Does Globalization Contribute to Decreasing Child Labor Rates?

¿Contribuye la globalización a la disminución de las tasas de trabajo infantil?*

Leopoldo Laborda Castillo
Inter-American Development Bank* Washington, DC.(USA)
llabordacastillo@gmail.com

Daniel Sotelsek Salem
Instituto de Estudios Latinoamericanos. Universidad de Alcalá.
daniel.sotelsek@uah.es

Abstract

This study examines the relationship between globalization (from a multi-dimensional viewpoint) and child labor. No specific a priori relationship was found through an analysis of the impact of globalization on child labor in relation to a country's level of development. The use of panel data methodology reveals empirical evidence of an inverted U-shaped relationship between globalization and child labor in countries with medium-low and low incomes. The inflection point and the convergence coefficient obtained, describe the nature of the social phenomenon −child labor− in low-income countries.

Keywords: Child Labor; Globalization; Income Levels; Panel Data.

Resumen.

Este estudio examina la relación entre la globalización (desde un punto de vista multidimensional) y el trabajo infantil. Se evalúa el impacto de la globalización sobre el trabajo infantil en relación al nivel de desarrollo de los países. El análisis muestra que no hay una relación determinada a priori entre globalización y trabajo infantil teniendo en cuenta el nivel de desarrollo. El uso de la metodología de datos de panel revela la existencia de una curva U-invertida entre globalización y trabajo infantil en países con ingresos medios y medios-bajos. El punto de inflexión y el coeficiente de convergencia que se obtiene, muestra como éste fenómeno social del trabajo infantil se presenta en países de bajos ingresos.

Palabras Clave: Trabajo infantil; globalización; niveles de ingresos; datos de panel.

Clasificación JEL: O15, O57,I24,I25,O19.

1. Introduction

The World Report on Child Labour, published every four years by the International Labour Organization (ILO) (2013, 2015), shows that the number of child workers worldwide fell by around 3% between 2004 and 2012 (from 222 to 168 million). Nevertheless, this rate of reduction is still too low to have any significant effect on the absolute number of children engaged in economic activities. What is more, in some regions the situation is getting worse, as child labor rates continue to rise.

In an attempt to explain the phenomenon of child labor and, as far as is possible, predict its evolution, empirical literature has focused extensively on the effects of economic growth and globalization.

In general terms, globalization is referred to as "intensified commercial and financial integration" Rodrik (2007:279), and it presents opportunities and challenges for the development of economies. Among the opportunities, the possibility of prosperity through specialization and labor division in the framework of the competitive advantage theory is shown in an obvious and easily contrasted way. But difficulties exist next to these advantages, and they are mainly related to institutional matters as States lose their influential capacities through the regulatory and distributive institutions of the nation as globalization progresses.

Continuing with this concept and from a general perspective, such as the one proposed by Castells (1996) or Held et al. (1999), the phenomenon of globalization refers to international flows and interactions that involve a multitude of factors that are transforming the world into a global society[1]. Most of the literature that analyzes its influence on child labor has focused on aspects linked to trade openness, (Bandyopadhyay and Bandyopadhyay, 2009), foreign direct investment (Davies and Voy, 2009), and capital account restrictions (Espinosa-Vega, 2005 and Barnett, 2005). However, recent studies have considered additional elements linked to both the social (Congdon Fors, 2012) and political (Maffei et al., 2006) dimensions.

Taking these precedents into account, the current study is based on the assumption that countries have different levels of globalization, as understood in its three di-

[1] This global society is made up of networks in which the flow of goods, services, capital, technology, information, ideas, cultures, and people cross national borders.

mensions (economic, political, and social), in line with the instrumentalization of the concept proposed by authors such as Keohane and Nye, (2000) and Dreher (2006).

In this respect, the main aim of this study is to conduct an analysis that considers globalization from a multidimensional viewpoint and also adopts a dynamic perspective on a vulnerable sector of the population (economically active children) in groups of countries at different levels of development. To this end, the link between the child labor rate and the globalization index (including all of the above-mentioned dimensions) is examined empirically and focuses on three questions: i) Is the level of globalization (in economic, political, and social terms) a conditioning factor for child labor? ii) Does this interaction have different characteristics depending on a country's level of development (in terms of income level)?; and iii) Is there a Kuznets inverted U-shaped relationship between globalization and child labor in low income countries?.

In order to answer these questions, this study is organized as follows. Section 2 gives a brief theoretical framework which can be used to consider certain economic, political, and social factors liable to affect child labor levels where the main common denominator is the importance of the globalization phenomenon as a catalyst. Section 3 provides a brief empirical review of the existing literature on the relationship between child labor and globalization. Section 4 develops the methodology used for empirical analysis; Section 5 shows the main empirical results obtained from the analysis, and Section 6 summarizes the main conclusions.

2. Theoretical reference framework

From a strictly economic point of view, and in accordance with Acaroglu and Dagdemir (2010), the child labor supply is made up of a set of exogenous factors, the most significant being: decisions made in the home, government decisions, and poverty levels within the family. The demand for child labor, however, is basically determined by the growth dynamics of different economies and the way this influences the level of integration with the global economy.

Taking this theoretical framework as a starting point (from an economic perspective), globalization has a direct influence on the demand for child labor through its effect on growth sources. For example, Krueger (1996) shows that if we adopt the classical theory that trade between nations is based on comparative advantage, economic globalization can create comparative advantages in unskilled labor-intensive sectors[2]. Another argument along these lines is that of Edmonds and Pavcnik (2006), who suggest that growth derived from trade openness and the penetration of foreign direct investment increases the demand for child labor and their wages, which ultimately raises the opportunity cost of children attending school.

According Davies and Voy (2009), such a situation may generate a *substitution effect* that conditions household decisions about sending children to school and thereby increases the supply of child labor.

---

[2] In other words, one country may get a competitive advantage over others via a higher level of child labor which enables it to reduce costs (social dumping).

However, as Edmonds and Pavcnik (2002) suggest, when globalization improves the income level in poor households, parents' decisions are more likely to focus on reducing their children's workload. According to Kis-Katos (2007), this phenomenon, known as the *income effect*, may have a significant impact on the reduction of child labor. Therefore, we can initially consider that child labor in developing countries comes under dual pressure from both income and substitution effects during periods of economic growth.

This is one of the main topics that this article specifically deals with, since during, and especially at the beginning of, an economic growth period (as a result of globalization) it is easy to assume that the substitution effect has more influence than the income effect. But this dynamic should change as economic growth progresses. Then, it is interesting to locate the point at which inflection occurs (measured through the tridimensional globalization index instead of GDP growth) and globalization causes the income effect to outweigh the substitution effect.

