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Natural Resource-Seeking FDI Inflows and Current Account Deficits in Commodity-Producing Developing Economies

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Natural resource-seeking FDI inflows and current account deficits in commodity-producing developing economies

Nathalia Rios Ballesteros[a] and *Thomas Goda*[b]

Abstract

Natural resource-seeking foreign direct investment (FDI) rose substantially during the last two decades as global commodity prices soared. This type of FDI typically is expected to improve the current accounts of recipient countries. Notwithstanding the commodity boom, however, current account balances of many commodity-producing developing economies were negative during 1995–2013. Considering 31 commodity-producing countries, we find that the average net effect of a 1% increase in natural resource-seeking FDI was a 0.23% decline in the current account (measured as percentage of GDP). This surprising result can be explained by the repatriation of profits.

Key Words: Foreign Direct Investment (FDI); net primary income (NPI); profit repatriation; current account; balance of payments; natural resources

JEL Classification: F21; O11; O24

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1. Introduction

During the past three decades, foreign direct investment (FDI) has become an important source of finance for developing economies, and it was especially important during the commodity price boom of the 2000s as they sought to benefit by exploiting their natural resources (UNCTAD, 2013). FDI is said to help developing economies accelerate growth and achieve sustainable development, as it entails many potential benefits include triggering technology spillovers, fostering human capital formation, promoting domestic investment, spurring employment, and improving environmental and social conditions (OECD, 2002).

However, FDI inflows also can have adverse effects. For example, they may crowd-out domestic companies and curtail employment (Jude & Silaghi, 2016), create chasms between investing and recipient countries when technological transfers fail to materialize (Görg & Greenaway, 2004), and increase regional disparities within recipient countries (Chen et al., 1995; Ran et al., 2007). Moreover, negative externalities can arise if countries engage in a 'race to the bottom' regarding labor, environmental, and tax standards to attract FDI (Davies & Vadlamannati, 2013; Olney, 2013; Danladi & Akmolofe, 2013).

Moreover, FDI inflows can affect recipient countries' current accounts. Policymakers and scholars typically assume its impact on commodity-producing countries is positive because natural resource-seeking FDI fosters commodity exports (Brouthers et al., 1996; UNCTAD, 1999).[1] However, FDI inflows simultaneously reduce the net primary income (NPI) account when multinational corporations (MNCs) repatriate profits to shareholders who reside outside the recipient country (Jansen, 1995).

When commodity prices soar, the adverse impact on NPI can be especially severe because MNCs earn extraordinary profits from extracting resources, and NPI outflows might offset the beneficial effects of natural resource-seeking FDI on exports. That possibility is suggested by the trade and NPI balances in a sample of 31 commodity-producing developing

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[1] Brouthers et al. (1996) refer to natural-resource-seeking FDI as raw-material-seeking investment.

economies between 1995 and 2013. During that period, average trade balances for these countries were positive and average NPI balances were negative (Table 1), and the deficit in the NPI balance was nearly three times greater than the surplus in the trade balance. Accordingly, the average current account balance of commodity-producing developing economies during the period was −2.14% (measured as the sum of trade and NPI balances).

Table 1. Current account balances of commodity-producing developing economies (1995–2013)

	% of GDP (average)
Trade Balance	1.15%
NPI Balance	−3.29%
Current Account Balance	−2.14%

Note: This table shows the average trade balance, net primary income balance, and their sum for a sample of 31 countries during 1995–2013.

However, these data do not reveal whether natural resource-seeking FDI inflows partly explain the observed negative NPI balance between 1995 and 2013. The aim of this paper is to examine whether that was the case. To be more precise, this study tries to shed light on the question whether natural resource related FDI inflows affected the current account of commodity-producing developing economies negatively when both trade and NPI balances are considered.

