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Child Labor and International Trade

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Global Trade and Child Labor: A Literature Review

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Child labor is an issue which has been raised in many discussions concerning international trade in economics. Critical to the evaluation of any policy, accord, treaty, law, regulation or otherwise that would attempt to address how to deal with child labor, would be to see how altering child labor conditions will ultimately impact four factors of production capital (K), labor (L), land (T), and entrepreneurship (E). Child labor is usually considered the equivalent of unskilled labor. Therefore any policies attempting to restrict or eliminate child labor ultimately affect the overall supply of unskilled labor, and thus factor prices. (Doepke & Krueger, 2008). Moreover, households whose factors of production are complementary to child labor stand to lose from child labor restrictions, because they will see the returns to their factor decline. By contrast, those households whose supply factors are substitutable with child labor stand to gain, because the adult unskilled workers will see an increase in their wages.

Advocates of laissez-faire claim that without market restrictions, the equilibrium reached will be economically and thus Pareto efficient under the first fundamental welfare theorem; by contrast, these same advocates contend that an equilibrium allocation under a child-labor ban results in a worsening to welfare. Typically coupled with a ban will be a child education law, which will increase government spending, yet not be welfare improving relative to the laissez-faire equilibrium and which will distort the market. In this sense, mandatory education results in higher human capital and lower wage inequality. This has the odd effect of increasing the wages of unskilled adult workers (who have less competition from children), and decreasing the wages of skilled workers (who will receive increased competition from children who graduate educated).

The household of parents containing unskilled workers would want to send their children to school, so that education can eventually bring them increased wages. Yet the children more than likely could end up seeing less pay with increased competition from one another. When droves of educated children are unleashed on the work force, this will result in a supply that could exceed the demand for such workers.[1] Paradoxically, ceteris paribus, the children could come to view education as a negative, and some would rather intentionally choose to go uneducated, so as to remain in an unskilled state where they face less competition. Thus free market advocates argue that forcing children out of factories and into schools may actually hurt them. Unless the families of the children banned from participating in child labor are reimbursed for the income loss, such a policy can worsen conditions, and impoverish those families further. Therefore, however noble an effort might be to eradicate child labor, the negative effects may defeat the underlying purpose.

I have selected two journal articles to review the literature on the subject of child labor in international trade.[2] What follows in turn, is a summary report of each. Four other articles were considered but not used for the two summary reports. I include reference to them at the end.

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[1] Obviously this would depend on which fields the children are studying. If the children study subjects in fields low in demand, which already have too many educated workers, then this oversupply will result in declining wages. If the children study high in demand fields that cannot attract enough educated workers (e.g. medicine), then while the wages may decline somewhat, they will still remain competitive until the supply begins to exceed the demand.

[2] This is in compliance with the requirements of the syllabus. The syllabus requested either 6 reading summary reports from newspapers or magazines, or 2 reading summary reports from peer reviewed journals related to international trade.

Summary Report 1: Trade Openness, Foreign Direct Investment and Child Labor

Neumayer and De Soysa (2005) take on the assumption held by skeptics of free trade that as trade barriers are being lifted around the world, that incidences of child labor are bound to increase in frequency and number. They rely on an estimate that some 211 million children between the ages of 10 and 14 are engaged in some type of work. Many people are opposed to the exploitation of children on moral and ethical grounds. Others are opposed because it results in a loss of jobs that would go to adults, or it negatively affects the wages of unskilled adult workers. Neumayer and De Soysa conduct their research using the employment of 10-14 year old children as a dependent variable, but also add three other dependent variables in an attempt to test the robustness of their results – the number of economic sectors, the primary school nonattendance rate, and the secondary school nonattendance rate. Moreover, rather than looking at openness of trade alone, they also examine Foreign Direct Investment (FDI). The article is divided into seven sections.