At this point, it is necessary to extend the theoretical framework and adopt a broader perspective of the globalization phenomenon in order to study the political and social dimensions that, together with the aforementioned economic factors, are also liable to affect both the supply of and demand for child labor.

For example, from its political dimension, globalization may affect labor market regulations as well as legal decisions in developing countries. With regard to child labor policies, such situations arise when governments find themselves under an obligation to intra-national, supra-national, or extra-national institutions (Singh and Zammit, 2004).

Furthermore, globalization as seen from its social and cultural dimensions, may be affecting household decision-making and thus the child labor supply. In this respect, authors such as López-Calva (2001) argue that while the social and cultural standards of developing countries may initially be able to support the social acceptance of child labor, they usually converge with worldwide standards as a consequence of social globalization, and child labor becomes less accepted. However, Pal (2015) found that child labor is essential for the survival of the family in West Bengal India and is therefore socially acceptable.

Finally, it is important to mention an alternative viewpoint where the priority is not the elimination of child labor, but rather it is to understand the reasons that necessitate child labor in the first place, so that its driving factors can be regulated and influenced in the best possible way in situations with scarce economic and social development. This is the position taken by The Latin-American and Caribbean Movement for Children and Adolescent Workers (Molacnats, by the acronym for its Spanish name), which aims to understand and analyze the phenomenon of child labor from a multi-dimensional point of view that incorporates social, cultural, and political aspects of a reality that is specifically not unidirectional. Ultimately, they do not deal with the elimination of child labor, instead they focus on managing the phenomenon and transitioning towards a more globalized situation.

A good example of this is Bolivia's new "Childhood and Adolescence Code" (ratified by Law 548 of July 2015) that brings attention to the need to address the reality of the child labor situation in low-income countries in a different way than it has been dealt with in international treaties and rights agreements up to now (Fontana and Grugel, 2015). A law that regulates child labor is necessary as it deals with the reality of the situation in countries that first need to improve laws dealing with child labor before focusing on how to eradicate it. This law, for example, recognizes the training that child labor provides to the household as well as the possibility that a child becomes a self-employed worker (when they are 12 years old or more) with parental permission (Ley N° 548, 2014).

Another example along this line, is the launching of conditional cash transfer programs that offer money to families who send their children to school instead of work. The Human Development Voucher in Ecuador which focuses on, amongst other things, reintegrating 5 to 18 year-olds into school and ensuring that they attend classes is a good example of a program that helps to reduce the rate of child labor. Importantly, this program does not aim to directly eradicate child labor, rather it takes the approach that it is necessary to transition towards eventual abolition (the income effect must be given priority over the substitution effect in order to make social and cultural factors compatible with financial ones) (MIES, 2015).

3. Review of empirical literature

As previously mentioned, existing literature on the relationship between globalization and child labor has largely focused on aspects linked to the openness of international trade, foreign direct investment (FDI), and capital mobility. One of the first studies carried out by Cigno et al. (2002) uses panel data to analyze the impact of trade openness on child labor. They show that, depending on the specifications of the model, openness and international trade either slightly reduce child labor or have no effect on it. In the same way, Neumayer and De Soysa (2005) find that trade openness and FDI reduce child labor even when it is controlled by per capita GDP. Using different instrumental variables to control for the potential endogeneity of trade openness, Edmonds and Pavcnik (2006) find a negative relationship between trade and child labor, although when per capita GDP is included in the regression, the positive effect of trade disappears because of the correlation between trade and national income. Davies and Voy (2009) also use instrumental variables to explore the relationship between FDI, international trade, and child labor and find that FDI and trade have a negative impact on child labor, although these results are not significant when national income is included as a control variable.

A series of studies carried out in parallel with the previous line of research examines other dimensions of globalization, such as social aspects likely to affect the reduction of child labor if regulations against child labor or in favor of education are disseminated through increased international transactions and

global integration. For example, López-Calva (2001) models the possible influence of social standards on the acceptance of child labor. Along the same line of work, Patrinos and Shafiq (2010) explore situations where parents may even have a positive attitude towards child labor. Stark (2004), Mayr and Peri (2009), and Iranzo and Peri (2009) emphasize different aspects of social globalization that may increase the opportunity cost of child labor as returns on education grow. Finally, Congdon-Fors (2012) finds, after carrying out an empirical analysis using a specific social globalization index, that such globalization has a significant impact on the average incidence of child labor.

This brief review of empirical literature on globalization and child labor concludes with two studies that analyze the relationship between globalization in terms of political openness and child labor. Shelburne (2001) shows that economic changes brought about by democracy tend to undermine the practice of child labor. And, Maffei et al. (2006) show that child labor is more common under repressive political regimes, which fail to create appropriate regulations.

4. Methodology

In short, if one asks 'Why send a child to school instead of encouraging him or her to enter the child labor market?' the answer is not only economic (measured in terms of the returns on investment provided by education) but social (measured by the standards and regulations that this practice implies in the social setting) and political (measured, for example, in terms of any regulations that may exist regarding compulsory primary education). Having determined the importance of globalization as a factor to be considered in the child labor equations, we can initially establish, and then examine empirically, that the rate of involvement in the child work force is related to a multidimensional globalization index. As a secondary focus, we are interested in determining how this relationship is expressed in different countries in relation to their level of development. To this end, the empirical evidence is examined in-depth in an attempt to establish whether this relationship has a similar shape to the Kuznets inverted U-shaped curve.

4.1. modeling and convergence analysis

The child labor participation rate in relation to the level of globalization is examined using 3 different functions to see which of them best fits the model.

$$Y = \alpha + \beta X \tag{1}$$

$$Y = \alpha X^{+\beta} \tag{2}$$

$$Y = \alpha + \beta X + \gamma X^2 \tag{3}$$

The dependent variable Y is defined as the total percentage of child labor. The explanatory variable is the globalization index. In (1) a monotonic relation is postulated, and the expected sign for the globalization parameter is negative. In (2) a negative exponential relationship is postulated, and the expected sign for the globalization parameter is also negative. Finally, in (3) a non-linear quadratic relationship is defined. If (2) provides a better explanation, given the available sample, it can be concluded that the incidence of child labor shows a decreasing tendency and does not exhibit an inverted U-shape. To confirm the inverted U hypothesis in (3) the parameters should be

$$\beta \rangle 0 \quad \gamma \langle 0$$

Using panel data methodology, a fixed effects model is proposed and is estimated by grouped least squares (Hsiao, 1986; Judge et al, 1988). In this case, it is assumed that the specific components of each cross section are fixed parameters, that is, that each country has a single constant term that includes specific location factors. The three previous models can be written as:

$$Y_{it} = \sum_{j=1}^{N} \beta_1 D_{jt} + \beta_2 X_{it} + \mu_{it} \tag{4}$$

$$\ln(Y)_{it} = \sum_{j=1}^{N} \ln \alpha_j D_{jt} + \beta \ln(X)_{it} + \mu_{it} \tag{5}$$

$$Y_{it} = \sum_{j=1}^{N} \beta_1 D_{jt} + \beta_2 X_{it} + \beta_2 X_{it}^2 + \mu_{it} \tag{6}$$

$$\mu_{it} \sim iid\left(0, \sigma_\mu^2\right) \qquad \forall i = 1,...,N \qquad \forall t = 1,...,T \qquad \beta_{ij}$$

The dummy variables corresponding to the country being considered take the value of 1 or 0, that is, $D_{jt} = \left\{ \begin{smallmatrix} 1 if \ j = i \\ 0 if \ j \neq i \end{smallmatrix} \right\}$. The proposed models are estimated with

an additional component that includes the following variables: per capita GDP calculated using Purchasing Power Parity (PPP) and the child mortality rate.

