Core Labor Standards and Development:

Impact on long-term income

First Version: November 2005
Last Version: March 2007

Rémi BAZILLIER
Paris School of Economics - Université Paris 1 Panthéon Sorbonne - CNRS
Remi.Bazillier@malix.univ-paris1.fr
Tel : +33 1 44 07 82 43 – Fax : +33 1 44 07 82 47

Abstract : The paper focuses on the impact of international core labor standards on long-term per-capita income. In order to do that, it is necessary to build a new synthetic indicator of labor standards using multiple correspondence analysis, measuring the four core labor standards recognized by ILO. We propose an estimation of the steady-state per-capita income for a large panel of countries (104) and then that of developing countries. The Two-Stage Least Square Method is used to correct potential problems of endogeneity. The findings show that, by and large, countries with higher labor standards have a higher steady-state level.

Key words : Growth, Labor Standards, Data analysis

I am very grateful to Jean-Louis Arcand (CERDI-CNRS) for the very helpful comments he made on a previous version of this paper. I also want to thank Paul Gyselinck (CERDI), Ariane Tichit (ENS-LHS) and Jean-Claude Berthelemy (CES-CNRS) for their advices and Nicolas Sirven (Capability and Sustainability Centre, University of Cambridge) for his help.

1. INTRODUCTION

Labor Standards are by no means a new issue. We have seen demand for labor standards rise with the globalization process. Many developed countries and workers unions are demanding a social clause in international trade; the idea behind this proposition being that international trade exerts a downward pressure on labor standards in developed countries and constitutes an 'unfair' competitive advantage for developing countries. From this perspective, international coordination should be more efficient in order to achieve trade liberalization and strengthening of labor standards (Beaulieu and Gaisford, 2002). Bagwell and Staiger (2000) argue that international negotiations on tariffs alone would lead to a globally inefficient outcome characterized by partial liberalization and a lowering of labor standards. They suggest different approaches of multilateral negotiations could allow governments to reach a globally efficient outcome in terms of trade liberalization and strengthening of labor standards.

Until now, the debate has focused largely on the link between labor standards and international trade. However, this approach has its limitations. In the first instance, many developing countries are completely against any kind of links between international trade and labor standards, for fear of a 'hidden protectionism'. Furthermore, trade sanctions can be counter-productive because they harm the people they are designed to help (Maskus, 1997; Srinivasan, 2004; Brown Deardorff and Stern, 1996, Brown, 2000). Many authors (Griswold, 2001; Committee for Economic Development, 2001) argue the best way to improve labor standards is to achieve trade liberalization (arguments for the endogeneity of labor standards). Yet we might suggest that it is insufficient to study the whole phenomena exclusively from the point of view of the link with international trade, as it is often the case that countries with very weak labor standards are not integrated into international trading. Moreover, the export sectors have very often better standards than the others (Brown, Deardorff and Stern, 2003).

The focus of this paper is on the link between labor standards and long-term per-capita income. The raising of labor standards may have important consequences on determinants of long-term income. Opponents of a social clause into the WTO argue that weak labor standards are a condition for the development of the poorest countries (thanks to their comparative advantage in non-skilled labor force). It is therefore doubly interesting to study the impact of core labor standards on long-term per-capita income.

The first goal of this paper is to build an index to measure the enforcement of the core labor standards recognized in the ILO declaration on Fundamental Principles and Rights at Work (1998). For that purpose, we build several indexes to measure child labor, freedom of association, discrimination and forced labor. We also take into consideration the number of ILO conventions ratified by each country.

The lack of data is a serious problem. It is necessary to aggregate different sources of information to minimize this problem. Granger (2005), Ghai (2003), Kucera (2001) and more generally ILO 'Decent Work' Research Program are also working on this issue.

We want to measure the enforcement of all core labor standards and not the enforcement of each kind of these standards. For that, we aggregate our different indexes using Multiple Correspondence Analysis (MCA) in order to determine endogenously the weight of each variable in the aggregated index.