Earlier empirical literature primarily examines how FDI affects trade balances and ignores its effects on NPI balances. This limitation might incites misleading interpretations of the overall effect of FDI inflows on the balance of payments of recipient countries. That matter is important because ongoing current account deficits are generally unsustainable when exports cannot be increased sufficiently. In this case countries need to attract continuous foreign capital inflows to finance them—that is, accumulate ongoing liabilities that make it harder to improve their current account in the future—and eventually must reduce imports to equilibrate their current accounts. Reducing imports implies difficult income adjustments or

sharp contractions in investment (IMF, 2015), and the accumulating liabilities ultimately might provoke a balance of payments crisis.

Our results suggest that natural resource-seeking FDI inflows decidedly impaired current accounts of commodity-producing developing economies during 1995–2013. The average net effect of a 1% increase in natural resource-seeking FDI inflows was a 0.23% decline in the current account as a percentage of GDP. This finding implies that the current accounts of these commodity exporters were not only affected negatively after the 2000s commodity boom ended (IMF, 2015) but also during the boom years.

This paper proceeds as follows. Section 2 discusses potential impacts of FDI inflows on the balance of payments of recipient countries and reviews previous empirical literature. Section 3 presents the research design. Section 4 summarizes estimation results. Section 5 presents the conclusion of this study.

2.   Potential effects of FDI inflows on the balance of payments of recipient countries

FDI inflows can affect a recipient country's balance of payments through its financial account (external assets and liabilities) and its current account (net income flows). FDI inflows are considered positive for the former. According to the savings gap theory, low domestic savings in developing economies lead to low levels of investment and hence also to a relatively low capital stock. Foreign savings in the form of FDI help developing economies to accumulate capital and boost long-run growth in the Solow model (Bosworth et al., 1999; Priewe & Herr, 2005).

The potential effects of FDI inflows on the current account of recipient countries are ambiguous. On the one hand, they might improve or worsen the trade balance of the country, depending on the specific type of FDI. In the case of efficiency-seeking FDI, for example, MNCs situate elements of their global value chain in developing economies to reduce costs and improve the profitability of their operations. Inclusion in global value chains tends to

increases the diversification and amount of developing economies' exports. Likewise, the diffusion of technological and managerial know-how from foreign to domestic firms might boost industrial competitiveness, enhancing domestic firms' export capacities and countries' long-run trade balances (Orr, 1991; UNCTAD 2013, Cieslik and Hagemejer, 2014; Mijiyawa, 2016).

Market-seeking FDI, conversely, mainly affects imports because it is motivated by MNCs' wish to penetrate recipient country markets and produce nearer to customers. MNCs might replace imported final goods or intermediate inputs, hence reducing a recipient country's imports and benefiting its trade balance. However, imports can also rise if MNCs substitute imported for local inputs (vertical crowding-out) (Brouthers et al., 1996; UNCTAD, 1999; Pacheco, 2005; Aparecida Fernandes y Carvalho Campos, 2008).

The effect of natural resource-seeking FDI on trade balances typically is regarded as positive as it usually has the aim of exporting extracted commodities. However, in developing economies, this type of FDI usually also entails the import of capital goods and specialized intermediate inputs, especially during early years of investment. Nonetheless, the value of those imports is expected to be considerably lower than subsequent commodity exports so that natural resource-seeking FDI is seen to improve the trade balance in the medium term (Brouthers et al., 1996; UNCTAD, 1999, 2007, 2013).

The effect of FDI inflows on the primary income account, on the other hand, is expected to be unambiguously negative. Rational and reasonably well informed MNCs direct their investment only towards projects wherein returns exceed the initial investment (i.e. in profitable projects), and typically, most of their shareholders reside in developed economies. This means that much of MNC's profits are repatriated, which implies that repatriated profits rise alongside FDI inflows (Jansen, 1995).

Given the preceding discussion, three potential net effects arise for countries that receive natural resource-seeking FDI. The first is a current account surplus if the positive trade balance effect exceeds the negative NPI payment effect. Second, the current account squares

if the positive trade balance effect equals the negative NPI payment effect. Third, the current account declines if the negative NPI payment effect exceeds the positive trade balance effect.