Given that the signs of the coefficients may be sensitive to the level of development in the countries concerned, the countries are grouped according to their income level in such a way that model estimation is carried out as follows: first, models are estimated for the whole sample; they are then estimated for countries with high income and medium-high income levels in terms of per capita GDP (PPP); and finally, models are estimated for countries with low income and medium-low income levels.

Given that countries start with different levels of child labor, a convergence analysis is also proposed that aims to analyze whether child labor levels de-

cline more rapidly in countries with higher initial levels than in those starting out with lower levels. The convergence analysis also gives insight into the other factors that normally favor globalization and which refer to the speed at which the countries achieve greater living conditions.

To carry out this analysis, we use the **β**-convergence estimation expressed as follows:

$$Ln\left(\frac{Y_T}{Y_0}\right) = \alpha + \beta LnY_0 + \varepsilon_i \qquad\qquad (7)$$

where Y_O and Y_T represent the initial and final levels of child labor for each country with respect to its corresponding income level. Convergence would be confirmed if the β parameter were negative and statistically significant (Barro and Sala-i-Martin 1992).

To improve the robustness of the analysis, as suggested by Lozano-Vivas and Pastor (2006), a test is performed with the conventional variance-covariance matrix and with the corrected matrix which is obtained from the bootstrap process proposed by Simar and Wilson (2003).

4.2. DATA AND VARIABLES

The statistical source used for this analysis is the World Bank's *World Development Indicators* (WDI). The KOF globalization index[3] (Dreher 2006, Dreher et al. 2008) is also used, and it incorporates various economic, social, and political factors, which in combination convey a country's level of globalization. Table I in the appendix explains the main variables used in this study.

Although this indicator has some limitations due to the heterogeneous nature of its variables, the decision to use it is relevant to the main aim of our research, which is to examine more than just the economic effects of the impact of globalization on child labor.

From the referenced variables, temporal observations were obtained on a yearly basis (T = 13) in 94 countries between 1998 and 2010. A panel was then formed with this data; descriptive statistics are shown in Table II in the appendix.

5. EMPIRICAL RESULTS

At first glance, the data (Table 1) reveals that of the total sample, none of the regions examined attain a level of less than 10% in the total rate of economically active children between 1998 and 2010. Certain regions like sub-

---

[3] The index covers 123 countries and includes 23 variables, some of which are described in Table I (see statistical appendix). This study uses the KOF index, updated in 2010, to measure globalization on a scale from 1-100, with the highest values representing the highest levels of globalization. http://globalization.kof.ethz.ch

Saharan Africa, and Eastern Asia and the Pacific (in countries with low to medi-um incomes) show rates in excess of 35% and 20%, respectively. The general globalization index values shown range from 41.67% in sub-Saharan Africa to 57.06% in Latin America and the Caribbean. Between countries with high and medium-high income levels and those with low and medium-low income levels, the difference in child labor rates is significant in the case of well developed countries. In countries of Europe and Central Asia (7,66%) and less developed countries in the same region (19,25%); for Latin America and the Caribbean the rates are similar (8,62% for high and medium-high income countries and 16,47% for low and medium-low income countries)

TABLE 1: DESCRIPTIVE STATISTICS BY REGIONS: 1998-2010.

Variable	Total economi-cally active children	General globaliza-tion Index	Economic globaliza-tion	Social globaliza-tion	Political globaliza-tion	Per capita GDP (PPP)	Child mortality rate
Total sample							
Eastern Asia and the Pacific	19.77	44.07	59.42	27.93	56.96	2720.43	14.07
Europe and Central Asia	13.45	53.71	58.89	48.50	58.93	7098.79	6.88
Latin America and the Caribbean	11.24	57.06	59.55	45.59	69.93	6816.10	14.33
Middle East and North Africa	10.33	49.55	49.06	37.17	70.61	3720.77	8.10
Southern Asia	17.32	43.78	35.54	28.36	77.17	1990.62	23.28
Sub-Saharan Africa	35.36	41.67	45.06	25.43	59.84	1655.10	65.21
High income and medium-high income countries							
Eastern Asia and the Pacific	15.10	60.06	63.76	43.66	78.25	6517.65	
Europe and Central Asia	7.66	58.91	59.63	54.95	63.54	10233.79	6.51
Latin America and the Caribbean	8.62	59.61	61.90	48.52	72.20	8568.79	7.71
Middle East and North Africa	1.00	68.00	65.12	59.41	84.25	4261.89	4.17
Sub-Saharan Africa	24.41	53.95	66.27	35.17	63.57	5702.23	17.28
Low income and medium-low income countries							
Eastern Asia and the Pacific	20.16	41.67	58.55	25.57	53.76	2171.95	14.07
Europe and Central Asia	19.25	47.02	57.55	40.20	53.00	3068.07	7.26
Latin America and the Caribbean	16.47	51.97	54.85	39.73	65.40	3618.88	22.41
Middle East and North Africa	11.50	45.86	45.05	32.73	67.88	3612.55	9.57
Southern Asia	17.32	43.78	35.54	28.36	77.17	1990.62	23.28
Sub-Saharan Africa	35.93	40.56	43.01	24.54	59.51	1250.39	68.12

Source: Author's own creation, from the *World Bank's World Development Indicators* (WDI) database (2012) and the KOF globalization index (Dreher 2006, Dreher et al. 2008).

R
E
M

Table 2 provides the variables when income groups are taken into account, and it shows that the total rate of economically active children reaches 36% in low income countries and almost 20% in medium-low income countries.

With respect to the general globalization index, the pattern is scattered: with an average globalization level of around 57.10%, the values for high income countries (OECD) are in excess of 80%, while those of low income countries are below 38%.