The second goal of this paper is to determine the impact of these core labor standards on long-term per-capita income. We use a "Mankiw, Romer and Weil (1992) model augmented by labor standards. Our goal is to evaluate the long-term effects of a better enforcement of

these standards; this in turn brings us to an estimation of the long-term steady-states of different countries[1].

2. LABOR STANDARDS: PRESENTATION AND CONSTRUCTION OF INDEXES

Labor Standards can be defined by the global principles and rules governing work and professional conditions (OECD, 1996). They are multifaceted and may vary from one country to another depending on the stage of development, political, social, and cultural conditions or institutions. Labor standards will then largely depend on given national circumstances (Stern, 1999). However, OECD and ILO distinguish four *core* labor standards: (1) prohibition of forced labor, (2) freedom of association and the right to organize and bargain collectively, (3) elimination of child labor exploitation, and (4) non-discrimination in employment. OECD justifies these choices with the reasoning that they are fundamental part of the Human Rights and their respect carries more efficiency. ILO argues that these core labor standards represent the fundamental rights of workers which can be applied all over the world irrespective of the stage of development. There is an international consensus[2] to consider that these core labor standards should be globally recognized and protected, which correspond in turn to eight ILO conventions[3].

(a) Labor Standards and Indexes

We build five indexes[4]: ratifications of ILO's conventions, Child labor, freedom of association, discrimination, and forced labor. Each of these indexes aggregates different sources of information in order to minimize the problems of data[5]; these we then classify into five groups in order to have more comparable data. Finally we obtain a set of ordinal indexes.

For each **number of conventions ratified (NR)**, we build a formula[6] to measure both the number of conventions and the number of *core* conventions ratified. This formula gives a higher weight to ratifications of *core* conventions.

For **child labor (CL)**, we build a raw and an adjusted index. The raw index is defined by the percentage of working children between 10 and 14 years old. We consider this data as a good proxy of the level of exploitation of children, and it is the one generally used in the literature to measure child labor (Granger, 2005 ; Bescond & al., 2003). However, this raw index is unsatisfactory for many developing countries because of problems of data. We might suppose that a country in which half of the children do not go to primary school would have a significant problem with child labor, even if it is possible that a significant number of children neither work nor go to school. We observe that countries which have an official child labor rate equal to zero also has a low level of primary school enrollment. Political consideration or lack of data can explain this paradox. Our adjusted index is an attempt to correct this bias. It is defined by the raw indicator, adjusted by the percentage of children who do not attend primary school[7]. This method is also suggested by Bescond & al. (2003) and used by Kucera & Sarna (2004). Bescond & al. (2003) argue that, taken as a worldwide average, the number of children combining work with school is nearly the same (9.9% in 2000) as the number of children neither at work nor school (10.1%)[8]. We use the gross rather than the net enrollment rate as it is available for a larger number of countries.

For **Freedom of Association and collective Bargaining (FA)**, we build a composite index. The goal is to obtain an index available for a large number of countries, both from a quantitative and a qualitative point of view. The unionization rate[9], the number of ILO

conventions on freedom of associations ratified by the country and the civil rights Freedom House index are the criteria taken into account.

Gender discrimination in employment (DISCRI)[10] is a multidimensional phenomenon. Our hypothesis is discrimination in education is an essential and complementary component of discrimination in employment. Discrimination can be seen indeed as pre-*labor market discrimination* (Altonji and Blank 1999). Recent work by Durlauf (1996), Benabou (1996), Lundberg and Startz (1998) builds upon earlier work by Loury (1977) emphasizing that pre-labor market discrimination against a group has an unfavorable effect on the human capital of future generations and may lead to persistent group differences. Current labor market discrimination may also influence pre-labor market discrimination (Altonji & Blank, 1999). If women believe they will have difficulties being accepted in a particular profession, they are less likely to invest in the skills necessary for this profession (Coate and Loury, 1993). Because of the correlation between pre-labor market discrimination and labor market discrimination, several authors (Jolliffe and Campos, 2005; Chamberlain and Van Der Berg, 2002) have observed a strong correlation between the unexplained component of Oaxaca (1973) decomposition (which is seen as the component measuring discrimination in employment), and discrimination in education.

