	44	39	38
Hansen test (p-value)	0.994	0.748	0.857
AR Bond z statistic for AR(1)	-2.39	-2.56	-2.46
AR Bond z statistic for AR(2)	-1.14	-0.57	-0.88

FDI = foreign direct investment; GDP = gross domestic product; NBTT = net barter terms of trade; p.c. = per capita.

Note: ***, **, and * denote statistical significance at the 1 %, 5 %, and 10 % level, respectively. Results of one-step System GMM estimation with country and time fixed effects, and cluster-robust standard errors covering 490 observations in 52 developing countries.

Source: Authors' calculations.

Table 2: Different Coefficients for FDI Impact for Different Sub-Samples

	Estimated Parameter	Standard Error of Parameter	F-stat (d.f.) (p-value)
Education I: Percentage of Completed Primary			
Below sample median	0.00064	0.00070	1.74 (1, 43) (0.1944)
Above sample median	0.00176	0.00067	
Education II: Years of Schooling			
Below sample median	-0.00072	0.00097	6.78 (1, 43) (0.0126)
Above sample median	0.00165	0.00059	

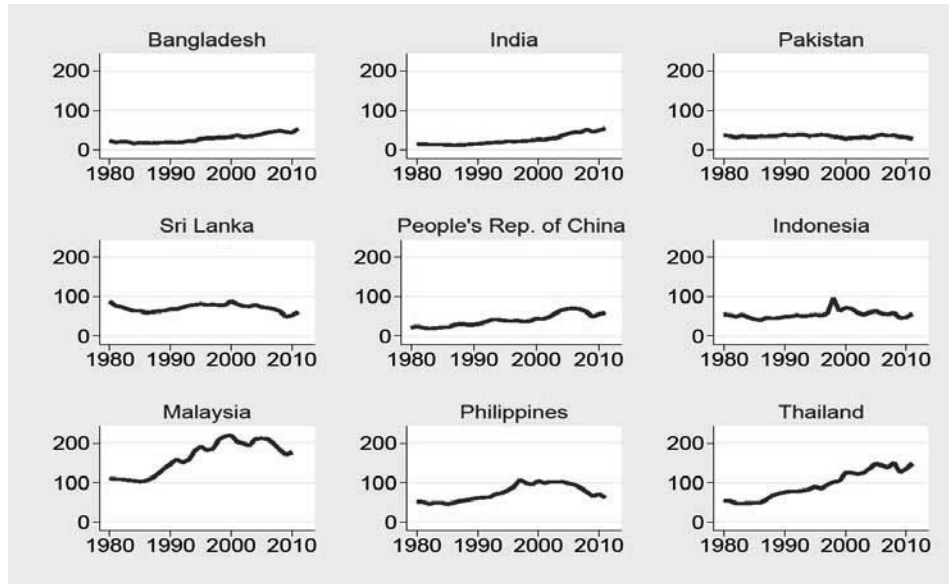
d.f. = degrees of freedom.

Note: Table 1 depicts the different impacts the regression coefficient β from equation (2) has for different sub-samples of countries.

Source: Wacker (2011).

Appendix A: Country Specific Data for Development of Main Variables

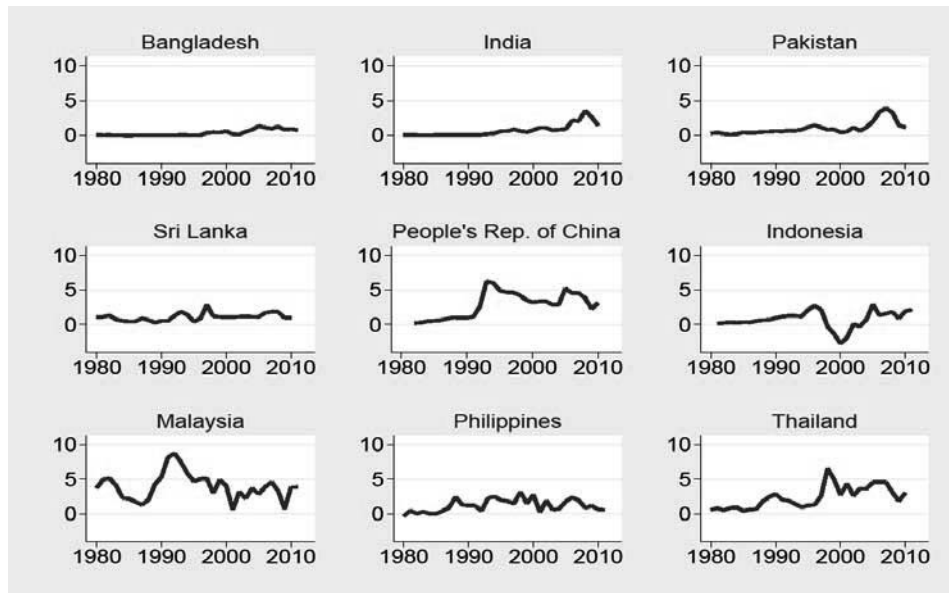
Figure A1: Trade as % of GDP, 1980–2010



GDP = gross domestic product.

Source: World Bank (2012).

