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IMPLICATIONS OF FDI FOR CURRENT ACCOUNT BALANCE: A PANEL CAUSALITY ANALYSIS

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Abstract

Two main forms of capital movements, namely portfolio and direct investments, towards developing countries have been studied from various angles. It is very often argued that direct investments have better implications for economic development and growth as they provide more stable and long-term resources. Foreign direct investment is also regarded to be a healthier means for financing current account deficits. However, widening current account deficits in most of the developing economies in the past few decades have brought about the question of implications of capital movements, including FDI, for those imbalances. This paper empirically investigates the relationship between current account balances and FDI in a group of developing economies by considering the channels for this relationship. To provide an empirical analysis, a panel Granger causality framework is employed with the data on FDI, exports and imports, by using the methodology developed by Konya (2006). The empirical results of the study do not provide conclusive results; the countries in the panel seem to have various links between FDI and international trade components.

Keywords: Foreign Direct Investment (FDI), Current Account Deficits, Developing Countries, Granger Causality, Panel Data Analysis

JEL codes:C33, F14, F21, F41

1. Introduction

Following the liberalization processes in the 1980s, two main forms of international capital movements, namely portfolio and foreign direct investments, showed an upsurge, and as a result of this expansion, the debate on the implications of capital flows for developing economies intensified. International capital movements have been studied from various angles, such as, their determinants, their impacts on economic development and growth, their place in financing current account deficits as well as their possible role in macroeconomic instabilities in those economies.

According to a conventional wisdom, among alternative capital movements, FDI plays a fundamental role in economic development and growth.[1] More specifically, in comparison with

[1]Hausmann and Fernandez-Arias (2000) distinguish between the good and the bad kinds of capital inflows, similar to the distinction between two types of cholesterol, and calls FDI as the good kind, which

portfolio investments, FDI is an appreciated source of capital as it provides more stable and long-term resources to the economies where the level of savings is not sufficient. Foreign Direct Investment (FDI) has been one of the main beneficiaries of financial liberalization over the last few decades and has become a leading form of capital flows for many developing economies. FDI has appeared increasingly attractive to the countries facing problems with level of domestic investment and higher costs of foreign borrowing (Fry *et al.*, 1995).[2]

FDI appears to be attractive for the host country as direct investors share risks with stronger commitments.FDI is bolted down and cannot leave easily the economy with a small sign of economic distress. Due to these aspects, it is also considered to be a safer and stable means for financing current account deficits. On the contrary, international portfolio investments, especially short-term flows, are thought to provide temporary resources and often have part in generating further instabilities in developing economies with sudden moves, sometimes leading to serious turmoil and crises.

Conventionally, an addition to the capital stock of the host country has been considered as the core contribution of FDI to economic development (e.g. Lall and Streeten 1977). On the other hand, the value of FDI is not limited to this direct impact, it is also associated with positive spillover effects to local industries, such as, stimulating transfer of new technology to the host country, hence enhancing productivity and output growth; enhancing international trade and integration into the world economy; contributing to the development of local companies and their restructuring by fostering exchange of managerial know-how; increasing competition; and contributing to the creation and development of human capital (see e.g. Markusen and Venables, 1999; Blomstorm and Kokko, 2003; Mencinger, 2003, 2008; Meyer, 2003; OECD, 2003).

For policy makers and vast majority of academicians FDI has appeared to be some kind of panacea for developing countries' critical economic problems and sustained a pillar of the development strategies. As a result of this perception, negative effects of FDI have very often been neglected and most of the literature has been mainly focused on how to attract FDI rather than complications caused by it (Mencinger, 2008).However, as Mencinger (2003, 2008) states, FDI is not a 'manna from heaven' which necessarily contributes to economic growth in the host country. Direct and indirect effects of FDI can be positive or negative, both in the short and long run, as indicated by inconclusive empirical results.