Our index takes into account the differences of several components: differences in alphabetization rate, differences in schooling rates, differences of income, gender empowerment measure (GEM) of UNDP, and female activity rate. Hence, we focus on gender discrimination and not all discriminations mentioned in ILO conventions, because of a lack of reliable and comparable data in racial discrimination at the international level. The focus on gender discrimination is generally accepted in the literature on labor standards (Ghai, 2003;

Busse and Spielmann, 2006). Moreover, the fundamental convention 102 on equal remuneration only deals with equal remuneration between men and women.

For **Forced Labor (FL)** index, we used the following definition: "*Forced or compulsory labor is defined as work or service exacted under the menace of penalty and for which a person has not volunteered"* (Source: ILO). We use several sources: Busse & Braun (2003), Antislavery and ICFTU (2001), ILO (2001) and US Department of State (2003). Busse and Braun (2003) built two indexes: one of the core forms of forced labor (scale from 0-5) and another one for all forms of forced labor (scale from 0-9). Considering it is more crucial to focus here on the core forms of forced labor, we propose the following formula:

$$FL_{Raw} = FORCED1^2 + FORCED2$$

With *FORCED1,* the index of core forms of forced labor and *FORCED2,* the index of all forms of forced labor. We then obtain values between 0 and 7.5 and we propose the following classification: FL=1 for countries with FL_{Raw}=0 ; FL=2 for countries with FL_{Raw} between 0.5 and 1 ; FL=3 for countries with FL_{Raw} between 1 and 2; FL=4 for countries with FL_{Raw} between 2.5 and 3.5, and FL=5 for countries with FL_{Raw}>3.5.

For the missing values in the index of Busse and Braun (2003), we rebuilt a similar index thanks to other sources of information mentioned above, operating a distinction between core forms and all forms in order to obtain a comparable value.

(b) The aggregated index of Core Labor Standards

We assume to study the common impact of *all* four core labor standards and not simply the impact of each standard separately[11]. This choice can be justified by several reasons:

- An aggregated index measures the general index of labor standards, which can also be seen as an evaluation of the *social consciousness* of the country.
- Each standard may have complementary effects. For example, the main effect of freedom of association would be to ensure the effective enforcement of other standards. Trade unions, asking for the respect of the rights of workers, will have a positive influence on the respect of other core labor standards. This effect can be measured with the global index of labor standards.
- This approach is justified by the activity of international organizations such as ILO which promote the four core labor standards and not only one among the four. It is more interesting to study the *general* effect of the four core labor standards to see if this strategy is justified economically.

The first way to obtain a correct measure of the enforcement of all core labor standards would be to sum the different values of each individual index. However, this choice is not completely satisfactory because it will introduce a bias in the measure for two main reasons:

- Totaling each index of every standard to obtain a scalar index would mean that each norm has the same explicative power to explain the general level of workers rights. This is not our hypothesis. We consider the discriminating power of each standard could differ.
- We have to take into consideration the difficulty to obtain good data, without statistical bias for each standard. We are confronted with a serious problem of imperfect information. If we suppose the existence of a "common tendency", here the general enforcement of core labor standards, we have to isolate the effects for each standard coming from this common tendency and delete all other effects (statistical

bias or measure of different information). Data analysis is a good tool to fulfill this kind of goal by isolating the common factors between different variables.

We have different indexes measuring different aspects of labor standards. It is necessary to find a general index of workers rights' enforcement, which is unobserved. Multiple correspondence analysis can provide this measure.

(i) Multiple Correspondence Analysis

Multiple Correspondence Analysis (MCA) is a mathematical technique allowing an analysis of different discrete variables by projecting on different axis the common information contained into these different variables. The goal is to reduce the number of dimensions minimizing the loss of information (Benzecri, 1992; Greenacre, 1984).