In Section 2, the authors look at the primary determinants of child labor. Parents are categorized as altruistic (not wanting their children to work), and selfish (wanting their children to work). However even altruistic parents who fall upon hard times during short-run economic downturns, may give in to the survival need to have their children work to effect consumption smoothing.[3] Presumably, such altruistic parents would remove their children from the work force when conditions improve, but if conditions never improve, the employment may become permanent. By contrast using a risk return analysis, selfish parents will send their children to

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[3] By consumption smoothing, I mean that economic concept in which economic agents want to have a stable path of consumption, an idea of Milton Friedman's which Robert Hall formalized in an paper published in 1978 titled "Stochastic Implications of the Life Cycle-Permanent Income Hypothesis: Theory and Evidence". If we consider E_t to be a mathematical expectation conditioned on all information available about t, and c_t to be the consumption in time period t, then $E_t[c_t] = c_{t+1}$.

work if the payoff to the parents is greater than the uncertain return in the future of sending their

kids to school. An additional factor is that selfish parents can control the income of their kids

who work as child labor now, but may not have control over the income of the children when

they work later after having undergone an education.

An additional element to consider is whether financing for education is public or private.

Where it is public, then poor parents can send their kids to school without worrying as much

about the cost. Additionally one must consider the area of the household. Families in poorer

rural areas, may not have easy geographic access to a secondary school, and may view it

pointless to enroll their child in the primary school if the options of continuing further are

foreclosed. Additionally parents who live in urban areas and who are educated are far more

likely to ensure that their children receive the same level of education that they have had. Also

there is some misperception that children may be better physical workers due to better eyesight

and more nimble fingers, but there is no demonstrated correlation at this time that validates this

perception. Lastly, where there are little or no socioeconomic incentives for a country to end

child labor, regulations against it will rarely be enforced.

Section 3 deals with the effect of globalization on the incidence of child labor. When a

country is abundant in unskilled labor, then in the face of increasing trade freedom, relative rates

of return to unskilled labor will increase, and the return to education will decrease. A

substitution effect will increase the supply of child labor. Children need not work in the export

sector for the increase of trade liberalization to have an effect; as long as there is the opportunity

for unskilled work in a formal or informal sector which supplies inputs to the export sector then

the incidence of child labor will increase. For example, multinational corporations (MNCs) like

Reebok, Adidas and Nike, have taken advantage of the opportunity to subcontract to operations

that employ children in the past.

In addition to the substitution effect, there is an income effect. Being that there are

multiple equilibria in the labor markets in impoverished nations, when we switch from one

equilibrium to another, we may move from a scenario of survival where parents must send their

children to work, to a scenario where parents see no need to continue to put their children to

work, and can enjoy the normal goods of child leisure and education. In the long run, the

country may move from the low-skilled labor-abundant production sector to a higher-skilled

capital-intensive production sector. Thus to reach a higher level of economic development, and

to engage long-run competitiveness, it becomes wise for households in a developing nation to

invest in education.

Also with increased trade, came a loosening of credit requirements for a loan, and access

to lower interest rates, which makes it possible to facilitate the financing of higher education, and

thus can reduce incidences of resorting to child labor. Studies not do find high incidences of FDI

in nations too abundant with cheap unskilled labor. Quite the opposite: the countries that attract

more instances of FDI are typically undergoing economic growth, and as a result, labor-abundant

production is less attractive than capital-intensive production. Market size, market growth,

political stability, infrastructure, and higher labor skills are actually more important than simply

achieving lower wages. Moreover, it is becoming increasingly difficult to avoid the effects of

anti-labor policies and regulations, and thus MNCs like Nike and Reebok trying to save their

brand names, have adopted voluntary policies of their own banning and limiting child labor

using in their organizations as well as in the ranks of their subcontractors. Thus globalization

can lead to lower incidences of child labor.

