# The impact of FDI on child labor: Insights from an empirical analysis of sectoral FDI data and case studies

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ABSTRACT: Not all FDI are alike as far as their impact on various dimensions of human development. This paper focuses, in particular, on child labor and it undertakes a cross-country empirical analysis of this issue, using data on 100 countries spanning the period 1990-2009. Unlike earlier studies that focus mostly on total FDI, we also utilized data on disaggregated FDI, covering main economic sectors of interest such as agriculture, mining, manufacturing, services, and finance. The empirical results suggest that different economic sectors generate varied effects on child labor. For instance, FDI in agriculture in Europe and Central Asia tends to exacerbate child labor, whereas FDI in manufacturing in South and East Asia and FDI in mining in Latin America appears negatively linked to child labor. Furthermore, signing onto the UN Convention on the Rights of the Child had a positive association with child labor, which runs counter to the intended effect! One possible explanation is that stronger anti-child labor laws could lead to multiple equilibria in labor markets, including the possibility of *increasing* child labor in certain sectors. Selected case studies help clarify the possible reasons behind this varied FDI impact on child labor, emphasizing among other factors supply chain management and the critical importance of policy implementation and coordination with the private sector.

JEL: E24, F15, O15,

Key words: FDI, child labor, income and substitution effect, UN Convention on the Rights of the Child

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**Introduction**

Protecting children and stamping out child labor are among the principal objectives of over 190 governments that are signatories to the international convention on the rights of the child (CRC). Nevertheless, one out of every six children aged 5-14 are engaged in child labor in the developing world.[1] Child labor results from a complex set of factors, and it has been the subject of a growing body of literature examining the reasons behind it, as well as its various types and impact (Edmonds, 2008). Empirical studies have also begun to examine the impact of increased economic openness on the poor, and in particular, children. A handful of these studies focus in particular on the impact of trade and foreign direct investments (FDI) on child labor. The inflow of FDI could help boost output and lead to an increase in incomes (an income effect), but also a rise in demand for low wage labor, raising the relative returns from child labor (a substitution effect). Since these factors influence child labor in opposite ways, the net effect is an area for empirical analysis.

This paper contributes to the literature in this area by undertaking a cross-country empirical analysis of the impact of foreign direct investment (disaggregated by sectors) on the incidence of child labor, using data on 100 countries spanning the period 1990-2009. In addition to the more extensive scope of data, there are several other main innovations herein that improve on earlier studies. First, in addition to total FDI, we also utilized data on disaggregated FDI, covering main economic sectors of interest such as agriculture, mining, manufacturing, services, and finance. Earlier literature in this area has focused extensively on aggregate indicators, which leaves out much of the nuances across sectors. As illustrated by the figures in table 1, child labor across sectors varies widely. We hypothesize that FDI across different economic sectors would generate different outcomes—including notably income and substitution effects—vis-à-vis child labor. Second, and acknowledging the challenges faced by previous research, we also addressed the simultaneity issues associated with empirical analyses of FDI, income and child labor by utilizing a GMM estimation methodology. This approach is possible because of the extensive panel dataset that this study utilizes. Finally, this study also uses an indicator to test for a possible structural break in the model between the period prior to the country signing onto to the

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[1] See UNICEF Child Info Website (http://www.childinfo.org/labour.html). Data drawn from DHS, MICS and other national surveys, 2000-2010.

UN Convention on the Rights of the Child (CRC) and the period afterwards. For many countries, this marked the beginning of stronger child protection policies and institutional reforms to promote the welfare of children. We therefore expect that the period with the CRC in effect would be associated with a reduction in child labor. To the best of our knowledge, no empirical study has measured the possible impact on child labor of signing onto the CRC.

[INSERT TABLE 1 HERE…]

The empirical results suggest that the aggregate indicator for FDI is not linked to child labor, contradicting earlier research that found a negative link. We interpret the difference in finding to be due to the improvement in empirical methodology in this study. Furthermore, when using the disaggregated indicators for FDI, the results show that various sectors and regions are associated with child labor in different ways. For instance, we find evidence that FDI in agriculture in Europe and Central Asia seems to exacerbate child labor, whereas FDI in manufacturing in South and East Asia and FDI in mining in Latin America appears negatively linked to child labor.

A brief review of different cases suggests that further analysis of the microfoundations of the FDI-child labor links is a rich area for future research, shedding further light on the broad linkages empirically examined in this paper. Finally, the empirical results also suggested that signing onto the CRC is positively linked to child labor—and it therefore runs counter to the intended effect! We draw on earlier research by Basu (1999; 2001; 2005) to provide a possible explanation for this unintended effect.

In what follows, section 1 briefly reviews the empirical literature on FDI and child labor. Section 2 discusses the data and empirical methodology and section 3 briefly presents the empirical results. Section 4 draws on various case studies to shed light on the possible explanations behind the broad empirical relationships examined here. A brief concluding section reviews areas for future work.


## I. Related Literature

Myriad factors, spanning cultural, economic, political, social and others, could help explain the child labor phenomenon.[2] Our main attention in this paper is on one set of economic factors, with

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[2] For a recent review of the empirical and theoretical literature, see Edwards (2008). In addition, Basu (1999;2001;2005) provides an extensive elaboration of the pathology behind child labor. Basu and Van (1998) and

a specific focus on foreign direct investments (FDI). Theoretically, child labor could be influenced by economic openness, covering trade, FDI and other aspects, because of the related income and substitution effects. First, increased economic openness could help to raise income by increasing productivity, creating jobs and boosting growth. This in turn could lead to lower incidence of child labor among the poor, as households no longer need to rely on children to help boost incomes above subsistence, while parents also may start to boost investments in their children's education and health (Basu and Van, 1998).[3] Second, economic openness could also stimulate the demand for cheap labor, which may also create a knock-on effect on child labor to the extent that children could perform some adult jobs. An indirect effect is also possible if the parents of children are drawn to take-on more work hours, and they pass on their household and family enterprise work to their children.

For instance, Webbink, Smits and de Jong (Forthcoming) examined the conditions of children's housework and family business work using data on over 150,000 children from 180 districts in 13 developing countries in Africa and Asia (i.e. Côte D'ivoire, The Gambia, Ghana, Guinea Bissau, Sierra Leone, Togo, Malawi, Somalia, Syria, Yemen, Thailand, Vietnam and Bangladesh). Their study suggested that most children spend some time on household chores, but in some countries, the majority of girls spend well over ten hours a week on household work. More than half of the girls and about thirty percent of the boys in Somalia, for example, spent over twenty hours a week on household work. These figures suggest that these forms of child labor may be much more significant than commercial work.

Aspects of economic openness—such as international trade or foreign investment inflows—could create economic opportunities for children and their families that would not otherwise have existed. For instance, firms in the export sector could transact with subcontractors from the informal sector in the value chain, in turn boosting the demand for unskilled workers and creating opportunities for utilizing child labor. Essentially the relative returns to child labor increase (due to higher equilibrium child wages), prompting a possible

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Kitaura (2009) develop theoretical frameworks to explain the links across policy, wages and the possible income and substitution effects on child labor.

[3] The literature on cash transfers also lends support to the hypothesis that increased household income among the poor may help to reduce child labor incidence and support further investments in education. For instance, Edmond and Schady (Forthcoming) examined the impact of cash transfers on child labor in Ecuador. Randomly selected poor mothers received cash transfers amounting to about 7 percent of monthly expenditures. Poor families receiving the transfer delayed their children's entry into the labor force. Students in beneficiary households reduced their involvement in paid employment by 78 percent and unpaid economic activity inside their home by 32 percent.

substitution into work in lieu of play, leisure and education. These income and substitution effects could work in opposite directions, making the net final impact a question for empirical verification.