The attentive reader may rightfully ask why we decide to use *multiple correspondence analysis* and not principal component analysis (PCA), generally used for this kind of studies[12]. To this attentive reader, we would like to answer that PCA is a method adapted for quantitative and continuous variables while correspondence analysis is used to analyze qualitative, discrete or ordinal values. Strength of this method is that it allows us to explore non-linear relations between variables which is not possible with PCA. PCA can be seen as an analysis of correlation between variables. However, a null correlation between two variables does not mean that there is no relation between the variables but that the relation of first degree is null. MCA allows exploring the relation of degree higher than one, mainly because it is an analysis of the relations between different modalities and not variables.

(ii) MCA and aggregated index of Core Labor Standards

Thanks to MCA, we have different axis explaining different aspects in respect of core labor standards. The question is then how many axis (or factor) to retain in order to have a good description of the whole phenomena. Results of the MCA are summarized in Annex 2. Three main comments can be done in light of these figures. Firstly, it is very interesting to see that the first factor (F1) explains by itself about 72.5% of the total inertia. Put differently, F1 synthesizes much more information on the five variables of core labor standards than the accumulation of all other factors. According to the scree test (Cattell 1966), this "gap" between F1 and the other factors allows us to think that countries' coordinates on the first axis are a good proxy for the global application of core labor standards. Secondly, all low items have negative values and their sign changes when they indicate a higher degree of core labor standards. In other words, there is no non-linear effect among the five variables used; they all evolve in the same direction along the first factor. This confirms the homogeneity of the data and the choice of F1 as the aggregate index of core labor standards. Items coordinates on the first axis are then re-defined using linear extrapolation in the [0,1] interval for homogeneity of the index. Thirdly, it appears that the choice of the Number of ILO ratifications is consistent with the four other labor standards because its weight (18.9%) is very close to 1/5. Note that the weight of a variable is the sum of the absolute contributions (to the inertia of F1) of each item. Forced labor (17.6%) is thus close to average weight, while Freedom of association (26.6%) and Child labor (24.3%) are the most discriminating variables. The fact that Non-Discrimination (12.7%) seems to play the less important role may be due to he fact that discrimination depends on factors (culture, religion, etc.) much less related to labor standards than any other variables.

This index has three main advantages:

- Contrary to other empirical works on labor standards, it is based on a clear definition of these standards, supported by a real international consensus of worldwide organizations, governments and scientists.
- Data analysis means all the statistical bias or imperfections of data are not taken into consideration, therefore measurement errors are more likely to be reduced.
- We have shown, with thanks to MCA that shared characteristics can be found. If disparities exist, different labor standards evolve in the same way.

3. IMPACT OF CORE LABOR STANDARDS ON LONG-TERM PER CAPITA INCOME

(a) Expected Impact of Labor Standards

Labor standards are supposed to have common effects on income per-capita. There are three main determinants of income: productivity[13], investment in human capital and investment in physical capital.

Concerning productivity, freedom of association, abolition of forced labor, discrimination and child labor are supposed to have a positive impact. Unions give workers a direct voice to management making it more likely that conflicts will be resolved through discussion rather through conflict. What is more, unionization reduces turnover, making it more likely that employees will develop valuable job-specific skills and that employers will invest in long-term training, which will contribute to productivity growth. Aidt and Tzannatos (2002), arguing that collective bargaining facilitates coordination, showed that most studies on the issue find that coordinated collective bargaining was associated with improved macroeconomic performance[14]. Martin and Maskus (2001) show that if product markets are

competitive, it is likely that association rights would increase output and competitiveness, by raising productivity. Labor Market discriminations impede effective matching in the labor market between employers and workers. Economies are much more productive when jobs are allocated on the basis of skills and ability instead of ethnicity and genders (Brown, Deardorff & Stern, 1996 ; Maskus, 1997 ; OECD, 1996). Child labor and forced labor increase the supply of cheap or free labor within a country, driving down wages for everybody and easy access to cheap labor removes incentives for firms to lower their costs by developing or adopting new technologies. Productivity growth could be slowed. Globally, we expect that core labor standards will have a positive impact on productivity.