When breaking down the KOF index into its three components, the biggest difference is found in the social dimension, between regions with high and low income levels, where: social globalization levels are 77.59 and 22.62 respectively.

Table 2: Descriptive statistics by income groups: 1998-2010

Variable	Total economically active children	General globalization index	Economic globalization	Social globalization	Political globalization	Per capita GDP (PPP)	Child mortality rate
High income: OECD	3.64	83.43	82.73	77.59	92.70	21297.74	
High income: non-OECD	3.65	58.14	72.10	51.28	48.50	3992.07	6.65
Low income	36.00	38.03	39.72	22.62	57.39	1001.11	63.33
Medium-low income	19.05	47.73	52.35	34.30	63.87	2957.95	30.16
Medium-high income	9.75	58.19	60.62	48.21	69.03	8240.76	8.47

Source: Author's own creation, from the *World Bank's World Development Indicators* (WDI) database (2012) and the KOF globalization index (Dreher 2006, Dreher et al. 2008).

5.1. Empirical estimation

The results shown in Table 3 correspond to estimations from different fixed effect models based on equations (1), (2), and (3). In their later notation, (4), (5), and (6), these equations incorporate control variables that consider per capita GDP (PPP) and child mortality rates[4]. First, consideration of the linear functions for the subgroup composed of high income and medium-high income countries (model 2), do not reveal any significance from which we can infer a negative or positive monotonic relationship between child labor and the afore-

[4] At first, additional variables related to education were considered, for example, the primary school enrolment rate, the GINI index, etc., but these were excluded because of sampling restrictions and resulting estimation problems.

mentioned general globalization index. As in the previous model analyzed, the result of the log-log functions (model 3) for high income and medium-high income countries, do not show any significance in being able to postulate a positive or negative relationship between child labor and the general globalization index.

However, when the results of the regression in the quadratic functions are taken into account, they are significant for the total sample (model1), for high income and medium-high income countries (model 4), and for low income and medium-low income countries (model 5), which suggests evidence of a non-monotonic and statistically significant relationship between child labor and levels of globalization. As Figure 1 shows, for low income and medium-low income countries there is an inverted U-shaped relationship.

FIGURE 1: RELATIONSHIP BETWEEN CHILD LABOR AND GLOBALIZATION[5].
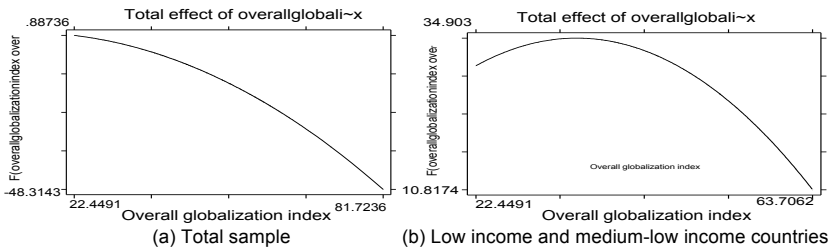
(a) Total sample (b) Low income and medium-low income countries

Source: Author's own creation, from the World Bank's *World Development Indicators* (WDI) database (2012) and the KOF globalization index (Dreher 2006, Dreher *et al.* 2008).

[5] Considering the total sample and using untransformed variables, the linear model gives an SS of 10468.96, an MS of 10468.96 (their residuals are: 34871.18 and 227.91, respectively), and an R-squared of 0.2329. Using the quadratic model gives an SS of 10886, an MS of 5443.34 (their residuals are 34453.44 and 226.66, respectively), and an R-squared of 0.2401. A robustness check was also carried out on the models via the use of the "primary education enrolment" variable with the total sample. This analysis confirmed the a priori relationship that was expected to be seen (an inverse relationship) between "primary education enrolment" and child labor with respect to the effect of globalization.

Table 3: Fixed effect models: specifications with the general globalisation index.

	Total sample	High income and medium-high income countries			Low income and medium-low income countries
	Model 1 Specification (3)	Model 2 Specification (1)	Model 4 [b] Specification (2)	Model 5 Specification (3)	Model 6 Specification (3)
General globalisation index	-4.536219*** [1.689196]	.2835264 [.3324734]		-8.330426** [3.508777]	-4.651188* [2.301356]
Ln general globalisation			.9155856 [1.328002]		
Squared general globalisation index	.0456333** [.0184983]			.0781537** [.0317278]	.0483021* [.026905]
Per capita GDP, PPP	-.0011849 [.0014504]	-.0004407 [.0006285]	-.0000765 [.0000448]	-.0013238* [.000651]	-.0022668 [.0065502]
Child mortality rate					
Constant	133.2699*** [39.92836]	-3.389884 [17.43106]	-1.097326 [5.231768]	236.986** [98.74157]	138.0156*** [50.05367]
Sigma_u	16.211763	8.5800527	.83576228	13.691453	16.615866
Sigma_e	10.171252	4.2611975	.3116121	3.6840852	11.838229
RHO [a]	.71755049	.80214892	.87795121	.9324848	.66330288
F test that all u_i=0:	2.76	4.92	7.88	6.73	2.22
Prob > F	0.0000	0.0011	0.0001	0.0003	0.0037
Number of observations	151	45	45	45	106
Number of countries	89	28	28	28	61
F	2.62	0.41	1.47	2.39	1.77
Prob > F	0.0594	0.6714	0.2622	0.1127	0.1683

Notes:
Dependent variable used is the total rate of economically active children
[a] fraction of variance due to u_i
[b] dependent variable in ln
*p (0.1; **p (0.05; ***p (0.01

Source: Author's own, from the World Bank's *World Development Indicators* (WDI) database (2012) and the KOF globalisation index. (Dreher 2006, Dreher et al. 2008).

In low income and medium-low income countries the inverted U-shaped relationship mentioned above means that the general globalization index initially has a negative effect on child labor. However, at greater levels of globalization this effect diminishes until a point is reached where higher globalization levels have a positive effect on the reduction of child labor. In this respect, the inflection point of the curve (Table 4) is observed to be at *34.80*. This result may be of great interest when it comes to showing that, in countries that still have not moved beyond this cut-off point, the levels of child labor will rise in accordance with increases to the general globalization index, that is, the global index that incorporates economic, social, and political aspects. In other words, once all the index variables are incorporated, the inflection point can be considered to be the point where the income effect dominates the substitution effect in the child labor market.

TABLE 4: ANALYSIS OF THE MAXIMUM POINT IN THE RELATIONSHIP BETWEEN CHILD LABOR AND GLOBALIZATION

Sample	Ranking of general globalization index	Maximum	Standard error[a]	Confidence interval up to 95%
Total	[22.44907,81.723602]	13.08193	26.02692	[-37.9299, 64.09376]
High income and medium-high income countries	[44.40929,81.723602]	79.56391	40.0663	[1.035401, 158.0924]
Low income and medium-low income countries	[22.44907, 63.706249]	34.79783	5.383097	[24.24715, 45.3485]
Notes: [a] Calculated with the delta method.				