The empirical evidence on economic openness and child labor provides some evidence of a negative relationship between indicators of trade and foreign direct investment and child labor, suggesting that, contrary to arguments that globalization could increase the risk of child labor, in fact the latter is mitigated. For instance, Cigno, Rosati and Guarcello (2002) utilized data on all developing countries for the years 1980, 1990, 1995 and 1998, and examined cross-country trade openness indicators—the trade ratio (exports plus imports scaled by GDP) and the Sachs and Warner openness indicator[4]—and found that these are negatively related to proxy measures of child labor (e.g. child labor is alternatively measured by the 10–14 labor participation rate, or by the primary school nonattendance rate) in most model specifications that control also for skill composition.[5] These authors did not consider this relationship a causal one. Instead they interpreted the results as having provided some empirical support that trade exposure per se does not seem to be associated with increased child labor incidence. They further argued that trade openness could be resulting in higher skill premiums in countries with an abundance of educated workers; and that countries with a large number of educated workers the findings are better able to integrate and compete in globalized markets. The principal challenge with this study, however, is that the possible endogeneity between trade and child labor was not adequately addressed. This led to a possible bias in the results as trade could influence child labor, whereas child labor could also create feedback effects on trade.

In addition, Neumayer and de Soysa (2004) are among the first to empirically analyze the possible link between FDI and child labor. They studied the relationship between indicators of economic openness, including trade and FDI, on child labor, using cross-sectional data for about 117 countries with indicators drawn from averaged figures in the 1990s. In order to deal with endogeneity, they utilized instruments that would affect trade and FDI penetration rate without affecting child labor incidence: demographic, geographical and language instruments (e.g.

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[4] Sachs and Warner (1999) considered countries "closed'' if at least one of the following conditions applied to the country: 1) average tariffs higher than 40%; 2) nontariff barriers covering more than 40% of imports; 3) socialist economic system; 4) state monopoly of major exports, 5) black market premium in excess of 20%.

[5] The variable for "skill composition" is proxied by the share of the workforce aged 25 or over which completed only primary education, as well as the additional group that completed secondary or higher. One way to interpret this variable is that it controls for the capability of the labor force to participate more successfully in the opportunities brought about by economic openness.

population size, size of land area, a dummy for countries that are landlocked, the minimum distance to New York, Brussels or Tokyo and a dummy variable for countries, share of the same language with a developed country). They found evidence that trade and FDI penetration were both negatively associated with child labor, suggesting that the income effect dominated the substitution effect.

Similarly, Davies and Voy (2009) empirically analyzed the relationship between FDI and child labor, utilizing data for 145 countries for the year 1995. In order to address the endogeneity between FDI and child labor,[6] they utilized instrumental variables developed in earlier studies based on geographical determinants (Frankel and Romer, 1999; Frankel and Rose, 2002; Edwards and Pavcnik, 2006). These instruments would influence FDI but not necessarily the skill level or child labor incidence in the country. These authors found evidence that FDI is statistically negatively linked to child labor incidence, but the statistical significance of this link disappeared when the income level was included. Davies and Voy argued that this was evidence that the main effect of FDI on child labor runs through the income channel.[7]

In all, the findings in the empirical literature do not suggest that economic openness—proxied by increased trade and foreign direct investments—tends to increase child labor. It is important to consider the limitations of these earlier studies which are dominated by cross-sectional data analyses (and therefore fails to cover variance over time), and despite more recent efforts many do not adequately address issues such as endogeneity in the variables of interest (and therefore could result in biased estimates). Earlier studies have also not disaggregated FDI according to different sectors in the economy, thus failing to account for sector specific effects which may vary. These are among the main issues addressed by the innovations in this study, to which we turn to next.

## II. Data and Methodology

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[6] Countries with high incidence of child labor also typically have a low-skilled labor force, and this in turn is not necessarily a strong attraction for FDI. Hence, FDI could impact on child labor, whereas child labor could also affect FDI levels.

[7] Similarly, Edmonds and Pavcnik (2004) examined the link of trade on child labor (i.e. the labor force participation of children 10-14) and found that openness is negatively associated with child labor only if income is not included in the model specification. These authors also concluded that the main effect of trade on child labor runs through the income channel.

*Stylized facts.* Child labor rates have been decreasing in all world regions since the 1960s (see Figure 1). According to the World Bank data[8] in Eastern Europe and Central Asia some child labor was still in existence in the 1960s- a 7% incidence. The rate was reduced in the next 5 decades down to 1%- an average decrease of 80% for the entire period.

In the Latin America and the Caribbean region the child labor rates have declined from 13% to 6% in this period- a rate of decline of 53% in the period 1960-2003[9]. And in Sub-Saharan Africa and South and East Asia and the Pacific regions the declines have been respectively 40% to 27 %- an average rate of decrease of 33% and from 26% incidence of child labor to 17%- a rate of decrease of 35%. For the world as a whole the decline in Child labor rates has been from 21.5% to 16.5%- an average rate of decline of 33% for this period.

At the same time, aggregate FDI Inflows have been increasing since 1990s in all of the examined regions (see Figure 2), with the world FDI flows almost doubling in the period 1990-2010. The sectoral FDI flows to the examined regions, however, show more variability.

[INSERT FIGURES 1 AND 2 HERE…]

*Conceptual framework.* Following the literature, we model the child labor rates as a function of GDP per capita, quality of institutions, population density and the key explanatory variable FDI at the sector level. We also include a UN Convention on the Rights of the Child dummy variable.

**(1)** $$CL_{it} = CL_{it-1} + Income_{it} + Institutions_{it} + Density_{it} + FDI_{it} + \rho_{it} + \varepsilon_{it}$$

$$\varepsilon \sim i.i.d(0, \sigma)$$

We hypothesize that income level would a negative association with incidence of child labor, since fewer families would face the need to choose work for their children instead of schooling. In addition, with higher income levels average families have better ability to pay their children's education. We expect the role of role of institutions' quality to be two-fold: in developed countries better institutions may lead to less incidence of child labor and in developing countries, they may facilitate it. We expect that population density has a negative effect on child labor. We

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[8] World Development Indicators CDROM2005.
[9] The data set after 2003 becomes unbalanced

also expect that the sign on the UN Convention on the Rights of the Child dummy $\rho_{it}$ could be either positive or negative, depending on multiple equilibria as we further explain.

***Empirical model and methodology.*** The main econometric model utilized in this study is as follows:

**(2)**
$$\log(CL_{it}) = \beta_0 + \beta_1(CL_{it-1}) + \beta_2 \log(y_{it}) + \beta_3 corr + \beta_4 \log(dens) + \beta_5 f_{it}^{j} + \beta_6 \rho_{it} + \beta_7 D^t + \mu_i + \varepsilon_{it}$$

$\mu_i \sim i.i.d(0, \sigma_{\mu_i})$  $\varepsilon_{it} \sim$ i.i.d.$(0, \sigma_{\varepsilon})$, $E[\mu_i \varepsilon_{it}] = 0.$

where $i = 1,..,100$ and $t = 1,..,20$

The variables $\mu_i$ and $\eta_t$ are, respectively, a country-specific effect and a time-specific effect represented by year dummies. The method of *fixed effects* is designed to control for the unobserved country-specific time-invariant effects in the data. However, two technical consequences of the within transformation are that it the method is not informative when we deal with variables with little time variation and that it does not address the problem of endogeneity. For these reasons, we choose the method of Blundell-Bond system GMM.