Concerning human capital, child labor, discrimination, forced labor, and freedom of association are expected to have an effect. The fact that children are working in low-wage jobs instead of attending school will impede the growth of a human capital nation stock (Maskus, 1997). Concerning discrimination, we assume that discrimination in employment is linked with discrimination in education. The eradication of discrimination in employment can be seen as an incentive for the education women or other minorities. Forced labor abolition can induce an improvement of human capital efficiency as it is highly probable forced workers are overeducated for their job. Lastly, unionization makes more likely that employees will develop valuable job-specific skills and employers will invest in long-term training, which will be also positive for human capital accumulation.

Concerning investment in physical capital, only indirect effects can be expected.

(b) The Mankiw, Romer and Weil (MRW) model augmented by labor standards

We use the Solow (1956) Growth Model, augmented by human capital (Mankiw, Romer and Weil, 1992)[15]. Several authors measure the influence of other factors on long-term per-capita income using this model. This empirical study will measure the impact of core labor standards on growth by means of spillover effects on different productions factors.

Let the production function be:

$$Y_t = K_t^{\alpha} H_t^{\beta} (L_t A_t)^{1-\alpha-\beta} \quad (1)$$

Where *K* is the stock of physical capital, *H* the stock of human capital, *A* the level of labor productivity, *L* the level of labor. Let s_k be the fraction of income invested in physical capital, s_h the fraction of income invested in human capital. The evolution of the economy is determined by:

$$\dot{k}_t = s_k y_t - (n + g + \delta) k_t \quad (2)$$

$$\dot{h}_t = s_h y_t - (n + g + \delta) h_t \quad (3)$$

where *y=Y/AL, k=K/AL, h=H/AL* and *ls=LS/AL* are quantities per effective unit of labor, δ is the rate of depreciation. Following MRW (1992), we assume that the same production function applies to human capital, labor standards, physical capital and consumption. One unit of consumption can be transformed without cost into either one unit of physical capital ore unit of human capital. In addition, we assume that human capital depreciates at the same rate as physical capital.

We suppose that $\alpha+\beta < 1$ which implies that there are decreasing returns to all capital. Equation (2) and (3) imply that the economy converges towards a steady-state defined by:

$$k^* = \left(\frac{s_k^{1-\beta} s_h^{\beta}}{n+g+\delta}\right)^{1/(1-\alpha-\beta)} \quad (4)$$

$$h^* = \left(\frac{s_k^{1-\alpha} s_h^{1-\alpha}}{n+g+\delta}\right)^{1/(1-\alpha-\beta)} \quad (5)$$

Substituting (5) and (6) into the production function (1) and taking logs gives an equation for income per-capita.

$$\ln\frac{Y_t}{L_t} = \ln A(0) + gt + \frac{\alpha}{1-\alpha-\beta}\ln(s_k) - \frac{\alpha+\beta}{1-\alpha-\beta}\ln(n+g+\delta) + \frac{\beta}{1-\alpha-\beta}\ln(s_h) \quad (6)$$

There is an alternative way to express the role of human capital in determining income in this model. Combining (6) with the equations of the steady-state level of human capital given in (5) yields an equation for income as a function of the rate of investment in physical capital, the rate of population growth and the *level* of human capital.

$$\ln\frac{Y_t}{L_t} = \ln A(0) + gt + \frac{\alpha}{1-\alpha}\ln(s_k) - \frac{\alpha}{1-\alpha}\ln(n+g+\delta) + \frac{\beta}{1-\alpha}\ln(s_h) \quad (7)$$

(c) Empirical Specification and Data

From equation (7), and following the methodology used by Murdoch and Sandler, we propose the following estimating equation in order to estimate the effect of labor standards (*ls)* on long-term per-capita income.

$$\ln(y_{96}) = \gamma_0 + \gamma_1 \ln(s_K) + \gamma_2 \ln(n_i + g + \delta) + \gamma_3 \ln(h^*) + \gamma_4 \ln(ls^*) + \epsilon \quad (8)$$

theoretically with, $\gamma_1 = -\gamma_2 = \frac{\alpha}{1-\alpha}$, $\gamma_3 = \frac{\beta}{1-\alpha}$ and where *ls* is the value of our aggregated index of labor standards. Following MRW, we assume that $g+\delta=0.05$. The model

is estimated for the year 1996 and for two samples: a large sample of 104 countries including developing and developed countries, and one other including only developing countries.