In Section 4, the authors review existing quantitative studies. They point to a study by Eric Edwards and Nina Pavcnik, where in Vietnam a 30% price increase in rice leads to a 9% decrease in the use of child labor. "The results show that even though the price increase has rendered child labor in rice farming more attractive via raising its rate of return, the income effect led to an even stronger reduction of child labor" (Neumayer & De Soysa, 2005, p.47). In a 1992 paper by Cynthia Drenovsky, Drenovsky found that looking at a commodity concentration in exports, and an index of the presence of 70 MNCs during the 1970s, that there was no correlation found between these items and labor force participation of 10-14 year old children. In a 2001 article by Robert Shelburne, Shelburne found that the trade ratio[4] was negatively associated with child labor incidence. Other authors are discussed who also found similar negative relationships between child labor and the trade ratio.

In Section 5, research design is explained with economic activity of 10-14 year old children used from 117 countries as one dependent variable. The rates of nonattendance in primary and second schools are used as a second and third dependent variable. The fourth dependent variable measures whether 10-14 year old children work from anywhere from 0 sectors to 7 sectors;[5] the CLCOUNT variable only counts a sector that does employ minors of

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[4] Our terms of trade are represented by the equation:
$Terms\ of\ trade = Export\ price\ index/Import\ price\ index \times 100$. If the amount exceeds 100, then the economy is healthy. If the amount is less than 100, then the economy is not thriving, and more money escapes the economy than comes into the economy.

[5] Taken from a wide variety of textual sources from the US State Department's Country Reports on Human Rights Practices and various ILO documents, the sectors are "(i) textiles, apparel, rugs, leather goods (including tanning), or footwear, (ii) other manufacture or craft production, including putting–out and home production of crafts for market, (iii) mining, (iv) market-oriented agriculture, forestry, or fishing, including processing of fish and foodstuff, (v) construction, (vi) subsistence agriculture or fishing, including processing of fish and foodstuff, (vii) informal (or small-scale) service sector, most commonly including street vendors, workers

that age range, but speaks nothing to how many children are employed in each sector.   For

independent variables, total economic size of each economy is measured using natural log of

GDP (lnGDP), an urbanization rate is included (%URBAN), value added by agriculture as a

share of GDP (%AGRICULT), regional dummy variables are used to differentiate aspects of

countries in Africa, Asia, Europe, the Pacific, Latin America and the Caribbean, trade ratio is use

to express trade openness in relation to GDP (%TRADE), a measure from a 1992 Sachs and

Warner's analysis is used as well (SWOPEN), and another rating scale is used with mind on

taxes and tariffs on trade from 0 to 10, with 10 being the highest freedom and 0 the lowest

freedom (FRASEROPEN).

The independent variables included public health expenditures as a share of GDP

(%HEALTH), public school spending as a share of GDP (%EDUCATION), pupil to teacher

ratio in primary schools (PUPILS|TEACHERS), and percentage of primary school entrants

reaching at least grade five (%GRADE5). To measure penetration in foreign markets, a ratio is

taken of FDI stock to GDP (FDISTOCK|GDP). Ordinary least squares (OLS) is used for

regression, and negative binomial regression is used for the count data nature of CLCOUNT.

The wide variety of variables is to alleviate the authors' concerns about reverse causation and

endogeneity.   Since some evidence was found by Matthias Busse in 2001 that child labor

countries have a comparative advantage in the export of unskilled labor-intensive manufacturing

products, the authors looked for a positive correlation between globalization and child labor, but

found a negative association instead. To consider whether instrumental variable (IV) analysis

might work better than OLS, they also ran a Durbin-Wu-Hausman test, in which they ruled out

the need for IV regression. Also a Robust Sargon overidentification test was employed.

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in small retail and repair shops, domestic servants (excluding own home but including home of
relatives), porters, and restaurant workers" (Neumayer & De Soysa, 2005, p.48).