The Blundell-Bond system GMM methodology requires a set of conditions to be met. First, even if the unobserved country-specific effect is correlated with the regressors' levels, it is not correlated with their differences. The condition also means that the deviations of the initial values of the independent variables from their long-run values are not systematically related to the country-specific effects. These sets of conditions can be written as follows.

(i) Country-specific effects not correlated with first-differenced dependent or independent variables:

$$E[(CL_{i,t-1} - CL_{i,t-2})(\mu_i + \varepsilon_{it})] = 0$$

$$E[(y_{i,t-1} - y_{i,t-2})(\mu_i + \varepsilon_{it})] = 0$$

$$E[(f_{i,t-1}^{j} - f_{i,t-2}^{j})(\mu_i + \varepsilon_{it})] = 0$$

(ii) And the standard "no second order autocorrelation" in the error term conditions:

$E[CL_{i,t-s} (\varepsilon_{it} - \varepsilon_{i,t-1})] = 0$ for s≥2 and t=3,....T

$E[y_{i,t-s}(\varepsilon_{it} - \varepsilon_{i,t-1})] = 0$ for s≥2 and t=3,....T

$E[f_{i,t-s}^{j}(\varepsilon_{it} - \varepsilon_{i,t-1})] = 0$ for s≥2 and t=3,....T;

*Data.* The sources of data include: World Development indicators (WDI) and International Labor Organization (ILO) for Child labor rates; World Development indicators for income and demography data; International Country Risk Guide (ICRG) for Institutions quality data, where the variable of chose is Anticorruption; and OECD, UNCTAD, national statistical agencies web sites for sectoral FDI flows. Below are the definitions of the key variables.

- *Child labor* or Children 10-14 in the labor force is the share of that age group active in the labor force. Labor force comprises all people who meet the International Labor Organization's definition of the economically active population.

- *Income* is GDP per capita in constant 2005 prices.

- *Population density* is the people per sq km.

- *Anticorruption* is defined by ICRG as a measure of control of corruption within the political system. Such corruption distorts the economic and financial environment, reduces the efficiency of government and business Actual or potential corruption may take the form of excessive patronage, nepotism, job reservations, 'favor-for-favors', secret party funding, and suspiciously close ties between politics and business.

- *Sectoral FDI flows* are net inflows, accounting for the purchases and sales of domestic assets by foreigners in the corresponding year. They are based on the sectoral definitions in the International Standard Industrial Classification (ISIC), revision 3, divisions 15-37. Services correspond to ISIC divisions 50-99. Services include value added in wholesale and retail trade (including hotels and restaurants), transport, and government, financial, professional, and personal services such as education, health care, and real estate services.

- *UN Convention on the Rights of the Child* is dummy variable, reflecting whether the country has signed the Convention at the time when the child labor data was reported.

**III. Empirical Results and Analysis**

Due to the innovations in the data and methodology, it is not totally surprising that we find empirical results that run counter to earlier studies. The coefficient of the total FDI indicator was positive and not statistically significant, which runs counter to earlier findings of a negative and statistically significant link between FDI and child labor (Table 2). It is possible that this is due to the empirical methodology in this paper, i.e. the GMM estimator, which allows for a more robust treatment of the endogeneity of FDI and child labor. As noted earlier in section 2, a key drawback of earlier studies had to do with the failure to address this issue, leading to possibly biased estimates.

As expected, the disaggregated FDI indicators revealed varying results (see tables 3-6), depending on the sector and the countries (regions) examined. In the Latin America and Caribbean region, mining FDI is negatively associated with child labor, while child labor is positively linked to agricultural FDI in Europe and Central Asia. In South and East Asia, child labor increases with more FDI in the agriculture sector; however it decreases with increasing FDI in manufacturing and services sectors. Among the African countries in the sample, child labor is positively associated with more agricultural, mining and manufacturing FDI. Nevertheless, the link is negative when it comes to services FDI.

These context-varying empirical relationships are unsurprising, in light of the more recent FDI literature that stresses their varied impact on different sectors and on different groups in society (e.g. Lipsey and Sjöholm, 2005; Te Velde, 2003). Among the key channels through which the impact of FDI manifests, is the cooperation between affiliates and local firms. It is possible that these foreign investments contribute to economic and human development outcomes by requiring suppliers to meet higher standards of quality and also responsible business practices (i.e. corporate social responsibility or CSR in the business lingua). The latter may include more stringent monitoring and standards to promote child rights and prevent child labor. Nevertheless, it is well known that not all multinational corporations are able to promote these higher standards.

[INSERT TABLES 2-6 HERE…]

The abovementioned empirical results also suggest that each industry in each region/country may have distinct net income and substitution effects as far as child labor and

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FDI is concerned. A brief analysis of specific region/country cases may shed further light on these contexts.

## IV. Cases of Child Labor in Different Regions/Countries

The following cases help illustrate how investments and trade in different sectors of the economy in different regions/countries brings about widely differing results as far as their possible child labor impact. These cases help to establish possible explanations for the much broader aggregate empirical results in section 3. Essentially, the lack of transparency in supply chains leaves these prone to sourcing materials and products that are linked to child labor.

### *FDI and Child Labor in Agriculture in South and East Asia – Production of Hybrid Seeds in India*

The majority of children that are engaged in the worst forms of child labor in India work in agriculture (close to 70 percent), particularly in the production of rice and hybrid seeds (United States Department of Labor 2011, p.367).[10] This kind of work often involves heavy lifting and the exposure to pesticides that can be harmful to children's health. Children working in the production of hybrid seeds are also often found to work under forced conditions. Without a minimum age for employment, and a minimum age for hazardous work that does not comply with international standards, chances in India are high that even very young children may take up work that might be detrimental to their health (United States Department of Labor 2011).

Commodities that are produced using hybrid seeds in India include cotton and vegetables like tomato, sweet and hot pepper. Reported to be more labor- and capital-intensive than conventional cotton production, children are often considered a low-cost option for hybrid seed production (EJF 2007). While several studies point to large involvement of child labor in the production of cotton[11], children are also found to work in the production of several hybrid vegetable seeds, one of the fastest growing industries in India.

Analyzing the involvement of child labor in five important crops namely tomato, sweet and hot pepper, okra and *brinjal*[12] which are highly labor-intensive, a 2010 study (Venkateswarlu

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[10] It should be noted that this report also points out the hazardous work that is still being done by children in the manufacturing sector.

[11] See, for instance, EJF (2007) and Iram and Fatima (2008).

[12] Eggplant.

2010) informs that the recent increase in the demand for hybrid seeds has led to an increase of private hybrid seeds producing and selling companies. The top 10 companies control more than 80 percent of the vegetable seed market (Venkateswarlu 2010, p.6).[13] Out of 490 sample farms, in three states, namely Karnataka, Maharashtra and Gujarat, 58.5 percent produce seeds for multinational companies or their joint venture companies and 41.5 percent for Indian companies (Venkateswarlu 2010, p.4).[14]

Child labor involvement in multinational companies[15] that have started to address the problem of child labor on farms producing seed for their companies is lower compared to other seed companies that have not.[16] However, the situation on the farms supplying other multinational companies that have not yet initiated taking measures to combat child labor[17] is no different from Indian companies where child labor is often still prevalent in large numbers.[18] In this case, the implementation of higher standards in multinational companies' entire supply chains might be able to help reduce child labor in agriculture, more specifically, in the production of hybrid seeds.