Source: Author's own creation, from the *World Bank's World Development Indicators* (WDI) database (2012) and the KOF globalization index (Dreher 2006, Dreher *et al.* 2008).

It can be seen that countries with a low globalization index have low rates of child labor. This may indicate that if the globalization process continues, their child labor levels would hardly rise, whereas other countries would see very high rates of child labor with increased globalization. In the middle of the range are countries where the incentive for increasing globalization (from the point of view of child labor) is very strong because they are close to the inflection point.

To evaluate the distribution from which function maximums have been estimated, we can use a parametric bootstrap, which assumes that the coefficients actually have a bivariate normal distribution (Davison and Hinkley 1997) (for more details see appendix Figure I and Table I).

5.2. Evaluation of beta-convergence

Taking country data and the results obtained into account, Table 5 shows the results of estimating beta-convergence by applying inference to the corrected variance-covariance matrix using the bootstrap method. It also shows the existence of convergence with respect to levels of child labor in the group of medium-low income countries (model 4). However, there is statistically significant divergence in low-income countries when the model incorporates the general globalization index (model 8) and per capita GDP (PPP) (model 9) as additional variables. These results appear to show a tendency towards increased child labor rates in low-income countries. The level of child labor in this group would therefore rise as globalization increased (this would take place up to the point of inflection). However, the absence of convergence indicates that if a country already has high rates of child labor it will not necessarily converge with low-rate countries at the point of inflection, and globalization will therefore not have too great an effect on child labor. Beyond the point of inflection, reduction in the child labor rate in this group of countries will be divergent as globalization increases.

Finally, and with the sole purpose of showing the results broken down into the globalization index dimensions, Table 6 shows the estimations of different fixed effect models using several of the dimensions integrated into the KOF general globalization index as independent variables (in this case all of the specifications are log-log). In addition, it incorporates the control variables used in previous models (per capita GDP(PPP) and the child mortality rate). In this case, both for the total sample and for the group made up of low income and medium-low income countries, a negative and statistically significant relationship with child labor is revealed as the economic and social globalization index rises (see models 1,2,7, and 8).

With respect to political globalization, it is worth noting that this variable did not prove to be significant in any of the cases considered (see models 3, 6, and 9).

TABLE 5: BETA CONVERGENCE ANALYSIS[6]

	Total sample			Medium-low income countries			Low income countries		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
Ln(Y$_{2000}$)	.4023464 [.4746998]	.3091065 [.2777686]	.0276286 [.7827258]	-.2331122*** [.0765216]	-.1441713 [.119314]	-.5789121 [4.022342]		.4747662** [.2237155]	.7833641** [.3379583]
General globaliza-tion index 2005	.083068 [.0518781]	.0455062* [.0275507]		.0453488 [.0790129]	.0519552 [.0642476]		.2285643** [.101274]	.0900405** [.0353667]	
Per capita GDP (PPP), 2005	-.0002607 [.0002835]		-.0000115 [.0002414]	.0000531 [.0009343]		.0002438 [.0013305]	-.0025731 [.0018853]		.0016725** [.0008425]
Constant	-4.686234 [3.498022]	-3.422941 [1.920698]	-.5345535 [2.5239]	-2.188687 [3.974593]	-2.560032 [3.121748]	.186032 [10.4049]	-6.498405*** [2.386467]	-5.430692*** [1.862992]	-4.736679*** [1.582256]
Wald chi2	2.60	2.73	0.00	10.24	2.09	0.04		8.31	8.42
Prob > chi2	0.4581	0.2551	0.9982	0.0166	0.3518	0.9824		0.0157	0.0148
R-squared	0.7844	0.4150	0.0034	1.0000	0.9876	0.6953	1.0000	1.0000	1.0000
Adj R-squared	0.6228	0.1810	-0.3953		0.9629	0.0859			
Root MSE	0.3604	0.5310	0.6931	0.0000	0.0858	0.4260	0.0000	0.0000	0.0000
Number of obser-vations	8	8	8	4	4	4	3	3	3
Bootstrap repe-titions	50	50	50	50	50	50	50	50	50

Notes:
Dependent variable Y is the total rate of economically active children. Calculated as Ln(Y$_{2005}$/Y$_{2000}$).

Source: Author's own creation, from the *World Bank's World Development Indicators* (WDI) database (2012) and the KOF globalization index (Dreher 2006, Dreher *et al.* 2008).

[6] It is important to consider this convergence exercise with caution given that a convergence sigma cannot be estimated for cross-sectional models (rather it should be calculated using time series data). Our main limitation for carrying out this analysis on these characteristics is the scarcity of information for our panel data regarding the variable used to measure child labor. This limitation puts our first observation year as 2000, as in previous years, there were not a sufficient number of observations. The decision to incorporate this partial beta convergence analysis is based on our interest in capturing, in some way, the starting point and the speed at which a country approaches it.

Table 6: Fixed effect models: specification broken down by globalization factors

	Total sample			High income and medium-high income countries			Low income and medium-low income countries		
	Model 1[b]	Model 2[b]	Model 3[b]	Model 4[b]	Model 5[b]	Model 6[b]	Model 7[b]	Model 8[b]	Model 9[b]
Ln Economic globalization[e]	-18.40467*** [.1861269]			.7871622 [1.0110411]			-18.40467*** [.1861269]		
Ln Social globalization[d]		-32.73044* [3.93878]			.1347537 [1.178788]			-32.73044* [3.93878]	
Ln Political globalization			-12.43333 [5.330728]			.5840043 [.8227257]			-12.43333 [5.330728]
Per capita GDP (PPP)	.0106031*** [.0001492]	.0296631* [.0038654]	.0153595 [.0079177]	-.0000702 [.0000407]	-.0000656 [.0000538]	-.0000672 [.00004]	.0106031*** [.0001492]	.0296631* [.0038654]	.0153595 [.0079177]
Child mortality rate	.0240572** [.0004728]	.0414057 [.0067096]	.0188692 [.017852]				.0240572** [.0004728]	.0414057 [.0067096]	.0188692 [.017852]
Constant	44.77515*** [.46383]	34.78617* [4.492407]	13.91468 [10.00204]	-.654494 [4.068358]	2.018202 [4.24787]	.0808065 [3.427746]	52.43724*** [.51011951]	53.82663* [6.217731]	25.59898 [11.14006]
sigma_u	21.771238	56.27636	34.020186	.81285278	.81299591	.83547607	14.104098	36.0216	20.994303
sigma_e	.01744192	.20607406	.67965984	.31030321	.31637316	.31132518	.01744192	.20607406	.67965984
RHO[a]	.99999936	.99998659	.99960103	.87280604	.86848248	.87807517	.99999847	.99996727	.99895305
F test that all u_i=0:	1867.87	10.31	1.16	8.44	7.06	8.38	1354.77	8.45	0.89
Prob > F	0.0183	0.2428	0.6414	0.0000	0.0001	0.0000	0.0215	0.2668	0.7038
Number of observations	40	43	43	45	45	45	33	36	36
Number of countries	36	39	39	28	28	28	29	32	32
F	3633.48	25.70	2.06	1.54	1.20	1.48	3633.48	25.70	2.06
Prob > F	0.0122	0.1438	0.4639	0.2461	0.3291	0.2586	0.0122	0.1438	0.4639