Data used to estimate the different equations come from different sources: (i) The Penn World Tables Mark 6.1 (Heston, Summers and Atten, 2002), (ii) Barro and Lee (1996) and Barro and Lee (2000), and (iii) our index of labor standards. We use the GDP per capita, measured in constant dollar (RGDPL) in Heston, Summers and Atten (2002) to measure the income. The investment variable is the average of the investment ratio between 1960 and 1996. Data on population are the annual average of the population growth rate (variable POP in PWT). For the variable of Human Capital, we take here the *steady-state level* measured by the percentage of the population older than 25 that has attained secondary school in 1996 (Barro and Lee, 1996 and 2000).

(d) Instruments

As labor standards may have a significant impact on long-term per-capita income, income may also have an impact on the level of labor standards. It is, moreover, one of the main arguments of the opponents to a social clause in the WTO. Casella (1996) considers that differences in labor standards are in part driven by differences in income. Convergence in income levels will so cause an endogenous convergence in levels of labor standards[16]. The problem of endogeneity can create a bias in the estimation and has to be taken into consideration in the econometric methodology. This problem can be solved if we have an instrument for labor standards to correct the bias of endogeneity and measure the real impact of labor standards on growth thanks to the Two-Stage Least Square (TSLS) Method. Such an instrument must be an important factor in accounting for the variation of labor standards that we observe, but have no direct effect on performance.

We propose to test the validity of the following instruments: (1) a combined polity score (Polity IV) proposed by Gleditsch (2003)[17], (2) the competitiveness of participation (extent to which non-elites are able to access institutional structures for political expression[18]), (3) the executive constraints (operational independence of chief executive)[19], (4) the openness of executive recruitment (opportunity for non-elites to attain executive office)[20], and (5) the competitiveness of executive recruitment (extent to which executives are chosen through competitive elections)[21]. All data come from Gleditsch (2003). We take the average of each variable for the period 1990-2000[22].

The level of democracy (instrument 1) can be seen as a determinant of labor standards without direct link to economic growth. The global consensus in political sciences considers there a relation of causality between democracy and Human Rights. Carothers (1994) considers democracy and Human Rights are the 'two sides of the same coin'. The former United Nations Secretary General Boutros-Boutros Ghali argued that *"Human Rights, Equal rights, and government under law are important attributes of democracy"* (Fox & Nolte, 1995). Davenport & Armstrong (2004) notice that political democracy is seen as "a" and even "the" solution to the problem of state repression (Dahl, 1966; De Gre, 1964; De Jouvenal, 1945 ; Goldstein, 1978 ; Rummel, 1997 ; Russel 1993)[23]. They argue that above a certain level of democracy, democracy influences repression in a negative and roughly linear manner. Some psychologists tried to study the link between the *perception* of Human Rights and Democracy. Staerkle, Clemence & Doise (1999) argue members of non-democratic countries are viewed as accepting more human rights violations than members of democratic countries because of the pervasive impact of information on political judgments on the population. Last, ILO (1998) observes that 'the expansion of the democracy and of the free market economy has generally improved the context in which freedom of association principles are applied'.

On the other hand, there is no consensus concerning the link between democracy and economic growth, as showed by OECD (2004). Bardham (1993) states the basic dilemma: "*democracies might actually be more susceptible to pressure for immediate consumption and other particularistic demands that may hamper long-run investment. On the other hand, authoritarian rulers who have capacities to resist such pressures may instead be self-aggrandizing, plundering the surplus of the economy"*. The empirical research failed to find a clear relation between democracy and economic growth (Barro, 1996; Barro, 1997, Durham, 1999).