## *FDI and Child Labor in Mining in Africa - Gold Mining in Kenya*[19]

In Kenya, the lack of sufficient formal job opportunities discourages children (and their parents) from investing in a school education. Considered a better alternative for making ends meet, the gold mines in western Kenya's Nyanza province attract children. Children there often work in actual extraction or in ancillary services such as selling food. The local Children's Welfare Office estimates that about 15,000 children are working in gold mines in the districts of Nyatike and Migori (UNOCHA 2012). The number is said to be even higher during weekends and school holidays.

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[13] The top 10 companies control more than 80 percent of the vegetable seed market are the multinational companies Syngenta, Nunhems, Bejo Sheetal, Seminis, Advanta and US Agri and the leading Indian companies Namdhari,

[14] The study is based on field visits that were conducted during the cross-pollination period, hence, the data of the work force composition in the study restricted to this activity only.

[15] Syngenta, Nunhems and Seminis, in particular.

[16] For instance, the proportion of child labor (below 14 years) to the total work force on hot pepper farms in Karnataka varied between zero percent to 16 percent on Syngenta, Nunhems and Seminis farms, which is low compared to 24 percent to 38 percent found on the farms of other companies (Venkateswarlu 2010, p.23).

[17] Bejo Sheetal, Advanta US Agri and East West Seeds (Venkateswarlu 2010).

[18] For instance, the proportion of children below 14 years of age to the total work force on hot pepper farms in Karnataka varied between 22 percent to 33 percent on Bejo Sheetal, Advanta and US Agri farms (Venkateswarlu 2010, p.23).

[19] This case study is based on UNOCHA (2012).

The work in gold mines also poses severe risks to children's health. For instance, with its high toxicity and detrimental impact on children's development the use of mercury for amalgamating small particles of gold is a source of great concern. According to ILO (2011), gold-mining areas hold a number of mercury-related health risks for children. First, mercury can penetrate through the child's skin when handling it. In addition, the child can inhale mercury fumes when it is burned off over the fire. Children can also ingest particles that remain on their hands when eating or when consuming contaminated food grown in the surrounding area. Available evidence suggests that respiratory infections in Migori are high—at 37 percent, Migori has the province's highest prevalence of TB, as well as high rates of respiratory tract infections (UNOCHA 2012). Dusty conditions in the mines may have also contributed to these health risks.

Furthermore, the engagement in work in gold mining is leading to food insecurity since many people abandon farm work for jobs in the gold mines. Agriculture officials of the district of Nyatike inform that at least 69 percent of the population is affected by food insecurity (UNOCHA 2012).

School drop-outs are reported to increase with the proximity of the school to a gold mine. Children working in the gold mines in the areas of Nyatike and Migori generally attend school for just two days a week while they work on the remaining days (i.e. school attendance in these areas is about 35 percent of the total school days) (UNOCHA 2012).

The Department of Mines and Geology Pure estimates the gold deposits in Migori at a value of around KSh64 billion (about US$764 million) (UNOCHA 2012). Despite the richness in resources, however, the local residents are poor and middlemen take advantage of the often low level of education of these people who tend to settle for any price they are given. Most gold mines are now run by small-scale companies and artisanal miners.

Lessons from this case suggest the importance of raising standards and requirements for foreign direct investments and a transparent supply chain could help decrease the exploitation of children in mining.


*FDI and Child Labor in Mining in Africa –Gold Mining in Mali*[20]

Mali is Africa's third largest gold producer. Mali's artisanal gold miners often rely on low-tech methods. Human Rights Watch (2011, p.6) informs that between 20,000 and 40,000 children are

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[20] This case study is based on HRW (2011).

working in Mali's artisanal gold mining sector. Children working in these mines are often exposed to extremely harsh and hazardous conditions; children as young as six years old are tasked with digging mining shafts, pull up heavy weights of ore, working underground, etc. The work with mercury, a toxic substance used to separate the gold from the ore, is detrimental to children's health.

Child labor in Mali involves migration by the children (children travel to the mines from other parts of Mali as well as from other neighboring countries) who often travel to the mines by themselves being exposed to risks like exploitation and abuse or robbery. While Mali has strong laws on child labor and on compulsory and free education, implementation and enforcement of these policies remain key challenges.

HRW (2011, p.75) notes that Mali's artisanally mined gold exports of around four metric tons per year amount to around US$230 million (at September 2011 prices). The major share of this gold is exported to Switzerland and the United Arab Emirates. Human Rights Watch (HRW 2011) tried to get in touch with a number of companies that have bought gold from Mali's artisanal mines to inform them about the findings of their report. One out of the three international companies (Kaloti Jewellery International, based in Dubai, a Belgian company, Tony Goetz, and the Swiss company Decafin) that Human Rights Watch was able to contact, Kaloti, ceased to buy gold from Mali's artisanal mines after learning about the report's findings.

Large and non-transparent supply chains with many actors benefiting on the way seem to be at the core of continued child labor. The gold money travels a long way since artisanal miners usually sell the gold to local traders who supply middle men and trading houses in Bamako, the capital of Mali. Human Rights Watch (HRW 2011) reports that most of the Malian traders it interviewed expressed little concern about child labor and health risks from mercury use.

The above description might reflect the reality in many more gold exporting countries in West Africa's copper belt. Human Rights Watch (HRW 2011) reports that child labor in artisanal gold mining is particularly common in West Africa's gold belt, which comprises Burkina Faso, Côte d'Ivoire, Ghana, Guinea, Mali, Niger, Nigeria, and Senegal.

*FDI and Child Labor in Agriculture in Africa– Cocoa Production in West Africa (Ivory Coast and Ghana)*

The West African cocoa belt is an area where companies like Nestlé buy most of their cocoa. Long and complex supply chains make it difficult for large companies to trace the supply back to the people that harvest the produce they buy Hawksley (2011).

While the cocoa industry signed an international protocol[21] in 2001 banning dangerous child labor in cocoa production and promising resources for combating it, child labor is far from being history in West Africa.

A US government-backed report by Tulane University (2011, p.7) shows that over 50 percent of agricultural households' children in the cocoa belt in Ivory Coast and Ghana work in agriculture, with 25 to 50 percent working in cocoa. In the observed period of the survey, a projected total of 819 921 children in Ivory Coast and 997 357 children in Ghana, in total more than 1.8 million, worked in cocoa-related activities. Frequently involved in hazardous work like child trafficking, forced labor etc., about 5 percent of children in agricultural households in the cocoa-belt in Ivory Coast and more than 10 percent in Ghana are paid for their work (Tulane University 2011, p.7). The preceding implies the urgent need of large multinational companies to comply with commitments and to meticulously trace their supply chains to avoid the use of child labor in their production chains.

*FDI and Child Labor in Services and Manufacturing – Services and Manufacturing in Vietnam[22]*

Child labor of children under age 15 is still widespread in Vietnam, despite the fact of it being illegal by law. UNICEF (2011, table 9, p.123) estimates that around 16 percent of 5 to 14 year old children were working in Vietnam between 2000 and 2009. This rate was above the average rate of child labor for East Asia and the Pacific, which stood at 11 percent in the same period.