Existing studies commonly conclude that natural resource-seeking FDI enhances current accounts of recipient countries, but that conclusion arises from the convention that it improves the trade balance. The adverse impacts of FDI inflows on NPI accounts, on the contrary, receive little attention, although Jansen (1995) and Mencinger (2007) show that both the trade and NPI balances are important when verifying the current account effect of FDI inflows.

Jansen (1995) measures how FDI influenced Thailand's investment, growth, and balance of payments during 1970–1991. He measures the current account effect as the impact of FDI on imports, exports, income payments on investment. Jansen finds that Thailand's sharp increase in export-oriented FDI inflows strongly expanded private investment, growth, and exports. However, FDI inflows eventually generated profit outflows that exceeded the increase in exports. "As a result the current account deficit widens by more than the increase in FDI inflows" (Jansen, 1995, p. 204).

Mencinger (2007) addresses links between FDI and current accounts for eight European Union New Member States during 1999–2006. His three-equations model considers the effects of FDI inflows on trade balances, NPI payments, and net current accounts (the sum of the trade balance and NPI). The results of this model are similar to the results obtained in Jansen's study (1995): FDI inflows erode the current account by increasing deficits in the NPI account that are not offset by reductions in trade balance deficits.

In sum, the literature widely accepts that, natural resource-seeking FDI enhances recipient countries' trade balances and erodes their NPI balances. Its net effect on the current account depends on relative magnitudes of these opposing forces. Considering the data in Table 1 we hypothesize that during 1995–2013 natural resource-seeking FDI exerted negative net effects on the current accounts of commodity-producing developing economies.

3.   Data and Estimation Methodology

We employ a fixed-effects panel data model with the following specification to determine the net impact of natural resource-seeking FDI inflows on current accounts of commodity-producing countries:

$$CA_{it} = c + \beta_1 FDI_{NR_{it-x}} + \beta_i X_{it} + \alpha_i + \mu_{it}, \tag{1}$$

where, i denotes country, t time in years, and x n-lags. CA is the current account as a percentage of GDP, and c is a constant. FDI_{NR} is annual inflows of natural resource-seeking FDI as a percentage of GDP, and X is a vector of control variables. α denotes unobserved time-invariant individual country fixed effects, and μ is the error term.

Our unbalanced sample encompasses annual data spanning 1995–2013. We first identified all commodity-producing developing economies with an average natural resources rent 66% above the global median from the World Development Indicators database. Among qualifying nations from Africa, Asia, Latin America, and the Mideast, 31 have data for natural resource-seeking FDI inflows. Those 31 comprise our sample.[2] They are Azerbaijan, Bolivia, Brunei, Chile, Colombia, Ecuador, Egypt, Ethiopia, Guyana, Indonesia, Kazakhstan, Laos, Madagascar, Malaysia, Mauritania, Mozambique, Nigeria, Oman, Peru, Qatar, Russia, Rwanda, Saudi Arabia, Syrian Arab Republic, Trinidad and Tobago, Uganda, Ukraine, Tanzania, Venezuela, Vietnam, and Zambia.

The dependent variable (CA) is the sum of net exports and NPI as percentages of GDP (obtained from Development Indicators).[3] Data for our variable of interest (FDI_{NR}) are FDI inflows to the mining-quarrying and petroleum sector, provided by UNCTAD. We consider lagged FDI_{NR} to avoid potential endogeneity issues (changes in the current account might

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[2] Had the criterion for selection been FDI inflows into natural resources, only 24 countries exceeded 66% of the median. Use of that smaller sample does not affect our overall results.
[3] We omit net international compensation to employees and net unilateral transfers for simplicity.

affect the amount of FDI received). Considering Seabra and Flach (2004) and Mijiyawa's (2016) results, we used up to five lags to allow time for the effects of FDI to appear.