Section 6 details the results. There were three sets of results, in which %GRADE5, PUPILS|TEACHER, %HEALTH, and %EDUCATION were excluded from set I. %HEALTH and %EDUCATION were excluded from set II. All variables were included in set III. While the coefficient of %AGRICULT was positive, %TRADE and FDISTOCK|GDP were highly significant and negatively correlated. Goodness of fit, R^2 was .82 in I, and .83 in sets II and III, so at least 82% of the movement in the dependent variables were explained by the independent variables used. As for number of observations, in set I 117, II was 112, and III was 103. Both the Durbin-Wu-Hausman and Robust Sargon overidentification tests failed to reject the hypothesis of exogeneity of the instruments and regressors. Even using the different measures of trade openness used, whether using the trade ratio, the Sachs-Warner measure, or the Fraser Institute measure, all remained statistically insignificant, while the FDI stock variable by contrast remained significant throughout. Also the authors considered outliers.

"An observation with high leverage is one for which the estimates would change markedly if it were deleted from the sample. We exclude an observation from the sample if its so-called DFITS is greater in absolute terms than twice the square root of (k/n), where k is the number of independent variables and n the number of observations. DFITS is defined as the square root of ($h_i/(1 - h_i)$), where h_i is an observation's leverage, multiplied by its studentized residual" (Neumayer & De Soysa, 2005, p.58). This criterion excluded Bahrain, Guyana, India, Mali, Mauritius, Nepal, South Africa, Sierra Leone and Sri Lanka. Following the exclusion of these outliers, the only variable that became insignificant was per capita income. Using the Durbin-Wu-Hausman, and Sargon overidentification tests, the hypothesis of exogeneity could not be rejected for trade openness and FDI.

In Section 7, Neumayer and De Soysa concluded that some evidence showed that countries that are open to trade, and penetrated by FDI show a low incidence of child labor. Primary school nonattendance was not affected by globalization, and the model failed to explain variation in this variable. For the other dependent variables trade openness or FDI stock was statistically significant except where trade openness becomes marginally insignificant in the reduced sample model. For the preferred dependent variable, both measures of globalization were positively significant. The dependent variables were significant for the variable counting the number of economic sectors, only in the full sample (III). The authors suggest that child labor is less common in urban areas, and more common in rural areas, that policies restricting child labor are likely to cause more harm than good, and that as the income effect takes hold in the long run, households will phase out putting their children to work when price increases and returns lead to less poverty over time.

Summary Report 2: International trade and child labor: Cross-country evidence

Eric Edmonds and Nina Pavcnik are no strangers to research on international trade and child labor. An earlier draft of this article was available as an NBER research paper in progress in 2004. They published two articles in 2005: "The effect of trade liberalization on child labor" in the Journal of International Economics, and "Child labor in the global economy" in the Journal of Economic Perspectives. Edmonds also wrote "Does child labor decline with improving economic status?" in The Journal of Human Resources in 2005. Edmonds and Pavcnik (2006) look at the relationship between trade openness and incidences of child labor, in a study across numerous countries.

The article is divided into five sections. In the first section, the authors explain that they plan to set out to test whether data provides support for the hypothesis that trade sanctions is the

better method to mitigate child labor, or whether improvement of income through trade

openness, will eventually be the successful method that decreases the prevalence of this

occurrence. They point to a problem in the proposed study: whether endogeneity will complicate

differentiating the resource policies and endowments that could be influencing trade flows at the

same time they affect the prevalent of child labor. The availability of labor and child labor

standards may affect trade flows. A better study would look at an exogenous policy experiment

that could affect the rate of child labor in an asymmetric way. Pointing to one of their previous

papers published in 2005 (the study of child labor in Vietnam), they indicate that such a study

was done, but that this was not for a group of countries. "Therefore, *general* evidence on the

relationship between trade and child labor that *explicitly* considers the joint determination of the

two is missing in the existing literature" (Edmonds and Pavcnik, 2006, p.116).