A study published by the United Nations (Mashayekhi, Olarreaga and Porto 2011) analyzed the impact of FDI in the services and manufacturing sectors on child labor in Vietnam. The statistics in the study refer to children between 10-14 years of age who are not allowed to

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[21] Commonly called the "Harkin-Engel Protocol" the official name of the protocol is "Protocol for the Growing and Processing of Cocoa Beans and Their Derivative Products In a Manner that Complies with ILO Convention 182 Concerning the Prohibition and Immediate Action for the Elimination of the Worst Forms of Child Labor" For more information, see www.cocoainitiative.org/images/stories/pdf/harkin%20engel%20protocol.pdf

[22] This case study is based on Mashayekhi, Olarreaga and Porto (2011).

work under Vietnamese law. [23] Based on repeated household surveys and enterprise surveys with information for the years 2002, 2004 and 2006,[24] the study found that FDI in the services and in the manufacturing sectors is negatively correlated with child labor, i.e. that an increase in the entry of foreign direct investment is associated with a reduction in children's labor supply in both sectors.

Mashayekhi, Olarreaga and Porto (2011) find that the marginal effect of FDI on the reduction of child labor in the services sector is larger than in the manufacturing sector, demonstrating the great potential of FDI for an even stronger reduction of child labor in the services sector. However, to date, manufacturing FDI in Vietnam is much larger than services FDI and it has so far had a greater effect than services FDI. The study also reveals that services FDI contributes to an increase in school enrolment rates of children aged 6 to 19 years. The authors link this increase in school enrolment to the fact that FDI in the services sector tends to require more educated labor. This suggests that FDI that is channeled to sectors that require a higher educated labor force might provide opportunities for children—not only in terms of reduced child labor but also in terms of investment in human capital.

### FDI and Child Labor in Agriculture in Europe and Central Asia – Tobacco Farming in Kazakhstan[25]

Tobacco farming in Kazakhstan attracts Kazakhs and migrant workers often from neighboring Kyrgyzstan, for seasonal work (HRW 2010). Kazakh farm owners employ the workers. Many of the farm owners in turn contract with and supply tobacco leaf to international tobacco companies.

One of the worst existing forms of child labor worldwide, tobacco farming not only exposes children to physically hard work, long working hours under high heat and sun during harvest times but also to hazardous pesticides and other health risks associated with tobacco plant harvest (e.g. when harvesting wet tobacco leaves, nicotine is absorbed through the skin) (ILO 2011). These health hazards are particularly dangerous for children whose bodies are still

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[23] According to Vietnamese law, employment of children younger than 15 years of age is illegal. However, some exceptions apply for 12 and 15 year olds as defined by the Vietnamese government (Mashayekhi, Olarreaga and Porto 2011).

[24] The two data sources are the annual enterprise survey of the General Statistical Office of Vietnam and the Vietnam Household Living Standard Surveys (VHLSS) (Mashayekhi, Olarreaga and Porto 2011).

[25] This case study is based on HRW (2010).

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developing and hence more vulnerable. Poor access to water, sanitation and nutrition are also common factors for children in this field (HRW 2010).

Migrant children are reported to miss at least two to three months of school in Kyrgyzstan in order to accompany their families to Kazakhstan for work (HRW 2010). In the absence of permanent residence in Kazakhstan, many migrant worker families are prohibited to enroll their children in school in Kazakhstan.

An ILO (2006, p.4) study on child labor in agriculture informs that with a share of 70 percent of the domestic tobacco market, Philip Morris Kazakhstan (PMK), a subsidiary to Philip Morris International (PMI), is the leading tobacco producer in Kazakhstan. The company is an important buyer and employer for local tobacco farmers in Kazakhstan.

ILO (2006, p.viii) found that child labor in tobacco farming in Kazakhstan was prevalent with both Kazakh and migrant children aged 5-17. While interviewees observed a reduction in child labor in tobacco farming between 1994 and 2004 which might be linked to PMK's policy prohibiting child labor ILO (ILO 2006, p.10) reports that these policies were violated in many cases. A Human Rights Watch (HRW 2010, p.3) study based on testimony of 68 migrant tobacco farm workers in 2009 and early 2010, reported 72 cases of children, one as young as 10 years old, working in tobacco farming in 2009.

In response to the HRW study, PMK, increased protections for migrant workers on tobacco farms by requiring written contracts to ensure migrant workers receive regular payments and other protections (HRW 2012, Verité 2011). PMI and PMK also promised improvements in working conditions, expanding training with regard to labor rights and hazards of child labor for workers, farmers, and PMK employees and to collaborate with the government for improving access to schools for migrant workers' children to prevent child labor.

Despite PMI and PMK's efforts of having implemented programs designed to detect and prevent child labor in tobacco in Kazakhstan, child labor remains a serious concern in tobacco farming (HRW 2012). HRW (2012) informs that the Kazakh government continues to hinder migrant workers' children from registering in schools.

This case study underscores how child labor in certain agricultural activities, like FDI heavy tobacco production, remains a serious concern. Migration for seasonal agricultural work is a common phenomenon in much of Europe and Central Asia. Children are often forced to leave their homes and work in the fields. While it certainly shows that multinational companies have to

improve the working conditions all along their production chain, it also demonstrates that the collaboration of the host government is crucial.

### *FDI and Child Labor in Manufacturing in South and East Asia – Carpet Making in Nepal and India*

The use of child labor (including bonded child labor) in the handmade carpet industry is still subsistent in a number of countries, including Nepal (Office of the United States Trade Representative 2012). Children's tasks related to the production of carpets include wool dying and spinning, thread rolling, carpet weaving, and carpet washing. Children working in carpet making are exposed to damaging chemicals, and harmful dust, often working long hours in unsafe conditions (United States Department of Labor 2011).

While the Nepal Labor Force Survey 2008 finds that overall 1.6 million children aged 5-17, mostly girls, in Nepal are engaged in child labor (ILO and CBS of Nepal 2012, p.xi), it also reports that child labor has declined in some sectors, one of them being carpet making (ILO Country Office for Nepal 2012).

The Government of Nepal is reportedly taking action to fight child labor, including bonded child labor (Office of the United States Trade Representative 2012) but much remains to be done, including strengthening the enforcement of existing laws.[26] Children under age 16 are by law prohibited from engaging in hazardous work (United States Department of Labor 2011) but evidence shows that compliance with this law is lacking (ILO and CBS of Nepal 2012).

FDI in Nepal is highly concentrated in the manufacturing sector within which the textile and garment industries are strong recipients (Khanal and Shrestha 2008). Aimed at preventing an international ban on carpets that were associated with child labor, in the early 1990s, NGOs (non-governmental organizations), the government and the private sector joined forces to create a child labor free certification for carpets produced in Nepal.[27] A study on the impact of social labeling by NGOs on the incidence of child labor in Nepal finds that the probability of child labor is negatively correlated with the implementation of a labeling program by the carpet

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[26] While the Government of Nepal has ratified relevant conventions to regulate age standards for children's entry to the labor force (including ILO Conventions 138 and 182) more efforts are needed to address the issue (ILO and CBS of Nepal (2012).

[27] For a review of social labeling and related initiatives to decrease child labor in Nepal's carpet industry, please refer to World Education (2009).

industry (Chakrabarty, Grote and Lüchters (2006). It is also found to be positively correlated with children's school attendance (Chakrabarty, Grote and Lüchters (2006).