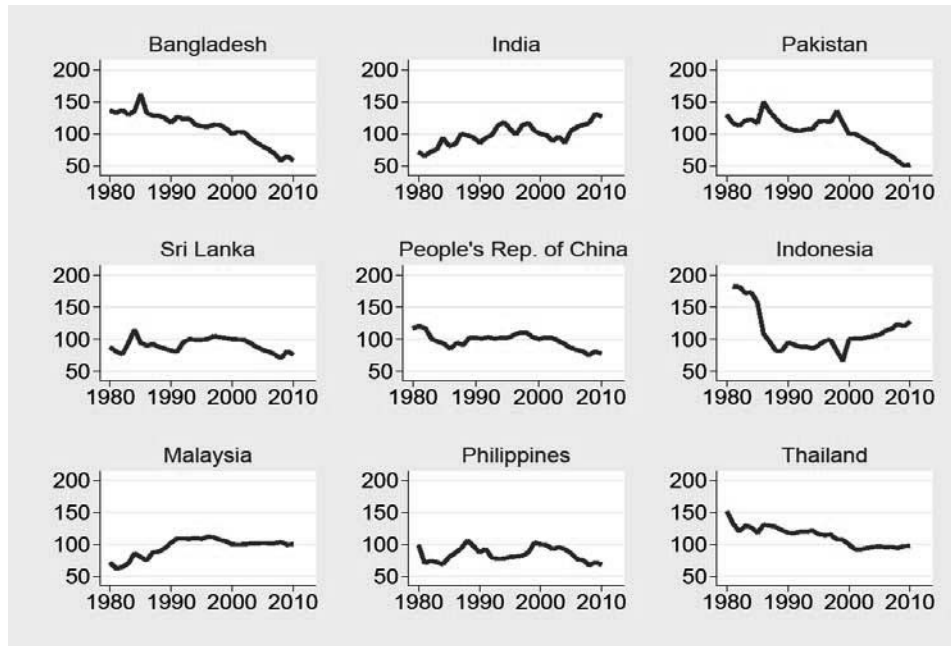
Figure A2: Net FDI Inflows as % of GDP, 1980–2010



FDI = foreign direct investment, GDP = gross domestic product.

Source: World Bank (2012).

FigureA3: Net Barter Terms of Trade Index, 1980–2010



Note: 2000 = 100.

Source: World Bank (2012).

Appendix B: Export Data for the 2x2 Country Investigation

To assess developments in figures, the colors mean a ...

...decline
...rise
...new entrant,

since 1989 (Bangladesh, Malaysia, Thailand) or 2003 (Pakistan).

“Top 10 Exports” is the share of top 10 exports (ranked by highest share in the respective world market) relative to total exports.

Bangladesh 2007			
Rank	% of World Exports	% of Country Exports	Product description
1	3.46%	25.93%	Manufacture of knitted and crocheted fabrics and articles
2	2.47%	45.66%	Manufacture of wearing apparel, except fur apparel
3	1.57%	0.35%	Manufacture of cordage, rope, twine and netting
4	1.38%	2.21%	Tanning and dressing of leather
5	0.96%	5.12%	Processing and preserving of fish and fish products
6	0.92%	3.03%	Manufacture of made-up textile articles, except apparel
7	0.52%	0.41%	Other publishing
8	0.52%	3.84%	Preparation and spinning of textile fibers; weaving of textiles
9	0.50%	0.43%	Manufacture of bicycles and invalid carriages
10	0.27%	0.83%	Manufacture of fertilizers and nitrogen compounds

Top 10 Exports: 87.81%

Pakistan 2011			
Rank	% of World Exports	% of Country Exports	Product description
1	6.80%	9.64%	Manufacture of grain mill products
2	6.46%	14.44%	Manufacture of made-up textile articles, except apparel
3	4.74%	21.17%	Preparation and spinning of textile fibers; weaving of textiles
4	4.31%	1.85%	Manufacture of cement, lime and plaster
5	2.36%	1.85%	Tanning and dressing of leather
6	1.54%	1.33%	Manufacture of sports goods
7	1.44%	15.30%	Manufacture of wearing apparel, except fur apparel
8	0.89%	0.52%	Manufacture of carpets and rugs
9	0.70%	2.99%	Manufacture of knitted and crocheted fabrics and articles
10	0.69%	0.99%	Distilling, rectifying and blending of spirits; ethyl alcohol

Top 10 Exports: 70.09%

Malaysia 2011

Rank	% of World Exports	% of Country Exports	Product description
1	17.67%	10.21%	Manufacture of vegetable and animal oils and fats
2	9.13%	2.44%	Manufacture of other rubber products
3	8.16%	16.36%	Manufacture of electronic valves and tubes; other electronics
4	6.91%	1.00%	Manufacture of veneer sheets; plywood, ... other panels
5	5.02%	4.31%	Manufacture of TV and radio receivers, sound / video rec.
6	4.16%	7.29%	Manufacture of office, accounting and computing machinery
7	3.41%	0.32%	Forestry, logging and related service activities
8	3.25%	0.13%	Manufacture of articles of concrete, cement and plaster
9	3.21%	0.60%	Manufacture of cocoa, chocolate and sugar confectionery
10	2.81%	0.48%	Sawmilling and planning of wood

Top 10 Exports: 43.15%

Thailand 2011

Rank	% of World Exports	% of Country Exports	Product description
1	22.91%	1.72%	Other publishing
2	19.01%	2.96%	Manufacture of grain mill products
3	13.32%	0.72%	Manufacture of starches and starch products
4	10.54%	1.61%	Manufacture of sugar
5	8.89%	3.50%	Processing and preserving of fish and fish products
6	7.65%	2.01%	Manufacture of other rubber products
7	5.83%	0.66%	Manufacture of motorcycles
8	5.81%	6.35%	Growing of cereals and other crops n.e.c.
9	5.78%	0.27%	Manufacture of cement, lime and plaster
10	5.09%	0.64%	Manufacture of man-made fibers

Top 10 Exports: 20.45%

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