To justify our choice of the instruments related to non-elites participation (instruments 2 and 4), we invoke the relations between rights and norms and the way to construct norms. Honfeld distinguished between 'the claim-rights' and the 'liberty-rights'. When an actor's right to act is transferred by that actor (or by others) to others actors, the first actor loses his liberty-right and the others come to have a claim-right toward him. Coleman (1990) claims that a norm concerning a specific action exists when the socially defined right to control the action is held by others. A norm needs a social consensus that placed the right in the hand of a group of people (the corporate actor in the wording of Coleman). As Coleman said: "*the genesis of a norm is based on the externalities of action which cannot be overcome by simple transactions that would put control of the action in hands of those experiencing the externalities"*. Thus, the principal question is - how do societies define this social consensus needed to build these norms. Labor standards have the objective criteria to give them the statute of 'norms'. But to be implemented, the government needs to recognize these rights to individuals. This is why the democratic regime is an important factor to put in place labor standards, as previously demonstrated.

Yet the democratic criteria may not be sufficient. A lot of sociologists and political scientists have studied the relations of power inside the societies. Mosca (1896) observed the organized structures of the elites in all societies. The characteristic of these elites is to be a minority group who holds the power with a relation of solidarity between them amidst common values or interests. Mills (1956) made a distinction between social classes and elite, with three components to his elite: a political elite, an economic elite, and a military elite, all linked by common interests. Last, Bourdieu & Passeron (1977) argue on the power of the 'dominant class' and the 'symbolic violence' used by this 'dominant class' in order to transmit to all the societies their own values and beliefs.

The need to improve labor standards in order to keep the comparative advantage of the country as it is, or the economic interest of some strategic firms, may not be in the interests of the elite. If we assume that the individuals who will benefit from an improvement in labor standards are not part of this elite, it is crucial that the 'non-elites' can participate in the democratic process, being able to access institutional structures for political expression, or having the opportunity to attain executive office. This is what Pareto (1916) called the rotating of the elite.

If we consider that the democratic system is efficient, i.e. the goal of the government is to take into account the collective interests of the peoples or the interests of the poorest (Rawls 1971), the crucial point is to give to the non-elites the capacity to have a real opportunity for expression and not systematically to change the elite.

So, if we assume the interest of the non-elites is to improve the labor standards and the working conditions, the political participation of the non-elites may be a determinant of the level of labor standards. Conversely, this is not a determinant of economic performance. Thus, we assume these variables can be used as an instrument.

The two other instruments proposed (competitiveness of executive recruitment and operational independence of chief executive) complete the explanation of the level of labor standards based on the level of democracy and the capacity of non-elites to participate in the political process.

In our attempt to correct for potential endogeneity of labor standards, we implement the Two-stage leas-squared method with the instruments proposed above. As a preliminary step, we carried out three sets of tests concerning the validity and the relevance of our instruments (see Annex 4 for details of the various tests performed to gauge the validity and relevancy of the subsets of instruments). The competitiveness of participation (instrument 2) is a relevant and valid instrument. All the others, excepting executive constraints (instrument 3), can be used as an instrument when they are associated with instrument 2. We then propose IV estimations with different subsets of instruments.

(e) IV estimates

(i) The effects of Core Labor Standards at the Global Level

We first estimate equation (8) using IV estimators in order to obtain consistent estimates of the impact of core labor standards on long-term per-capita income[24]. According to the results of validity and relevance tests, we use alternatively, the competitiveness of participation (2), and combinations of this instrument with level of democracy (1), openness of executive recruitment (4) and the competitiveness of executive recruitment (5). The results of the estimations are given in table 1. We then restrict the equation according to the theoretical model and find the results given in table 2.

Table 1 about here

Table 2 about here

The coefficient of labor standards is always strongly positive and significant whatever the subsets of instruments chosen. All things being equal, labor standards have a positive impact on long-term per capita income which means that countries could have different growth paths according to their levels of labor standards. The coefficient takes a high value with a mean of 0.50 which is higher to the estimated coefficient of education or investment. To give a quantitative assessment of this result, a one standard deviation change in the log variable of labor standards (0.88) will increase the GDP per-capita by 44% (0.88*0.50). If we take 0.42 as a mean of the estimated coefficient for the variable of investment, a one standard deviation change in the log variable of investment will increase the GDP per-capita by 25%. And if we take 0.46 as a mean of the estimated coefficient for the variable of education, a one standard deviation change in the log variable of education will increase the GDP per-capita by 42%. The standardized beta coefficient[25] is also more important for labor standards than for other variables (0.39 for labor standards against 0.36 for education and 0.22 for investment).