The empirical literature lacks definitive evidence for the presence of a relationship between FDI and economic growth, as well as the direction and channels of causation (see e.g. Fry *et al.*, 1995;Grilli and Milesi-Ferretti 1995; Aitken*et al.*, 1997; de Mello, 1997; Borenszte*in et al.*, 1998; Lipsey 2002; Tast, 2014; Polat, 2015). FDI may or may not contribute to the domestic capital stock, and similarly, implications of spillovers may vary. The related studies provide mixed evidence on the existence of positive and negative spillover effects for the host country (Gorg and Greenaway, 2002; Blomstrom and Kokko, 2003; Mencinger, 2003).

First of all, FDI does not always boost productive capital stock of the host country since a large part of FDI flows are accounted for by mergers and acquisitions. Most of the FDI goes towards privatization of public enterprises, and towards highly profitable sectors such as financial services, retails, and telecommunications (Mencinger, 2008;Mold 2008).Therefore, those mergers and acquisitions do not contribute much to the horizontal or vertical transfer of technology, and hence, cannot automatically be considered as a contribution to productive capacities or to employment opportunities of recipient countries.

FDI does not necessarily always increase competition in host countries as most of the areas that receive foreign investment are monopolistic or oligopolistic (Mencinger, 2003). On the contrary, in many cases FDI deteriorates competition in the host country by creating a

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brings technology, managerial skills and market access, and thus, accelerates growth and development, whereas the bad cholesterol is represented by foreign debt, more specifically short-term debt, which is driven by speculative motives.

[2] For instance, the share of FDI in GDP rose from the 16 per cent level in 1986 to the level of 45 per cent in 1997. FDI has continued increasing during most of the period, and for some years the level of FDI has exceeded portfolio flows and foreign debt.

powerful monopoly against the current or potential domestic competitors. When foreign and local companies compete for the same specific market, FDI may offset, or crowd out domestic investment (Kumar, 2007).

Despite the common belief, maybe not to the same extent as other private capital flows, FDI may add to existing instabilities in the host economy. Reinvested earnings and intra-company loans are likely to be restrained during a turmoil, as companies repatriate financial resources towards parent companies (Doraisami, 2007; Mold, 2008). Moreover, the circumstances in which multinational corporations can easily shift financial resources from one country to another may create further problems specially in case of a crisis, and transfer of financial resources abroad may put extra pressure on the local currency.FDI itself can be pro-cyclical (Mold, 2008). This becomes particularly evident during an economic downturn. When the prospects for economic growth in developing countries deteriorate, FDI inflows are also affected adversely too, which in turn, have a negative impact on current account balances. As capital becomes inadequate and more expensive, and multinational companies scale back their investment plans (Mold, 2008; Hanousek *et al.*, 2011).

More importantly, even FDI has a positive impact on economic growth; this does not assure that it increases welfare in the host country in the long run. Some part of GDP produced in the host country would flow abroad in the form of profits, interests, and loans, which in turn, would further contribute to current account deficits. The proceeds from mergers and acquisitions may be spent on consumption and imports, which again, would feed into current account deficits.

The surge in capital flows towards developing countries has been accompanied by widening current account deficits in many developing countries in the last few decades (Calvo *et al.*, 1996; Siddiqui *et al.*, 2007). The concern about current account deficits has given rise to the question of implications of capital movements for those imbalances. Although it is thought to be a superior means for financing current account deficits compared to other capital flows, implications of FDI for current account deterioration has also been brought about.

The relationship between FDI and current account balances needs to be investigated by considering alternative channels of impact. This paper aims to empirically analyze this relationship in a group of developing countries that have witnessed high levels of capital inflows in the last couple of decades. To this end, a panel Granger causality framework is employed with the data on FDI, exports and imports, by using the methodology developed by Konya (2006).

The rest of the paper is organized as follows; Section 2 reviews the literature on the relationship between FDI and current account balances more specifically after this general introduction. Direct and indirect channels through which FDI may interact with current account balances are presented here. Section 3identifies the data and econometric methodology employed in the paper, and is followed by the empirical analysis and discussion of the results in Section 4. Finally, Section 5 concludes.