Finding that it is not transparent how endogeneity affects any inference between trade

and child labor, the authors point out that reverse causality could be one factor and that wealthier

countries could have less child labor regardless of trade levels. Relying on the endogeneity

problem as pointed out by Jeffrey Frankel and David Romer in 1999, they seek to look at the

relationship between the variation of trade and child labor based on geographical conditions.

The assumption is that trade driven by geographical considerations do not affect levels of child

labor, except through the impact of total trade flows. A second consideration is that there is

already an established connection between trade and income, and that indirectly, empirical

evidence suggests that as trade increases income, income will decrease child labor. Yet trade

also alters the returns to unskilled labor, therefore it would apply also to the returns on child

labor. The authors want to explore other channels of how trade might affect child labor such as

the effect of overall trade, trade with richer (OECD) countries, and exports of unskilled labor-

intensive goods.

In Section 2, the authors revisit theory models of trade and child labor. There appear to

be three groups of mechanisms by which trade can affect child labor: (1) income effect changes;

(2) shifts in product demand which increase the relative return to child labor; and (3) interactive

effects stemming from government policy or local endowments. Also considered are parental

preferences and liquidity constraints, because the assumption is that parents generally do not

wish to send their children to work unless poverty dictates the need. When market returns to not

working exceed the returns of having children work, then child labor may be reduced either due

to preferences or the overcoming of liquidity constraints.

Also considered in the literature is that the slope of the labor demand curve, trade's

impact on labor demand, and the elasticity of substitution between child and adult labor plays a

big role. Where wages are completely determined by international product prices, and where the

labor demand curve is completely elastic, then increasing prices of exported product, trade

liberalization, and ease of access to the global market can lower incidences of child labor. The

authors also consider that while economies may move from being more unskilled labor-intensive

towards capital-intensive as the economy undergoes growth, one must still consider that the

capital-intensive economy will still subcontract from the labor-intensive economy, which

employs child labor. The authors note however that adult wages will increase due to Stolper

Samuelson effects, which can reduce the supply of child labor, and if child labor supply is elastic

with respect to adult wages, then the equilibrium level of child labor might be reduced also.

Also considered is the Hecksher-Ohlin framework. Trade liberalization can increase the

wages of unskilled workers. Thus as a result, this would make it more appealing for families to

send their children to work. If household welfare depends on current consumption, and if

liberalization reduces the returns to educated skilled workers, then the upward shift in demand

for labor almost dictates that families would not choose education over having their children

work. Yet credit constraints must also be considered. If the households are better off, and are no

longer credit constrained, then it is likely that the returns to education will exceed the returns to

labor, and thus the demand effect can still be overcome.

However, when factor endowments of each country are considered, the effects of

increased trade towards child labor will be heterogeneous. What if the country lacks strict child

labor law regulation? The assumption would be that such countries will tend to be the poor

countries, and that they will in the face of trade liberalization, seek to specialize in products that

are unskilled labor-intensive. Thus even as the countries become more rich with time, they will

still tend to decrease the prevalence of child labor by an amount less, than those countries that

are more well-to-do. Lastly, the authors note that based on the data, child labor tends to occur

less in the factories, and occurs more on the farm, or as part of the family business, and thus

believe that any product demands effects as explained by the literature are not likely to be a

significant factor in the studies.

In Section 3, they provide the methodology, an outline of the empirical framework, and

describe the data to be relied on. The data comes from the ILO in 1995. The following variables

are used: child labor, openness, GDP per capita (GDPPC), ln(GDPPP), share of rural population,

capital per worker, average schooling years, import duty, South Asia, East Asia, Latin America

and the Caribbean, OECD Member, latitude, ILO Convention 138, freedom, Sub Saharan Africa

for the OECD countries. The following are for the non-OECD countries: child labor, openness,

openness with OECD countries, and (unskilled labor-intensive exports)/nominal GDP. Capital

per worker and average schooling years come from data in 1980. Openness is considered to be

exports plus imports divided by GDP. When regressing the 10-14 year olds in the population

that are economically active (cl_i), the linear form is $cl_i = \beta_0 + \beta_1 openness + \varepsilon_i$. However, to

factor in the effects of income, the authors modify this equation to include a second order

polynomial, which removes the potential bias of overstating the coefficient of openness.