Our control variables are standard in the literature: GDP growth rate, relative GDP per capita, real effective exchange rate (REER), fiscal balances as a percentage of GDP, and foreign portfolio investment (FPI) inflows (see Jansen, 1995; Fry, 1997; Mencinger, 2007). These data are obtained from the World Development Indicators database, except for the REER, which is retrieved from Bruegel (2016).

We control for growth because it is conventional that the higher the growth rate, the greater the profits, and thus NPI outflows. High growth rates might also entail significant expansion in foreign trade, increasing both exports (competitiveness effect) and imports (income effect). The net effect of GDP growth on the current account thus is ambiguous.

Relative GDP per capita, is a common proxy for national productivity (see e.g., Hall & Jones, 1996; Petrariu et al., 2013). We chose US GDP per capita as the denominator. High relative GDP per capita plausibly reflects high productivity and thus greater competitiveness for domestic products, which potentially aids positive trade balances.

With regard to the third control variables, REER, appreciations customarily reduce exports and raise imports, whereas depreciations render exports more competitive and imports less competitive. Increases in the REER index indicate that the recipient country's currency appreciates against the currencies of trading partners.

The fourth control variable is FPI inflows. Next to profits, the NPI account also includes dividend payments to foreign portfolio investors. The expected effects of FPI inflows on the current account parallel those of FDI inflows. We include up to three lags for FPI given that typically FPI has a relatively short investment horizon.

Finally, we control for the countries' fiscal balances. According to the twin deficit hypothesis, fiscal and current account balances are positively related. Government expenditures can be significant components of aggregate demand, fiscal deficits (budgetary

expansion) likely raise demand for imports and reduce the current account, whereas budget surpluses (budgetary contraction) exert the opposite effect (Abbas et al., 2011).

Table 2 presents the descriptive statistics of the variables. On average, our sample countries exhibit a negative current account equaling −2.14% of GDP. Natural resource-seeking FDI inflows, on the other hand, are positive (averaging 3.21% of GDP). The 5.2% average growth rate of sampled countries is relatively high, but their average GDP per capita was only 12.9% of that in the US. Between 1995 and 2013, the typically commodity-producing country in our sample had net FPI inflows (albeit far below FDI inflows), an appreciating REER (as expected given the positive capital inflows) and a slight fiscal deficit.

Table 2. Descriptive statistics

	Obs	**Mean**	**Std. Dev.**	**Min**	**Max**
CA	527	−2.14	14.52	−53.86	51.13
FDI$_{NR}$	339	3.21	5.86	−1.56	47.10
Growth	583	5.20	5.05	−14.80	35.22
Relative GDP pc	589	12.86	23.80	0.00	183.55
REER	589	105.21	21.10	50.80	296.98
FPI	421	0.15	2.82	−23.82	11.21
Fiscal Balance	293	−0.92	4.18	−10.11	19.57

Note: This table summarizes descriptive statistics for all variables and 31 commodity-producing countries during 1995–2013. "Obs" is number of observations. "Mean" the arithmetic mean the variable, "Std. Dev." its standard deviation, "Min" its minimum value, and "Max" its maximum value. "CA" is the current account balance (as percentage of GDP), "FDI$_{NR}$" is FDI inflows to the mining-quarrying and petroleum sector (as percentage of GDP). "Growth" refers to the economic growth rate. "Relative GDP pc" is a country's GDP per capita relative to that for the US. "REER" is a real effective exchange rate index. "FPI" is foreign portfolio investment inflows. "Fiscal Balance" refers to government surpluses/deficits (as percentage of GDP).

The descriptive statistics endorse a fixed-effects approach. The standard deviation and minimum and maximum values suggest that the sample is relatively heterogeneous. To avoid a source of omitted-variable bias, it seems necessary to accommodate unobserved country-specific effects that transcend the explanatory power of our independent variables. To confirm that in our case a fixed-effects is superior to random effects approach, we performed

Hausman tests for all regressions. The results of these tests show that fixed-effects regression indeed are more efficient than random-effects.