Notes:
The dependent variable used is the total rate of economically active children
[a] Fraction of variance due to u_i
[b] Variable dependent on ln
*p (0.1 ; ** p (0.05; *** p (0.01

Source: Author's own creation, from the *World Bank's World Development Indicators* (WDI) database (2012) and the KOF globalization index (Dreher 2006, Dreher *et al.* 2008).

6. Conclusions

For many countries, the dilemma they encounter during the beginning of the XXI century is that some markets are fighting to become globalized, while other institutions (fundamental for sustaining the markets) are still domestic. Globalized markets help efficiency while domestic ones encourage equity. A specific example of this is the relationship between globalization and child labor (efficiency and equity).

As Sarkar and Sarkar (2016) show in their study relating child labor and poverty, the dichotomy between efficiency and equity is always present. In order to promote the eradication of child labor, free public education should be provided. On the contrary it could have a reverse effect.

Empirical evidence obtained in this study appears to support the two main hypotheses that: first, a relationship exists between child labor and a country's level of globalization when countries are considered by their income level, and that this relationship is positive for the group of medium-low income and low income countries; and second, this relationship appears to have an inverted U-shape in low-income countries, where the child labor rate increases up to a certain threshold of globalization, 34.80 of the global rate, after which child labor levels start to decrease. Of the models considered in this study for analyzing the relationship between globalization and child labor, those that use the quadratic form provide a better fit for both the total sample and for countries with medium-low and low incomes. The other linear and log-log functions initially considered have not been significant in any of the groups of countries considered.

In this respect, our results are consistent with other similar studies where an inverted U-shaped relationship has been found between child labor and factors related to income levels (Kambhampati and Rajan, 2006; Del Carpio, 2008; Basu et al 2010), or poverty levels and globalization (Agénor, 2004).

Taking the substitution and incomes effects into account (in their three dimensions), in low-income countries the former prevails over the latter only as far as the point of inflection, after which the income effect appears to have greater significance than the substitution effect.

On the other hand, given that there is a group of countries where this relationship is positive (the greater the level of globalization, the higher the child labor rate), the beta convergence analysis carried out appears to indicate that not only is convergence absent, but that the opposite is in fact true and the processes are divergent. This could indicate that although low income countries with lower rates of child labor and globalization will experience a rise in the number of child workers as the globalization index increases (until it reaches the threshold), the pace of this increase does not necessarily have to be faster than in other countries with higher rates of child labor. The convergence comparison between Sudan and Chad would be an example of this.

Taking into account the inflection point and the speed of convergence, especially in low to medium income countries, specific policies and incentives can

be designed to improve the performance of the most sensible variables that influence the demand and supply of child labor in order to reach the inflection point as soon as possible and with the least cost from an economic, political, and social point of view.

An additional conclusion is that although the results obtained are for a general globalization index (KOF), the breakdown into three main dimensions – economic, sociological, and political – shows a negative and statistically significant relationship between the level of child labor and economic and social globalization (both for the total sample and for countries with low to medium-low levels of income). With respect to the political dimension, the models did not reveal significant relationships in any of the groups of countries involved[7].

Additionally, we would like to comment on some implications that came up during this study. First, in countries with lower levels of development, policies must be created to improve the globalization index, especially with regard to the variables that influence economic and social factors, in such a way that the inflection point is reached as soon as possible and thus child labor rates are reduced. Improving political factors could improve globalization, but it has less of an impact on child labor rates. The State should adjust its policies based on the real causes of the problem rather than on legal or institutional issues. In order to truly eradicate child labor, focus must be placed on giving families opportunities to generate more income so that instead of saying "No child should work," people say "No child should *have to* work," (Fontana and Grugel, 2015).

Second, we have seen that great effort must be made to better explain the data, because in many cases household surveys do not distinguish between the number of hours worked nor the type of work. In this sense, work activities like those in mines or on big plantations should be prioritized over work activities that take place within the family. Curiously, this latter type of work is more looked down upon than the former (Fontana and Grugel, 2015).

Third, it is necessary to increase investment in education as increasing family income and improvements to economic variables do not always take children out of the workplace. To this end, the role of NGOs is very important, because they are able to identify detailed ways to fight for child workers' rights in specific situations. Similarly, many studies have come to the conclusion that improvements to public healthcare infrastructure produce a reduction in child labor that is equal to or greater than those produced by investments in education (Sarkar and Sarkar, 2016).

Finally, and this is a theme not captured by the globalization index, micro-studies must be carried out that consider social aspects of indigenous groups where the idea of child labor differs from State and international viewpoints. The case of Bolivia and their perspective that focuses on understanding and

---

[7] In this study, the fundamental objective was to investigate the KOF, and in future extensions of this line of research it would be pertinent to consider each of the three dimensions that make up the index (economic, social, and political) as dependent variables, as well as each of the most relevant variables present within each dimension.

managing child labor can help us in this sense (Orazem, Tzannatos, and Sedlacek, 2009).

It is not our intention at this point to paint a picture that reminds us of why Thomas Carlyle called economics 'The dismal science' in the 19th century. However, we would like to draw attention to the importance of urgently tackling this problem, noting as a final consideration that the empirical results obtained from this study appear to reflect that globalization behaves asymmetrically with respect to child labor depending on a country's level of development. It therefore seems reasonable to suppose that without the assistance of decisive development policies aimed at reducing high rates of child labor, it will be very difficult for low income countries to achieve higher levels of development and welfare from globalization because, far from decreasing, the child labor rate will continue to rise.

7. References

Acaroglu, H., & Dagdemir, O. (2010): The effects of globalization on child labor in developing countries. *Business and Economic Horizons*, (02), 37.

Agénor, P. R. (2004): Does globalization hurt the poor?. *International Economics and Economic Policy*, *1*(1), 21-51.