Therefore the prior regression equation then transforms to $cl_i = \beta_0 + \beta_1 openness +$

$\gamma_1 \ln(income_i) + \gamma_2 \ln(income_i) + \varepsilon_i$. Time-series is used, for the instruments for log GDP per

capita, Edwards and Pavcnik use a lagged (by 15 years) log GDP per capita and lagged (by 15

years) investment since the children are in a 10-14 year age range. The regression equation that

addresses the endogeneity of openness with a measure of trade based on geography between two

countries i and j, along with indicators such as population, area product, distance, and whether

the countries share a common border, language, and are landlocked, is $\ln(Tr_{ij})/NGDP_i = 0.45 -$

$0.95\ln$ distance$_{ij}$ + $0.96\ln$ pop$_j$ + 0.47 commlang$_{ij}$ + 0.61 border$_{ij}$ - $0.20\ln(area_i*area_j)$ - 0.43

landlocked$_{ij}$.

In Section 4, the results are addressed. The data seems to suggest that on average, child

labor is lower in nations with increased trade, even taking into account the endogeneity of trade.

A 10 percentage point increase in openness correlates with a 1.2 percentage point decline in child

labor. In terms of R^2, 82% of the variation in the dependent variables are explained by the

independent variables in the full model (column 6 in the data table). Even in low-income

countries, focusing on unskilled labor-intensive goods, and looking at trade between low and

high-income countries, the relationship holds true. Yet it appears that this relationship may

result due to the relationship between trade and income. Nonetheless controlling for income

differences, and controlling the endogeneity problem, the data remains robust and does not reject

the hypothesis that child labor is unrelated to trade. .

In the final section, the authors make conclusions and propose areas of future study.

Once the authors controlled for income differences across countries, the only effects shown were

due to the relationship between trade and income, not the relationship between trade and child

labor. Directly, the authors were unable to find a statistical relationship of significance between

trade and child labor. Nor did they find any evidence that heterogeneity between countries with

skill endowments, product demand changes, capital to labor ratio changes, or even the signing of

anti-child labor agreements, had any significant interaction between trade and child labor. High

levels of income mitigate child labor. Countries trade more not because of a demand for a

specific type of labor (i.e. child labor), but more due to geographic distances.[6] The authors

suggest that since they were not able to find any direct circumstances of trade that stimulated

higher incidences of child labor that trying to identify such circumstances in the future could be

the direction of future research.

Articles not chosen but which may be of interest

I reviewed several other articles, which I did not ultimately elect for this assignment, but

I will mention them briefly in passing. Dagdemir and Acaroglu (2010) published an article on

the effects of globalization on child labor in developing countries. Basu and Chau (2004)

published an article on the dynamics of debt bondage, showing some evidence that harsh policies

which restrict the use of child labor hurt the incomes of the families that need to survive, and

how trade restrictions may increase the prevalence of attempts to engage in undetected child

labor. Braun (2006) published a study on the penetration of FDI in foreign countries, and the

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[6] In part, though not mentioned in the article by the authors, we learned this with the gravity
model.

lack of evidence that it actually increases the use of child labor, thus implying a negative

relationship. Hasnat (1995) also published an article on the relationship between trade and child

labor many years ago, but the article is not heavily research-oriented. Published in the Journal of

Economic Issues, it explores the political and legal context of the worldwide push towards

ending child labor, but with theoretical predictions that trying to stop it will have adverse effects.

As Hasnat concludes, "Trade did not create child labor in developing countries." (Hasnat, 1995,

p.425). Hasnat indicates that only the eradication of poverty and greater access to free education

will end the practice in the long term.

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