2. Implications of FDI for Current Account Balances

Although it is often argued that countries are less vulnerable when current account deficits are financed largely by FDI inflows compared to the other alternatives, FDI may have direct or indirect effects on current account balances and may lead to further deficits. More specifically, three channels of impact can be identified, i.e., FDI can affect current account balances through exports, imports, and financial activities of foreign companies, mainly profit transfers.[3]

The impact of profit transfers appears to be obvious as they directly constitute an element of the current account of balance of payments. As Mold (2008) states, if profit remittances are taken as a proxy for its ‘price’, FDI can be considered as a very expensive form

[3] As defined in World Bank (2009), profit remittances on foreign direct investment involve payments of direct investment income, which consists of income of equity (dividends, branch profits, and reinvested earnings) and income on the intercompany debt (interest).

of financing due to flows of a portion of GDP in the form of profits, interests, or loans.[4]Therefore, even if a positive relationship between FDI and economic growth exists, this does not guarantee a welfare increase in the host country in the long run. Multinational enterprises are profit maximizers, and not interested in creating benefits for others without a significant return. Hence, foreign ownership inevitably increases current account deficit or reduces surplus.

A large share of proceeds acquired through mergers and acquisitions may be spent on consumption and imports. Therefore, FDI may diminish restrictions on current account by providing resources, but on the other hand, this indicates a link between current account and FDI, i.e. the higher the FDI inflow into a country, the higher its current account deficit.

Although the direct impact of FDI on the current account through financial transfers is rather straightforward, the indirect effects seem to be less evident. FDI undoubtedly contributes to the integration of developing economies to international trade as a result of increasing exports and/or imports, which in turn affect FDI. However, the sign of the impact of FDI on trade balance, hence on current account, can be positive or negative, depending on the nature of the foreign investment. For instance, a positive impact on the trade balance may occur if the aim of FDI is to take the advantage of cheaper labor compared to the home country, whereas a negative impact is the likely outcome if the aim is to access new markets for importing their products. For many manufacturing multinational companies, the ability to produce at central locations with large economies of scale and then distribute to several countries from this base is an essential strategy. Thus, they very often export more than domestic companies, and at the same time, import a great extent of their inputs. A large part of these exports and imports is carried out to or from the affiliated companies, implying intra-firm international trade (Meyer, 2003).

It is argued that FDI positively affects exports by enhancing capital for the production of exports, facilitating transfer of new technology and new products to be exported, providing training for the local workforce and upgrading technological and managerial skills, and helping access to new and large markets (UNCTAD, 2002; Meyer, 2003). Nevertheless, FDI may lead to a decline in exports. Transfer of low-level technologies, targeting the host country's domestic market, and preventing domestic firms that might become exporters may worsen export performance (Zhang, 1999).

The potential impact of FDI on exports depends on the type of investment. In case of a horizontal FDI, multinational companies have similar organizations in every country of interest, and hence, FDI is likely to have negative effects on exports (Markusen, 1984; Markusen and Venables, 1999).[5]However, if FDI is vertical, each stage of production process is located in different countries, and it will possibly have positive effects on exports (Lipsey and Weiss, 1984; Zhang and Markusen, 1999).

Similarly, a positive or negative association between FDI and imports may exist. If the motivation for FDI is to benefit from factor productivity and wage differences, a rise in foreign activity will probably lead to an increased demand for inputs and intermediate goods. When multinational companies need to import certain intermediate goods or raw materials which are more expensive or not available in the host country, and/or when FDI is vertical, increase in direct investments would contribute to current account deterioration (Alguacil and Orts, 2003). Conversely, when FDI is directed to an import substituting industry, its overall impact on imports is likely to be negative as previously imported goods will be produced in the host country (Blonigen, 2001; Alguacil and Orts, 2003). Hence, FDI inflows and imports are substitutes.