Similarly, studying the impact of the labeling of child labor free carpets on the welfare of children and their families in India and Nepal, Chakrabarty and Grote (2009) find a reduction of child labor for relatively better off households (those living above the subsistence level) but no significant impact for those living below this level.

While more research is needed, it can be assumed that fair and ethical trade initiatives might have contributed to a decrease in child labor in Nepal's and India's handmade carpet industry. The decrease in production in handmade carpets might also have contributed to the decline in the use of child labor in India's manufacturing sector (Venkateswarlu, Ramakrishna and Moid 2006). Nepal's and India's cases demonstrates that the relationship between FDI and child labor might be more complex than it appears at first sight.


**V. Conclusion**

All of the foregoing suggests that the combined income and substitution effects of FDI appear to vary across sectors and countries (or regions). These are important nuances that earlier studies failed to capture in assessing the link between FDI and child labor. Moreover, the coefficient of the variable indicating that the country had signed onto the UN Convention on the Rights of the Child (CRC) was positive and statistically significant for the model specification analyzing total FDI, manufacturing FDI and services FDI. With the exception of mining FDI among the African countries in the sample, all other model specifications for other regions appeared to show either a positive link or a coefficient that is not statistically different from zero.

These results run counter to the intended effect of signing onto the CRC! Possible explanations could be developed based on earlier work by Basu (1999;2001;2005) who wrote about possible unintended consequences from a ban on child labor, including possibly *increasing* it. Essentially, stronger laws and policies against child labor could lead to multiple equilibria in the labor market. A sudden withdrawal of children from the labor force could increase the wage rates in different industries where adult and child labor are somewhat substitutable. Since the impact across industries would differ—depending on the degree of substitutability of adult and child labor, as well as other factors such as the income effect through higher adult wages—it is possible to see strong pecuniary incentives for children to work in some sectors. Hence, the net

impact would depend on the income and substitution effects once again; and a ban on child labor will not necessarily lead to a reduction in child labor.

Finally, as the cases in this paper help illustrate, supplier arrangements could be an important avenue for mitigating child labor, as MNCs may help elevate the standards to which local businesses are held.

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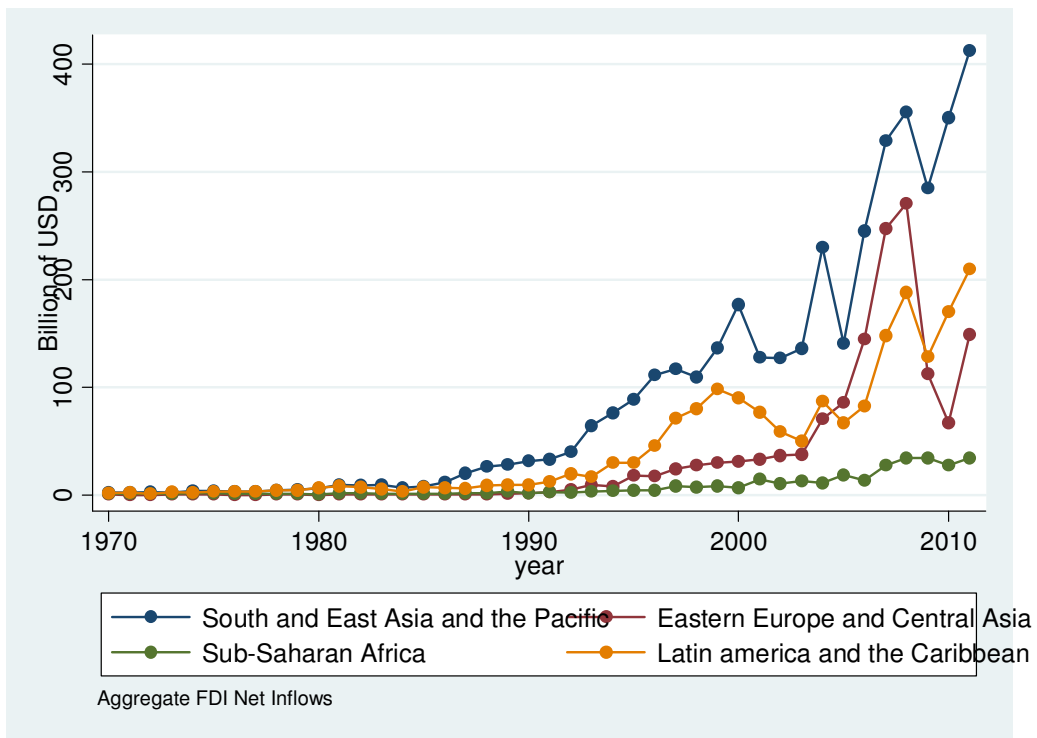
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**Figure 1**. Child Labor Rates by Region (1960-2003)



Labor force, children 10-14 (% of age group)
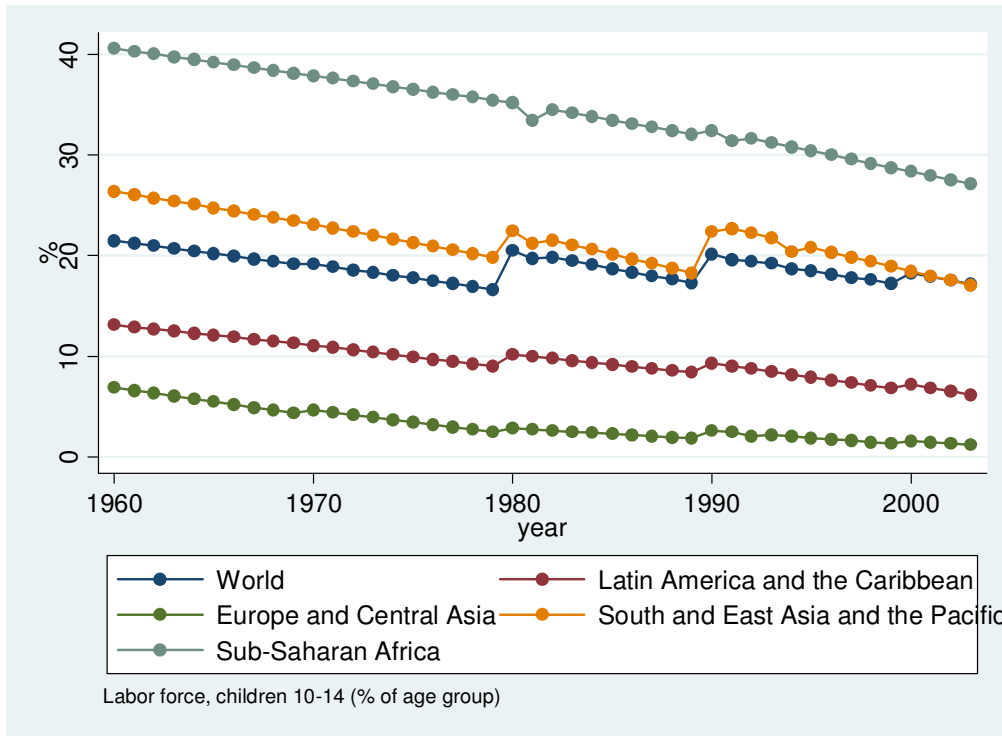
Fig. 2.Aggregate FDI Inflows by regions