Bandyopadhyay, S., and Bandyopadhyay, S. C. (2009): Trade and Child Labor: A General Equilibrium Analysis. *Emerging Markets Finance and Trade*, 45(1), 5-18.

Barro, R.J y Sala-i-Martin, X.(1992): "Convergence". *Journal of P Economy* Vol 100, 2.

Basu, K., Das, S., & Dutta, B. (2010): "Child labor and household wealth: Theory and empirical evidence of an inverted-U". *Journal of Development Economics*, *91*(1), 8-14.

Castells, M. (1996): *The rise of the network society* (Vol. 1, No. 996, pp. 1-25). Oxford: Blackwell Publishers.

Cigno, A, and F. Rosati, and L. Guarcello (2002). "Does Globalization Increase Child Labor?" *World Development* 30, 1579-1589.

Congdon Fors, H. (2012): Social Globalization and Child Labor. rapport nr.: *Working Papers in Economics* 533.

Davies, R. B., & Voy, A. (2009). "The effect of FDI on child labor". *Journal of Development Economics*, 88(1), 59-66.

Davison, A.C. and Hinkley, D. V. (1997): *Bootstrap Methods and their Applications*. Cambridge: Cambridge University Press.

Del Carpio, X. (2008): "Does child labor always decrease with income? An evaluation in the context of a development program in Nicaragua". *An Evaluation in the Context of a Development Program in Nicaragua (August 1, 2008). World Bank Policy Research Working Paper Series, Vol*.

Dreher, A. (2006): "Does Globalization Affect Growth? Evidence from a new Index of Globalization", *Applied Economics 38*, 10: 1091-1110.

Dreher, A., G., N, and Martens, P. (2008): *Measuring Globalization – Gauging its Consequences* (New York: Springer).

Edmonds, E., & Pavcnik, N. (2002): *Does globalization increase child labor? Evidence from Vietnam* (No. w8760). National Bureau of Economic Research.

Edmonds, E. V., & Pavcnik, N. (2006): International trade and child labor: Cross-country evidence. *Journal of International Economics*, 68(1), 115-140.

Espinosa-Vega, M., & Barnett, R. C. (2005): Barriers to Capital Accumulation and the Incidence of Child Labor (EPub). *International Monetary Fund*.

Fontana, L.B. & Grugel, J. (2015): To Erradicate or to Legalize? Child Labor Debate and ILO Convention 182 in Bolivia. *Global Gobernance* 21, 61-78

Held, D., McGrew, A., Goldblatt, D., and Perraton, J. (1999): *Global transformations: Politics, economics, and culture*. Stanford University Press.

Hsiao C. (1986): *Analysis of Panel Data*. Cambridge University Press: Cambridge.

International Labor Organization (2013): ILO *Global Employment Trends for Youth 2013: A generation at risk* (Geneva).

International Labor Organization (2015): ILO World Report on Child Labour 2015: Paving the way to decent work for young people. (Geneva).

Iranzo S. and G. Peri (2009): "Migration and Trade: Theory with an Application to the Eastern-Western European Integration", *Journal of International Economics* 79(1):1-19.

Jugde GG, RC Carter, WE Griffiths, H Lutkepohl, and TC Lee (1988): *An Introduction to the Theory and Practice of Econometrics*. New York; John Wiley and Sons.

Kambhampati, U. S., & Rajan, R. (2006): "Economic growth: A panacea for child labor?". *World Development*, 34(3), 426-445.

Keohane, R. O., & Nye Jr, J. S. (2000): Globalization: What's new? What's not?(And so what?). *Foreign Policy*, 104-119.

Kis-Katos, K. (2007): "Does globalization reduce child labor?" *The Journal of International Trade & Economic Development*, 16(1), 71-92.

Krueger, A. B. (1996): *Observations on international labor standards and trade* (No. w5632). National Bureau of Economic Research.

Ley N° 548 de 17 de Julio de 2014. Código Niño, Niña y Adolescente. Estado Plurinacional de Bolivia. Asamblea Legislativa Plurinacional.

López-Calva, L. F. (2001): Child labor: myths, theories and facts. *Journal of International Affairs-Columbia University*, 55(1), 59-74.

Lozano-Vivas, A. and Pastor, J. T. (2006): "Relating macro-economic efficiency to financial efficiency: A comparison of fifteen OCDE countries over an eighteen yearperiod". *Journal Productivity Analysis*. n° 25, pp. 67-78.

Maffei, A., Raabe, N., and Ursprung, H. W. (2006). Political Repression and Child Labor: Theory and Empirical Evidence. *The World Economy*, 29(2), 211-239.

Mayr, K. and G. Peri (2009) "Brain Drain and Brain Return: Theory and Application to Eastern-Western Europe" B.E. *Journal of Economic Analysis & Policy9* (Contributions), Article 49.

Ministerio de Inclusión Económica y Social (MIES): (Consultada 15-5-2015). *(http://www.inclusion.gob.ec/objetivos-bdh/)*.

Movimiento Latinoamericano y del Caribe de niños y niñas adolescentes trabajadores. *www.molacnats.org* (Consultada el 15 -5-15)

Neumayer, E., & De Soysa, I. (2005): "Trade openness, foreign direct investment and child labor". *World development*, 33(1), 43-63.

Orazem, P. F., Tzannatos, Z., & Sedlacek, G. (2009): *Child labor and education in Latin America: an economic perspective*. Palgrave Macmillan.

Pal, J.K. (2015): "Chid Labor: Parents live through Their Children". *The International Journal of Business and Management*. 3.8, 114.118

Peter F. Orazem, Guilherme Sedlacek and Zafiris Tzannatos (2009): "Introduction: Child Labor and Education In Latin America," in *Child Labor and Education in Latin America: an Economic Perspective*. Ed. Peter F. Orazem, Guilherme Sedlacek and Zafiris Tzannatos, New York: Palgrave Macmillan, p. 3-20

Patrinos, H. and Shafiq, M. (2010): "An Empirical Illustration of Positive Stigma towards Child Labor", *Economics Bulletin* 30(1): 799-807

Ranjan, P. (2001): Credit constraints and the phenomenon of child labor. *Journal of development economics*, *64*(1), 81-102.

Rodrik, D (2007): *One Economics, Many Recipes, Globalization, Institutions and Economic Growth*. Princenton University Press.

Sarkar, J and Sarkar, D (2016): Why Does Child Labor Persist with declining Povert. *Economic Inquiry*. Vol 54. (1), January, 139-158

Shelburne, R. C. (2001): An explanation of the international variation in the prevalence of child labor. *The World Economy*, 24(3), 359-378.

Simar, L. and Wilson, P. (2003): *Estimation and inference in two-stage, semiparametricmodels of production processes*. Technical Report 0310, Institute of Statistique, Université Catholique de Louvain, Louvain-La-Neuve.