Although there are alternative channels for the relationship between inward FDI and current account balances as distinguished above, some of the empirical studies have analyzed the linkage by using FDI and current account deficits variables in the models directly (Jansen,

[4]Frenkel and Rapetti (2012**)** argue that due to the reduction of foreign debts during the 2000s, the share of interest payments in the income account has declined in most Latin American countries, whereas current account deficits in those countries are now largely affected by dividend payments of FDI. In some years, the current account deficits were completely financed with FDI, and a large proportion of this was re-investment of dividends. In many cases profit transfers actually exceed new inflows of FDI.

[5]Negative effect is more likely, but still it depends on products and the target markets for those.

1995; Bosworth and Collins, 1999; World Bank, 1999, UNCTAD, 2002, Siddiqui *et al.*, 2007; Mencinger, 2008). However, in order to identify the channels of causation, the empirical examination of the relationship between FDI and current account deficits needs to ponder potential effects of FDI on both exports and imports.

A number of studies concerning the channels for the mentioned relationship between FDI and current account deficits have focused on the FDI-exports linkage (see e.g. Zhang, 1999;Sun, 2001; Xuan and Xing, 2008), whereas some studies have investigated the FDI-imports relationship (e.g., Lin, 1995; Brainard, 1997; Clausing, 2000; de Mello and Fukosuku, 2000; Alguacil and Orts, 2003). On the other hand, some authors refer to the both channels of relationship and employ models comprising exports and imports variables in relation with FDI (e.g., Min, 2003; Pacheco-Lopez, 2005; Pramadgani*et al.*, 2007). Overall, the empirical analyses do not provide conclusive results regarding the mentioned relationship(s).

Most of the empirical work has been undertaken by using individual country data. This study aims to make a contribution to the analysis of the FDI-current account relationship in a group of developing economies by focusing on the channels of exports and imports. To this end, the paper employs the panel Granger causality procedure developed by Konya (2006) that is based on the SUR estimations and Wald tests with country-specific bootstrap values.

3. Data and Empirical Methodology

3.1. Data

The empirical analysis in the study is carried out by using the annual data for 17 developing countries over the period of 1990-2014. The data are provided from the World Development Indicators database of the World Bank and FDI/TNC database of the UNCTAD.

The variables of the analysis are foreign direct investment stock (*fdigdp*), total exports of goods and services (*expgdp*), and total imports of goods and services (*impgdp*). All variables are used as shares of GDP (%).

The average values of the variables for the countries of interest are presented in two sub-periods in Table 1.

Table 1. FDI and trade variables of the countries (%)

Country	Imports/GDP		Exports/GDP		FDI/GDP	
	1990-2007	2008-2014	1990-2007	2008-2014	1990-2007	2008-2014
Argentina	11.68	14.70	13.85	16.65	19.12	18.88
Bangladesh	16.49	25.37	11.18	18.46	3.32	5.35
Brazil	10.69	12.99	10.94	11.73	14.95	27.55
Chile	29.33	33.65	32.15	36.47	51.70	68.98
China	19.88	21.78	22.46	25.32	12.88	9.61
Colombia	18.72	19.70	16.64	17.20	15.43	31.40
Egypt	28.12	28.03	22.81	21.51	26.47	32.49
India	14.08	27.99	12.72	23.24	3.33	11.83
Indonesia	27.45	24.37	31.71	25.27	12.20	21.88
Malaysia	89.08	69.89	100.25	84.55	37.70	39.03
Mexico	23.72	31.81	22.80	30.49	16.53	29.82
Pakistan	18.75	20.06	15.71	12.89	9.16	10.71
Peru	18.23	24.59	17.55	26.21	15.58	31.57
Philippines	47.23	34.81	41.30	31.92	11.94	14.99
South Africa	23.40	31.30	25.45	30.65	22.27	40.91
Thailand	50.90	64.19	52.64	68.31	21.06	41.17
Turkey	23.00	29.71	20.53	24.58	10.25	20.13

Source: World Bank, World Development Indicators and UNCTAD FDI/TNC Database

3.2. Empirical Methodology

Granger's definition of causality has led to a vast literature in applied economics.[6] In order to examine Granger causality implications in a panel data, three approaches can be implemented. The first one, the generalized method of moments (GMM) estimator, is not able to take into account either cross-sectional dependency or heterogeneity aspects in the panel (Pesaran*et al.*, 1999). The second approach proposed by Hurlin (2008), controls for heterogeneity, but not for cross-sectional dependency, whereas the last approach developed by Konya (2006) considers both cross-sectional dependency and heterogeneity. Owing to the advantages of the method and characteristics of our panel as shown below, the Konya methodology seems to be appropriate for the causality analysis in this study.