Likewise, we also include time dummies to reduce additional omitted variable bias. They are intended to capture effects of events that influence all countries in a period (economic crises, a commodity price boom etc). We assessed the importance of the dummy variables with a joint significance test that confirmed their use. Finally, we conducted the modified Wald test for groupwise heteroscedasticity and the Wooldridge test for autocorrelation in panel data to examine whether heteroscedasticity and serial correlation issues are present.

4.   The effect of natural resource-seeking FDI inflows on the current accounts

Table 3 presents the regression results. Regression (i) measures the effect of lagged natural resource-seeking FDI inflows (FDI_{NR}) for up to five periods on current account balances during 1995–2013[4] without considering control variables. The estimation indicates that this type of FDI influenced current accounts of sampled countries with lags of one and three years. On average, a 1% increase in FDI_{NR} caused a 1.39% reduction in the current account balance as a percentage of GDP after one year, whereas the current account recovered 0.5% after three years. However, the net effect of these two changes remains negative (−0.88%).

Our overall finding remains robust after including control variables and time dummies. In Regression (ii) natural resource-seeking FDI reduced the current accounts of commodity-producing economies negatively. The overall effect is stronger in this regression, given that the three-year lag of FDI_{NR} is not statistically significant. The average net effect of a 1% increase in natural resource-seeking FDI on the current account is −1.14% as percentage of GDP.

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[4] In all regressions the negative net effect of FDI is robust when only the commodity boom period 2003–2013 is considered.

Table 3. The impact of natural resource-seeking FDI on the current accounts of commodity-producing developing economies

	(i)	(ii)	(iii)	(iv)	(v)
FDI$_{NR}$ (−1)	−1.385***	−1.140***	−1.029***	−1.923***	−1.506***
	(−7.35)	(−3.30)	(−3.45)	(−6.66)	(−4.53)
FDI$_{NR}$ (−2)	0.361	−0.658	−0.914**	−0.602	
	(1.22)	(−1.45)	(−2.48)	(−1.51)	
FDI$_{NR}$ (−3)	0.502*	0.658	0.824***	1.129***	1.279***
	(1.81)	(1.43)	(3.66)	(4.49)	(4.40)
FDI$_{NR}$ (−4)	−0.153	0.093			
	(−0.57)	(0.31)			
FDI$_{NR}$ (−5)	0.320	−0.111			
	(1.64)	(−0.60)			
REER		−0.204***	−0.207***	−0.158***	−0.050
		(−3.24)	(−4.31)	(--3.21)	(−0.79)
Relative GDP pc		0.654***	0.433***	0.542***	0.741***
		(4.28)	(2.78)	(3.73)	(8.89)
Fiscal balance		0.075	0.237*	0.377**	0.408**
		(0.43)	(1.67)	(2.55)	(2.52)
Growth		0.009	−0.085		
		(0.09)	(−0.97)		
FPI (−1)			0.194		
			(1.27)		
FPI (−2)			0.007		
			(0.05)		
FPI (−3)			−0.068		
			(−0.44)		
Constant	0.805	19.928***	17.66***	9.614*	Omitted
	(1.07)	(3.50)	(3.41)	(1.75)	(0)
Time dummies	Not included	Included	Included	Included	Included
Observations	189	118	123	145	147
R-squared	0.45	0.67	0.71	0.78	0.63
Number of countries	21	17	17	20	21

Note: This table summarizes results of fixed-effects panel regressions for the current accounts of commodity-producing countries. Notes are identical to those in Table 2, with two exceptions: t and z statistics are in parentheses, and the significance of a coefficient at the 1%, 5% and 10% level of significance is indicated by *, ** and ***, respectively.

Next to natural resource seeking FDI, the REER and relative GDP per capita are also statistically significant in Regression (ii). As expected and in accord with Jansen (1995), currency appreciation impaired the current account balance (−0.20%), and higher relative GDP per capita improved it (0.66%).