Singh, A., & Zammit, A. (2004): Labor standards and the 'race to the bottom': rethinking globalization and workers' rights from developmental and solidaristic perspectives. *Oxford Review of Economic Policy*, *20*(1), 85-104.

Stark, O. (2004): "Rethinking the brain drain",*World Development* 32(1): 15.22.

Statistical appendix

Table I: Definition of variables

Variable	Definition/source
Total economically active children[1]	The term economically active children refers to children involved in economic activity for at least one hour in the reference week of the survey; World Bank (2012)
General globalization index (KOF)	This index measures the following dimensions of globalization: Economic globalization. Weight in the index: 36% Current flows: i) Trade (percentage of GDP), World Bank (2011), ii) Foreign direct investment stock (percentage of GDP) UNCTAD (2011), iii) Investment portfolio (percentage of GDP), IMF (2011), iv) Payments to foreigners (percentage of GDP), World Bank (2011). Restrictions: i) Hidden barriers to exports, Gwartney et al. (2011), ii) Tariff average, Gwartney et al. (2011), iii) International trade taxes (percentage of current revenue), World Bank (2011), iv) Restrictions on capital account, Gwartney et al. (2011). Social globalization. Weight in the index: 37% Personal contact: i) Telephone traffic, International Telecommunication Union (2011), ii) Transfers (percentage of GDP), World Bank (2011), iii) International tourism, World Bank (2011), iv) Foreign population (percentage of total population), World Bank (2011), v) International letters (per capita), Universal Postal Union, Postal Statistics database. Information flows: i) Internet users (per 1000 people), World Bank (2011), ii) Televisions (per 1000 people), World Bank (2007), iii) Press circulation (percentage of GDP) United Nations Commodity Trade Statistics Database (2011). Cultural proximity: i) Number of McDonald's restaurants (per capita), various sources, ii) Number of IKEA stores (per capita), Ikea, iii) Book trade (percentage of GDP), UNESCO (various years), United Nations Commodity Trade Statistics Database (2011). Political globalization. Weight in the index: 27%. - Embassies in the country, Europa World Yearbook (various years) - Participation in international organizations, CIA World Fact book (various years) - Participation in United Nations Security Council Missions, UN International Treaties United Nations Treaties Collection
Per capita GDP (PPP)[2]	Per capita GDP based on purchasing power parity (PPP). GDP (PPP) is the gross domestic product converted into international dollars using purchasing power parity rates. Data are given in 2005 constant international dollars, World Bank (2012).
Child mortality rate[3]	The child mortality rate is the probability of death occurring between the ages of one and five if subject to current age-specific mortality rates. This probability is expressed as the rate per 1000, World Bank (2012)
Notes: [1] % of children between 7 and 14 [2] 2000 constant US dollars [3] Per 1000 one-year-old children	

Source: Author's own creation, from the World Bank's *World Development Indicators* (WDI) database (2012) and the KOF globalization index (Dreher 2006, Dreher *et al.* 2008).

TABLE II: Basic statistics of the variables used

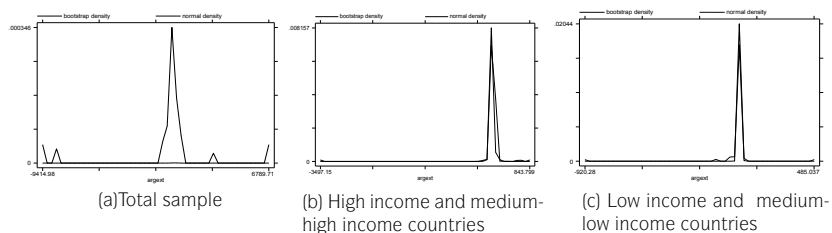| Variable	Obs	Mean	Std. Dev.	Min	Max
Total sample					
Total economically active children	160	21.71	17.15	1.00	74.40
General globalization index	1100	48.13	12.05	16.92	87.29
Economic globalization	1020	51.61	13.71	17.15	85.43
Social globalization	1100	35.21	14.39	8.68	85.23
Political globalization	1112	63.36	18.04	18.25	94.58
Per capita GDP (PPP)	1140	4068.54	3970.91	247.80	24690.30
Child mortality rate	137	39.59	36.00	1.50	193.10
High income and medium-high income countries					
Total economically active children	47	9.36	8.09	1.00	42.20
General globalization index	336	59.09	8.48	39.70	87.29
Economic globalization	336	61.82	10.19	34.86	85.43
Social globalization	336	49.37	10.91	12.33	85.23
Political globalization	336	69.14	18.37	21.62	94.58
Per capita GDP (PPP)	348	8569.81	4217.33	2122.52	24690.30
Child mortality rate	26	8.40	5.41	1.50	21.50
Low income and medium-low income countries					
Total economically active children	113	26.85	17.33	2.60	74.40
General globalization index	764	43.31	10.06	16.92	68.48
Economic globalization	684	46.59	12.37	17.15	78.09
Social globalization	764	28.98	10.90	8.68	59.43
Political globalization	776	60.86	17.31	18.25	94.02
Per capita GDP (PPP)	792	2090.72	1439.49	247.80	7791.76
Child mortality rate	111	46.90	36.23	2.05	193.10

Source: Author's own creation, from the World Bank's *World Development Indicators* (WDI) database (2012) and the KOF globalization index (Dreher 2006, Dreher *et al.* 2008).

Table III: Post-estimation maximum point: parametric bootstrap statistics

Sample	Repetitions	Observed	Bias	Standard error	Confidence interval up to 95%
Total	1000	13.08193	-26.65613	597.124	-1158.679 1184.843 (N) -288.7597 299.2054 (P) -649.0911 149.3177 (BC)
High income and medium-high income.	1000	79.56391	-25.18202	172.2258	-258.4019 417.5297 (N) -80.60803 158.2863 (P) 65.03155 840.4773 (BC)
Low income and medium-low income	1000	34.79783	-3.199408	49.73582	-62.80083 132.3965 (N) -6.306838 42.51403 (P) -15.89502 41.5222 (BC)
Notes: Bivariate normality assumed N = normal, P = percentile, BC = bias corrected					

Source: Author's own creation, from the *World Bank's World Development Indicators* (WDI) database (2012) and the KOF globalization index (Dreher 2006, Dreher *et al.* 2008).

Figure I: Bootstrap distribution of function maximum with respect to child labor and globalization. (density estimation of the distribution of the maximum using a kernel)

(a)Total sample

(b) High income and medium-high income countries

(c) Low income and medium-low income countries

Source: Author's own creation, from the World Bank's *World Development Indicators* (WDI) database (2012) and the KOF globalization index (Dreher 2006, Dreher *et al.* 2008).