The Konya procedure has a number of advantages. Although it does not assume that the panel is homogenous, it allows exploiting extra information provided by the panel data setting as contemporaneous correlation is allowed across countries. The approach enables to test for Granger causality on each member of the panel separately by taking into account the possible contemporaneous correlation across countries, and allows to apply one-way, two-way, or no Granger-causality between the variables for each country. This approach is also robust to the unit root and cointegration properties of the variables where the testing procedure does not require any pretesting for unit root and cointegration, and hence, the variables can be used in their levels (Konya, 2006). This is important as unit-root and cointegration tests generally suffer from low power, and alternative tests may lead to contradictory outcomes.

The methodology is based on 'seemingly unrelated regression' (SUR) estimates of a set of equations. The Wald tests for Granger causality are performed for each country in the panel with specific bootstrap critical values generated by simulations. The panel causality approach of Konya (2006) can be formulated as follows:

$$y_{1,t} = \alpha_{1,1} + \sum_{l=1}^{mly_1} \beta_{1,1,l}\, y_{1,t-l} + \sum_{l=1}^{mlx_1} \gamma_{1,1,l} x_{1,t-l} + \varepsilon_{1,1,t}$$

$$y_{2,t} = \alpha_{1,2} + \sum_{l=1}^{mly_1} \beta_{1,2,l}\, y_{2,t-l} + \sum_{l=1}^{mlx_1} \gamma_{1,2,l} x_{2,t-l} + \varepsilon_{1,2,t}$$

$$y_{N,t} = \alpha_{1,N} + \sum_{l=1}^{mly_1} \beta_{1,N,l}\, y_{N,t-l} + \sum_{l=1}^{mlx_1} \gamma_{1,N,l} x_{N,t-l} + \varepsilon_{1,N,t}$$

and

$$x_{1,t} = \alpha_{2,1} + \sum_{l=1}^{mly_2} \beta_{2,1,l}\, y_{1,t-l} + \sum_{l=1}^{mlx_2} \gamma_{2,1,l} x_{1,t-l} + \varepsilon_{2,1,t}$$

$$x_{2,t} = \alpha_{2,2} + \sum_{l=1}^{mly_2} \beta_{2,2,l}\, y_{2,t-l} + \sum_{l=1}^{mlx_2} \gamma_{2,2,l} x_{2,t-l} + \varepsilon_{2,2,t}$$

$$x_{N,t} = \alpha_{2,N} + \sum_{l=1}^{mly_2} \beta_{2,N,l}\, y_{N,t-l} + \sum_{l=1}^{mlx_2} \gamma_{2,N,l} x_{N,t-l} + \varepsilon_{2,N,t}$$

[6] According to Granger causality, a stationary time series Y_t is said to 'cause' another stationary time series X_t if the inclusion of past values of Y_t significantly reduces the predictive error variance of X_t.

where x denotes *fdigdp,* and y denotes *expgdp* and *impgdp* in *Model I* and *Model II* respectively. *N* is the number of units in the panel (*j*=1,….,*N*), *t* is the time period (*t*=1,….,*T*), and *l* is the lag length.

In the system presented above, each equation has different predetermined variables and error terms are assumed to be cross-sectionally dependent. To test for Granger causality, the following alternatives should be investigated for country j: (i) there is one-way Granger causality from X to Y if not all$\gamma_{1,i}$'s are zero but all$\beta_{2,i}$'s are zero, (ii) there is one-way Granger causality from Y to X if all$\gamma_{1,i}$'s are zero but not all$\beta_{2,i}$'s are zero, (iii) there is two way Granger causality between X and Y if neither$\gamma_{1,i}$'s nor$\beta_{2,i}$'s are zero and (iv) there is no Granger causality between X and Y if all $\gamma_{1,i}$ and$\beta_{2,i}$'s are zero.