Aggregate FDI Net Inflows

# Table 1. Industrial Composition of Economically Active Children

| Country | Age group | Agr. Forestry Fishing | Mining & Quarry | Manufact. | Construct. | Hotel Rest. Trade | Transport. Storage, Comm. | Social & Community Service | Private House | Other |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Industry: | | | | | | | | |
| Bangladesh | 5-17 | 16.4 | 0.2 | 14.4 | 3.1 | 16.4 | 4.5 | 4.4 | | 0.4 |
| Cambodia | 5-17 | 16.0 | 0.5 | 6.3 | 1.0 | 16.0 | 0.7 | 2.3 | | 0.4 |
| Costa Rica | 5-17 | 26.5 | | 9.0 | 7.0 | 26.5 | | | 5.9 | 8.0 |
| Costa Rica | 5-14 | 24.4 | | 7.3 | 4.8 | 24.4 | | | 2.8 | 4.1 |
| El Salv. | 5-17 | 23.0 | 0.3 | 16.0 | 2.4 | 23.0 | 2.1 | 2.1 | 4.8 | 2.2 |
| Ethiopia | 5-9 | 1.0 | | 0.4 | 0.1 | 1.0 | 0.0 | 0.3 | 0.3 | 0.2 |
| Ethiopia | 10-14 | 4.7 | | 2.0 | 0.3 | 4.7 | 0.1 | 1.0 | 1.0 | 0.3 |
| Ethiopia | 15-17 | 9.6 | | 4.3 | 0.7 | 9.6 | 0.2 | 2.0 | 2.0 | 0.5 |
| Ghana | 5-9 | 20.9 | 0.4 | 4.3 | | 20.9 | 0.3 | 0.5 | 0.3 | 0.3 |
| Ghana | 10-14 | 28.3 | 0.5 | 5.9 | | 28.3 | 0.2 | 0.3 | 0.3 | 0.2 |
| Ghana | 15-17 | 26.1 | 0.5 | 8.7 | | 26.1 | 0.9 | 1.5 | 1.0 | 1.2 |
| Honduras | 5-9 | 35.5 | 0.0 | 8.5 | 1.5 | 35.5 | 0.2 | 0.0 | | 0.0 |
| Honduras | 10-14 | 27.3 | 0.0 | 6.9 | 1.4 | 27.3 | 0.6 | 3.9 | | 0.1 |
| Honduras | 15-17 | 21.0 | 0.3 | 9.3 | 4.5 | 21.0 | 1.4 | 9.5 | | 0.4 |
| Kenya | 5-9 | 0.8 | 0.5 | 1.1 | 0.0 | 0.8 | 0.3 | 5.9 | 2.4 | 0.0 |
| Kenya | 10-14 | 2.6 | 0.5 | 1.8 | 0.4 | 2.6 | 0.1 | 6.1 | 8.8 | 0.7 |
| Kenya | 15-17 | 3.5 | 0.5 | 1.4 | 0.5 | 3.5 | 1.3 | 4.7 | 16.7 | 0.6 |
| Namibia | 6-10 | 0.1 | 0.0 | 0.1 | 0.0 | 0.1 | 0.9 | 5.2 | | 13.0 |
| Namibia | 11-15 | 0.4 | 0.1 | 0.7 | 0.0 | 0.4 | 0.8 | 4.8 | | 14.0 |
| Namibia | 16-18 | 4.9 | 0.1 | 1.3 | 0.7 | 4.9 | 1.5 | 7.5 | | 12.1 |
| Nicaragua | 5-9 | 24.8 | | 8.4 | | 24.8 | | 4.3 | | 2.1 |
| Nicaragua | 10-14 | 23.0 | | 9.7 | | 23.0 | | 7.0 | | 2.0 |
| Nicaragua | 15-17 | 16.5 | | 13.1 | | 16.5 | | 11.4 | | 7.5 |
| Pakistan | 5-14 | 8.7 | | 10.8 | 1.8 | 8.7 | 3.7 | 8.0 | | 0.0 |
| Panama | 5-17 | 18.9 | 0.2 | 3.5 | 3.1 | 18.9 | 3.7 | 11.1 | 7.8 | 2.4 |
| Philippines | 5-9 | 24.2 | 0.0 | 3.6 | 0.0 | 24.2 | 2.0 | 2.0 | 3.6 | 3.6 |
| Philippines | 10-14 | 22.1 | 0.5 | 4.2 | 0.5 | 22.1 | 1.3 | 1.4 | 3.3 | 2.6 |
| Philippines | 15-17 | 19.4 | 0.5 | 5.3 | 2.7 | 19.4 | 3.9 | 2.2 | 8.6 | 5.1 |
| Philippines | 5-17 | 21.0 | 0.4 | 4.6 | 1.4 | 21.0 | 2.5 | 1.8 | 5.7 | 3.7 |
| Sri Lanka | 5-17 | 10.8 | 1.3 | 14.8 | 2.0 | 10.8 | 0.9 | 5.4 | | 1.1 |
| Tanzania | 5-17 | 2.2 | 0.1 | 0.3 | 0.0 | 2.2 | 0.0 | | 17.4 | 0.0 |
| Tanzania | 5-9 | 0.8 | 0.0 | 0.1 | 0.0 | 0.8 | | | 27.8 | 0.0 |
| Tanzania | 10-14 | 1.9 | 0.0 | 0.2 | 0.0 | 1.9 | 0.0 | | 16.8 | 0.0 |
| Tanzania | 15-17 | 4.2 | 0.2 | 0.7 | 0.1 | 4.2 | 0.1 | | 7.8 | 0.0 |
| Turkey | 6-17 | 10.2 | * | 21.8* | * | 10.2 | | 10.4 | | 0.0 |
| Ukraine | 5-17 | 21.0 | ** | 8** | 9.0 | 21.0 | | 19.0 | | 0.0 |
| Zambia | 5-9 | 2.2 | 0.0 | 0.2 | 0.2 | 2.2 | 0.0 | | 3.8 | 1.5 |
| Zambia | 10-14 | 3.4 | 0.0 | 0.4 | 0.1 | 3.4 | 0.0 | | 2.1 | 0.7 |
| Zambia | 15-17 | 11.2 | 0.1 | 2.0 | 0.4 | 11.2 | 1.0 | | 8.7 | 1.4 |
| Zimbabwe | 5-17 | 2.1 | 0.3 | 1.9 | 1.7 | 2.1 | 0.2 | | 10.8 | 0.6 |

Source: Edmonds (2008, p.3630) drawing on various statistical sources ranging from the late 1990s to early 2000s.