Regression (iii) includes FPI inflows (with up to three lags) and excludes the four-year and five-year lags for FDI to increase sample size slightly. FDI_{NR} still exhibits the negative overall effect on current account balances. To be more precise, a 1% increase in natural resource-seeking FDI inflows lowers the current account balance (−1.12%) after three years. The REER and relative GDP per capita remain statistically significant with the expected signs.

In Regression (iii), also the financial balance becomes significant at the 10% level. In accordance with the twin deficit hypothesis, the sign of its coefficient is positive. Economic growth, on the other hand, still is not significant. This finding might be explained by the previously noted ambiguous effect of this variable. The same is true for the lagged FPI inflow variable. This result indicates that during our sample period FDI flows exerted a stronger effect than FPI inflows on the current account.

To increase the sample size and obtain a parsimonious model, Regression (iv) includes only those variables that are significant in Regression (iii). The overall net effect of natural resource-seeking FDI inflows remains negative, albeit smaller. In Regression (iv), the net effect of a 1% increase in FDI_{NR} on the current account balance after three years is −0.79%. However, the modified Wald test and the Wooldridge test suggest that the error term in Regression (iv) is heteroscedastic and serially correlated.

To resolve this issue, we estimated Regression (iv) using panel-corrected standard error estimates, as suggested by Beck and Katz (1995), Aparicio and Márquez (2005), and Labra and Torrecillas (2014). The resulting parsimonious Regression (v) confirms the main finding of Regressions (i)–(iv). The net effect of natural resource-seeking FDI inflows on the current account is negative after three years, although its magnitude is less than in previous

regressions. After one year, on average a 1% increase in FDI_{NR} reduced the current account balance by −1.51%, but the current account recovered 1.28% after three years. The overall net effect thus is −0.23%.

These results suggest that natural resource-seeking FDI inflows exerted a strong negative effect on the current accounts of commodity-producing countries one year after the investment is received. This short-term effect is statistically significant at 1% level in all regressions. In the medium term (i.e. after three years) the current account balances recover somewhat, but the net effect of natural resource-seeking FDI is negative. This finding confirms our hypothesis. Alongside effects from natural resource-seeking FDI, changes in relative productivity and fiscal balances apparently influenced current account balances of commodity-producing developing economies.

The likely explanation for the negative short-term effect of natural resource-seeking FDI inflows is that MNCs first import capital goods and specialized intermediate inputs before extracting the commodity. Exports increase only in the medium term as production takes off, explaining the positive sign after three years. However, this positive impact of exports is dampened by the repatriation of generated profits by commodity-producing MNC. The net result is that the sum of imports and NPI exceeds export revenues, impairing the current account balances developing economies that receive natural resource-seeking FDI.

5.   Conclusions

This study is the first to analyze how natural resource-seeking FDI inflows affect the current accounts in commodity-producing developing economies. Natural resource-seeking FDI inflows are expected to foster net exports, but they also entail the repatriation of profits that reduce the NPI account. Therefore, the current account can be affected negatively or positively, depending on magnitudes of these two opposing effects.

Contrary to the conventional view that natural resource-seeking FDI enhances the current account, our results suggest it impaired the current accounts of commodity-producing developing economies. Considering a sample of 31 countries in Africa, Asia, Latin America, and the Middle East during 1995–2013, we find that after three years a 1% increase in natural resource-seeking FDI inflows on average engendered a 0.23% decrease in current account balances as a percentage of GDP.

Our notable finding, that even during a commodity boom resource-seeking FDI inflows reduced current accounts, raises important policy implications. Typically, commodity-producing developing economies undertake policies to attract FDI because they expect that this investment will boost productivity, employment and exports, and foster technological spillovers and economic growth. However, the potential negative effects of FDI inflows on the current account can jeopardize the long run stability of balance of payments and impair growth and employment. Governments should therefore exercise caution in soliciting resource-seeking FDI via incentives, including tax holidays and relaxed environmental regulations.

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