4. Empirical Analysis

4.1. Preliminary Analysis

Prior to the investigation of causality implications, cross-sectional dependency and slope heterogeneity in the panel should be controlled to determine the appropriate technique. First, to test for cross-sectional dependency, Breusch and Pagan's (1980) the Lagrange multiplier ($\mathrm{CD_{LM}}$ hereafter) test is used in the analysis. The $\mathrm{CD_{LM}}$ test is based on the following LM statistic:

$$\mathrm{CD_{LM}} = \mathrm{T}\sum_{\mathrm{i=1}}^{\mathrm{N-1}}\sum_{\mathrm{j=i+1}}^{\mathrm{N}}\hat{\rho}_{\mathrm{ij}}^{2}$$

The LM test is valid for $T \to \infty$ with fixed N. The test statistic is distributed as$\chi^2_{n(n-1)/2}$.

Having tested for cross sectional dependency, the second issue in a panel data analysis is to determine whether or not the slope coefficients are homogenous. With respect to testing for slope homogeneity, Pesaran and Yamagata (2008) developed the following standardized dispersion statistic:

$$\tilde{\Delta} = \sqrt{\mathrm{N}}\left(\frac{N^{-1}\tilde{S} - k}{\sqrt{2k}}\right)$$

Under the null hypothesis with the condition of (N, T) $\to \infty$ so long as $\sqrt{N}/T \to \infty$, and the error terms are normally distributed, the $\tilde{\Delta}$ has asymptotic standard normal distribution. The small sample properties of the $\tilde{\Delta}$ test can be improved under normally distributed errors by using the following bias adjusted version

$$\tilde{\Delta}_{\mathrm{adj}} = \sqrt{\mathrm{N}}\left(\frac{N^{-1}\tilde{S} - E(\tilde{Z}_{iT})}{\sqrt{Var\,(\tilde{Z}_{iT})}}\right)$$

where $\mathrm{E}\,(\tilde{z}_{\mathrm{iT}}) = \mathrm{k}$, $\mathrm{var}\,(\tilde{z}_{\mathrm{iT}}) = 2\mathrm{k}\frac{(\mathrm{T-k-1})}{(T+1)}$ (Menyah *et al.*, 2014).

The tests for cross-sectional dependency are presented in Table 2. As can be seen in the table, the null hypothesis of no cross-sectional dependency is strongly rejected at the 1% significance level. These findings imply that a shock that occurs in one of the countries may be transmitted to the others.

Table 2. The Breusch-Pagan $\mathbf{CD_{LM}}$ test for variables

Variables	Constant		Constant and trend	
	Statistics	p-value	Statistics	p-value
impgdp	219.958	0.000	208.121	0.000
expgdp	266.022	0.000	262.174	0.000
fdigdp	221.632	0.000	210.075	0.000

Note: Lag length is chosen as 3.

Table 3 presents the tests for homogeneity. The results from the slope homogeneity tests reject the null hypothesis of slope homogeneity, hence supporting country specific dynamics.

Table 3. Homogeneity test for models

Model	$\tilde{\Delta}$		$\tilde{\Delta}_{adj}$	
	Statistics	p-value	Statistics	p-value
Model 1 : *expgdp=f(fdigdp)*	18.527	0.000	19.699	0.000
Model 2 : *impgdp=f(fdigdp)*	14.030	0.000	14.917	0.000

4.2. Estimation and Discussion of the Results

Having cross-sectional dependency and heterogeneity across the countries, a causality framework that enables to capture these features should be applied. In this regard, the panel causality approach proposed by Konya (2006) seems to be an appropriate method.

Prior to our estimation, the number of lags should be identified as the causality test results are known to be sensitive to the choice of lag length. In general, both too few and too many lags may cause problems. Too few lags mean that some important variables are omitted from the model, and this specification error will usually cause bias in the regression coefficients. On the other hand, too many will usually increase the standard errors of the estimated coefficients, making the results less reliable (Konya, 2006).