**Table 2. Regression Results for All Countries in the Sample (up to total 88)**

| VARIABLES | Total FDI/GDP | Agricultural FDI/GDP | Mining FDI/DP | Manufacturing FDI/GDP | Services FDI/GDP |
|---|---|---|---|---|---|
| Log of lagged working children 10-14 | 1.029*** (49.28) | 1.059*** (92.16) | 1.065*** (80.28) | 1.056*** (46.74) | 1.055*** (62.19) |
| GDP per capita in 2000 USD | 4.77e-06 (0.91) | .00001*** (3.47) | .00001*** (3.18) | 9.25e-06 (1.51) | 9.55e-06* (1.91) |
| FDI/GDP variable | .037 (1.09) | 2.199 (1.61) | -1.523 (-1.64) | -1.033 (-0.78) | -.242 (-0.45) |
| Control of corruption | -.010* (-1.87) | -.004 (-0.72) | -.010 (-1.01) | -.006 (-0.69) | -.007 (-0.85) |
| Log of population density | -.004 (-0.70) | -.019** (-2.29) | -.015* (-1.74) | -.015** (-2.12) | -.012 (-1.62) |
| Child rights convention dummy | .080* (1.78) | .031 (0.94) | .030 (1.17) | .064* (1.79) | .064* (1.81) |
| Constant | -.208** (-1.96) | -.091 (-1.52) | -.184*** (-2.62) | -.202 (-2.67) | -.208** (-2.46) |
| Observations | 1470 | 293 | 333 | 407 | 405 |
| Countries | 88 | 37 | 38 | 43 | 43 |
| AR(2) test | 0.959 | 0.555 | 0.552 | 0.880 | 0.754 |

**Table 3. Regression Results for Latin America and Caribbean Countries (up to total 23)**

| VARIABLES | Total FDI/GDP | Agricultural FDI/GDP | Mining FDI/DP | Manufacturing FDI/GDP | Services FDI/GDP |
|---|---|---|---|---|---|
| Log of lagged working children 10-14 | 1.038*** (70.53) | 1.057*** (68.09) | 1.062*** (77.81) | 1.064*** (81.99) | 1.067*** (78.35) |
| GDP per capita in 2000 USD | 9.49e-07 (0.14) | 4.76e-06 (0.45) | -9.27e-07 (-0.13) | 2.21e-06 (0.33) | 9.19e-07 (0.13) |
| FDI/GDP variable | -.371*** (-2.87) | 1.819 (0.65) | -1.997** (-2.01) | -2.009 (-1.38) | -.077 (-0.13) |
| Control of corruption | .007 (1.03) | .010 (1.10) | .009 (0.81) | .009 (1.15) | .003 (0.38) |
| Log of population density | -.008 (-1.00) | -.035 (-1.59) | -.024* (-1.86) | -.013 (-1.29) | -.013 (-1.12) |
| Child rights convention dummy | -.041 (-1.43) | .172*** (2.92) | .043 (0.38) | .045*** (2.88) | .033*** (2.71) |
| Constant | -.132 (-1.16) | -.145 (-1.30) | -.189* (-1.91) | -.247** (-2.48) | -.228** (-2.56) |
| Observations | 411 | 144 | 167 | 207 | 207 |
| Countries | 23 | 14 | 15 | 17 | 17 |
| AR(2) test | 0.590 | 0.392 | 0.679 | 0.579 | 0.634 |

**Table 4. Regression Results for Europe and Central Asia Countries (up to total 10)**

| VARIABLES | Total FDI/GDP | Agricultural FDI/GDP | Mining FDI/DP | Manufacturing FDI/GDP | Services FDI/GDP |
|---|---|---|---|---|---|
| Log of lagged working children 10-14 | 1.054*** (185.93) | 1.174*** (412.00) | 1.157*** (617.07) | 1.156*** (66.26) | 1.146*** (178.96) |
| GDP per capita in 2000 USD | 8.45e-06*** (3.23) | .00002*** (31.45) | .00002*** (73.66) | .00003*** (8.29) | .00003*** (15.39) |
| FDI/GDP variable | -.730 (-1.31) | 107.221*** (10.42) | -4.485 (-1.31) | 2.333 (0.68) | -.350 (-1.01) |
| Control of corruption | -.007 (-0.48) | .021*** (5.23) | .023*** (15.78) | .022*** (2.82) | .023*** (3.72) |
| Log of population density | -.012** (-2.27) | .242*** (11.61) | .238*** (29.14) | .034 (1.11) | .036 (1.19) |
| Child rights convention dummy | .105** (2.01) | .019*** (7.10) | .264*** (52.84) | .072*** (8.90) | .072*** (9.81) |
| Constant | -.165*** (-2.84) | -1.682*** (-15.88) | -1.862*** (-45.69) | -.836*** (-5.81) | -.804*** (-6.25) |
| Observations | 123 | 41 | 33 | 62 | 62 |
| Countries | 10 | 5 | 5 | 6 | 6 |
| AR(2) test | 0.614 | 0.138 | 0.176 | 0.401 | 0.175 |

**Table 5. Regression Results for South and East Asia Countries (up to total 12)**

| VARIABLES | Total FDI/GDP | Agricultural FDI/GDP | Mining FDI/DP | Manufacturing FDI/GDP | Services FDI/GDP |
|---|---|---|---|---|---|
| Log of lagged working children 10-14 | 1.036*** | 1.049*** | 1.044*** | 1.049*** | 1.052*** |
| | (72.27) | (70.34) | (106.62) | (126.86) | (137.76) |
| | | | -3.21e-06 | | |
| GDP per capita in 2000 USD | -.00001 | -.00001 | (-0.39) | -8.17e-06 | -6.54e-06 |
| | (-0.81) | (-1.23) | | (-1.08) | (-0.94) |
| FDI/GDP variable | -.222 | 4.180** | -.260 | -.833** | -1.487* |
| | (-0.85) | (2.49) | (-0.13) | (-2.06) | (-1.85) |
| Control of corruption | .004 | .007 | .0005 | .011* | .012* |
| | (0.62) | (0.74) | (0.14) | (1.88) | (2.33) |
| Log of population density | -.004 | -.011 | -.017 | -.023** | -.019** |
| | (-0.95) | (-0.38) | (-1.34) | (-2.23) | (-2.02) |
| Child rights convention dummy | -.020* | .031** | .023** | .014 | .011* |
| | (-1.95) | (2.30) | (2.09) | (1.33) | (1.65) |
| Constant | -.021 | -.152 | -.018 | -.007 | -.002 |
| | (-0.33) | (-0.78) | (-0.18) | (-0.11) | (-0.04) |
| Observations | 220 | 71 | 89 | 89 | 89 |
| Countries | 12 | 9 | 10 | 10 | 10 |
| AR(2) test | 0.431 | 0.323 | 0.657 | 0.109 | 0.284 |

**Table 6. Regression Results for African Countries (up to total 31)**

| VARIABLES | Total FDI/GDP | Agricultural FDI/GDP | Mining FDI/DP | Manufacturing FDI/GDP | Services FDI/GDP |
|---|---|---|---|---|---|
| Log of lagged working children 10-14 | 1.065*** (49.08) | 1.026*** (97.49) | .991*** (794.53) | 1.012*** (202.81) | 1.009*** (187.81) |
| GDP per capita in 2000 USD | 6.06e-07 (0.10) | .00001 (0.44) | -.00005*** (-11.93) | 2.18e-06 (0.13) | .00002* (1.85) |
| FDI/GDP variable | .024 (1.29) | .615** (2.36) | .023** (2.44) | .184*** (3.39) | -.306*** (-3.47) |
| Control of corruption | -.001 (-0.76) | .002 (0.47) | -.001 (-1.19) | -.0007 (-0.35) | -.0003 (-0.15) |
| Log of population density | -.0006 (-0.13) | -.002 (-1.34) | -.001** (-2.20) | -.002 (-1.33) | -.002 (-1.05) |
| Child rights convention dummy | -.002 (-0.36) | | -.010*** (-13.60) | | |
| Constant | -.226 (-2.59) | -.104** (-2.40) | .050*** (7.12) | -.051*** (-3.80) | -.041*** (-3.14) |
| Observations | 570 | 24 | 28 | 31 | 30 |
| Countries | 31 | 6 | 5 | 6 | 6 |
| AR(2) test | 0.256 | 0.996 | 0.924 | 0.310 | 0.029 |

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