For specifying the number of lags in the analysis we follow the procedure suggested in Konya (2006). That is, for selecting the optimal lag structure, we allow different maximal lags for Y and X (1–4 lags), without allowing them to vary across countries. We estimate the system for each possible pair of *ly*1, *lx*1, *ly*2 and *lx*2 by assuming from one to four lags, and then choose the combinations which minimize the Schwartz Bayesian information criterion (SIC).

The results from the model estimations by using the lag lengths suggested by the Schwartz Bayesian criterion are given below. Table 4 presents the results for the panel causality analysis between foreign direct investment and exports of goods and services, whereas the results for foreign direct investment and import of goods and services are reported in Table 5.

Table 4. Results for panel causality - Model I

Countries	H0:*fdigdp* does not Granger-cause *expgdp*					H0:*expgdp* does not Granger-cause *fdipgdp*				
	Coeff.	Wald Statistics	Bootstrap critical value			Coeff.	Wald Statistics	Bootstrap critical value		
			10%	5%	1%			10%	5%	1%
Argentina	0.486	48.463**	27.311	44.268	101.739	-1.018	71.996**	24.642	39.485	94.818
Bangladesh	0.470	5.136	25.794	37.884	73.842	0.047	2.287	26.162	37.889	73.133
Brazil	0.083	7.130	21.378	32.397	58.920	-0.293	2.436	30.312	45.335	88.470
Chile	0.101	14.434	30.478	44.599	83.157	-0.202	1.116	29.410	42.263	77.913
China	0.220	5.659	35.276	51.257	97.160	-0.142	18.445	20.330	29.630	59.422
Colombia	0.057	5.603	13.747	21.233	42.684	-0.357	3.066	22.164	34.129	72.641
Egypt	-0.126	0.959	31.843	45.809	89.238	0.063	0.371	23.817	35.496	69.728
India	0.411	19.518	39.922	56.182	101.714	0.282	95.361**	38.455	56.154	105.362
Indonesia	-0.112	1.839	25.216	37.632	77.511	-0.516	39.003*	33.489	59.055	150.503
Malaysia	-0.018	0.025	24.719	38.052	76.386	-0.129	9.117	34.628	50.914	94.101
Mexico	0.129	2.927	26.274	37.643	69.358	0.055	0.278	30.875	45.354	89.480
Pakistan	-0.167	9.711	20.249	30.798	64.747	-0.139	0.485	20.541	31.071	60.353
Peru	0.071	2.356	33.184	48.593	90.211	0.050	0.661	22.694	33.390	63.793
Philippines	-0.452	4.730	23.197	33.463	65.838	-0.102	13.313	23.016	33.614	66.561
South Africa	0.174	88.385***	19.620	28.765	57.349	1.194	24.767	33.326	47.839	89.400
Thailand	0.186	4.522	33.831	48.368	94.330	0.187	4.773	38.352	54.377	106.836
Turkey	0.038	0.262	16.287	25.188	50.544	-0.097	0.465	29.694	44.254	81.057

Note: Bootstrap critical values are obtained by undertaking 10.000 replications.***, **, * indicate significance at the 1, 5, and 10 per cent levels, respectively.

Table 5. Results for panel causality - Model II

	H_0:*fdigdp* does not Granger cause *impgdp*					H_0:*impgdp* does not Granger cause *fdipgdp*				
Countries	Coeff.	Wald Statistics	Bootstrap critical value			Coeff.	Wald Statistics	Bootstrap critical value		
			10%	5%	1%			10%	5%	1%
Argentina	0.071	24.574	35.053	52.780	109.252	-0.339	1.758	20.269	32.470	78.187
Bangladesh	0.760	15.745	35.176	50.313	96.341	0.018	0.558	23.024	34.403	65.012
Brazil	0.119	25.461*	24.792	36.701	69.782	0.628	3.437	29.927	43.731	81.879
Chile	0.096	16.352	28.164	41.494	81.501	1.373	20.216	26.677	40.361	82.354
China	0.181	5.726	38.345	57.034	108.176	-0.169	16.696	21.676	33.434	70.031
Colombia	0.008	0.125	14.220	21.204	42.693	0.452	5.238	20.274	30.049	57.446
Egypt	0.250	7.262	31.126	47.230	89.645	-0.018	0.023	24.120	36.835	81.494
India	0.370	5.069	44.649	64.087	121.620	0.261	72.356**	36.701	52.254	96.462
Indonesia	-0.030	0.191	23.773	37.561	76.541	-0.436	14.752	33.722	55.221	139.246
Malaysia	0.073	1.063	28.547	41.629	83.693	-0.050	0.559	32.482	46.491	84.615
Mexico	0.186	8.455	28.188	42.515	84.133	0.520	10.609	30.164	45.634	89.362
Pakistan	-0.049	0.429	28.769	44.668	93.548	0.247	4.948	23.411	34.171	70.129
Peru	0.114	13.365	40.898	60.314	113.984	0.563	30.765*	23.524	36.459	74.023
Philippines	-0.619	16.526	29.229	43.653	85.872	-0.061	6.258	23.737	36.375	68.149
South Africa	0.216	92.121**	32.108	46.994	96.990	1.222	37.352*	29.744	43.337	82.400
Thailand	0.584	99.527**	38.997	54.743	109.600	0.159	5.243	35.344	50.868	90.855
Turkey	0.324	49.743**	31.358	45.890	92.989	0.396	8.836	26.331	38.936	72.695

Note: Bootstrap critical values are obtained by undertaking 10.000 replications. ***, **, * indicate significance at the 1, 5, and 10 per cent levels, respectively.

The empirical results in the tables show a limited number of causal links between the variables across the countries. In Table 4, Argentina appears to have bidirectional causality between FDI and exports as indicated by the statistics which are significant at the 1 per cent level. The results suggest a unidirectional causality from *fdigdp* to *expgdp* in South Africa, and from *expgdp* to *fdigdp* in India and Indonesia. The positive causality from FDI towards exports may imply a vertical FDI structure in Argentina and South Africa.

Table 5 reveals a positive causality from FDI towards imports in Brazil, South Africa, Thailand and Turkey. The positive coefficients imply a complementary relationship between FDI and imports in these countries. The inverse unidirectional causality runs in India, Peru and South Africa. Among others, South Africa appears to be an interesting case as it has bidirectional causality for the FDI-imports relationship, while it also holds a unidirectional causality from FDI to exports. The possible impact of FDI both on exports and imports may suggest a link between exports and imports as well.

Overall, the results of the study do not provide some typical structures for the mentioned relationship(s) across the members of the panel. With regard to the impact of FDI on trade components, its impact on imports seems to be more pronounced compared to exports, but cannot be overstated. Although our study emphasizes the effects of FDI on the others, the results for the inverse causality are also reported. However, interpretation of the inverse causal links seems to be less clear. For instance, a suggested causation from imports to FDI may stem from the attempts of the host country to attract FDI, or from the multinationals' strategy to produce the imported goods in the host country.

5. Conclusion

Despite the common belief, FDI may affect current account balances adversely through direct and indirect channels, i.e. financial transfers, such as profit remittances, interests, intercompany loans, and exports and imports. While the impact of profit transfers from the host country is rather an apparent one, the indirect effects on current account balances through its exports and imports may vary, and hence, should be analyzed empirically.

This study investigates the relationship between FDI and current account deficits in a number of middle income countries, by focusing on the indirect links through exports and imports. To analyze causality implications between FDI and components of international trade a panel Granger causality framework developed by Konya (2006) is employed. The results of the analysis are not definitive regarding the presence and direction of the causality between FDI and exports, FDI and imports. Some of the countries in the panel have unidirectional causality, whereas two of them have bidirectional causality for the FDI-exports and FDI-imports relationships respectively. However, most of the countries in the panel do not seem to have any association between FDI and exports and imports for the period of analysis.

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