The importance of these quantitative assessments should not be underestimated. However, a one standard-deviation of labor standards is a very significant change for a country, and cannot occur in a short-term period. For example, if we take the average value of the log-variable of labor standards (3.51), with a one standard-deviation change, the new value of the log-variable of labor standards will be 4.39. A country like Burundi has a level of labor standards closed to 3.51. Bulgaria has a level of labor standards close to 4.39. A one standard-deviation change can be seen as a long-term process that will probably change the structure of the economy, especially for labor market. In a long-term perspective, the country will adapt

the way of organizing production with these new standards. A new international specialization can be expected. In addition, as we have seen before, the labor standards are expected to have a strong impact on the main determinants of economic growth. Investment, education or productivity may change positively with an improvement of labor standards. Some cumulative effects may occur that will induce a stronger impact on long-term per-capita income.

We can not rule out the possibility that other economic mechanisms are also taking place. More precisely, we cannot control, because of data limitations, for unobserved country-specific effects. In order to minimize this problem, we chose here a traditional growth model in order to control our results with the commonly accepted determinants of long-term per-capita income.

One other limitation is the possible ambiguity between the human capital and labor standard variables. In terms of gender discrimination and child labor, the labor standard indicators are defined, in part, in terms of human capital outcomes. We justified this choice by the need to measure the effective enforcement of labor standards. On this matter, the inclusion of a variable on education is necessary to measure the real level of child labor (Bescond and al. 2003). The discrimination in education is also an essential and complementary component of discrimination in employment. We do not consider that these two measures of education included in the labor standard index could influence the results for two reasons: first, the index of education included in the Child Labor index (CL) is only used to correct for potential statistical bias in the use of the variable 'percentage of working children between 10 and 14 years old', which is the main variable explaining the value of the CL index. Concerning the index of discrimination, we use only the differences between the alphabetization rate and

school enrollment of men and women. More generally, human capital and labor standards can be seen in a lot of cases as interlinked.

(ii) The effect in developing countries

We showed in the previous section that core labor standards could have a strong impact on the long-term per-capita income. It is therefore necessary to study if the relationship is still valid for the developing countries. The results (see Table 3 and 4) are consistent with the previous ones. Labor Standards also have a positive effect on long-term per-capita income in developing countries. The coefficient is now included between 0.32 and 0.43. If we take 0.34 as the average value of the estimated coefficient for labor standards, a one standard-deviation change will increase the GDP by around 30%[26]. It is less than 44% observed in the previous section. This can be explained by two elements: (1) the lower value of the standard deviation (2) the lower value of the estimated coefficient. Nevertheless, the effects are still strong and highly significant.

Table 3 about here

Table 4 about here

(iii) Tests of Robustness

In order to make certain that the results presented in the previous sections are not driven by only one component of our aggregated index of core labor standards, we first estimate an equation in OLS (because of the difficulty to find as much instruments as endogeneous

variables). Results are given in table 5. It seems that only child labor has a significant impact on long-term per-capita income[27].

Table 5 about here

However, and it is a strong justification for the use of an aggregated index, we consider that labor standards may have complementary effects. We calculate a new aggregated index of all labor standards except child labor thanks to Multiple Correspondence Analysis. We then estimate a new equation including both the index of child labor and the newly aggregated index of all other labor standards. We use here IV estimations[28]. Both estimated coefficients are significant (See Table 6) justifying our choice of measuring the effects of all core labor standards jointly. Both prohibition of child labor and the enforcement of all other standards have a positive impact on per-capita income.

Table 6 about here

4. CONCLUSION AND IMPLICATION

There is at present an international consensus to recognize four core labor standards as fundamental rights of workers. These standards are prohibition of forced labor, prohibition of child labor, freedom of association and collective bargaining and prohibition of discrimination.

The first contribution of this paper is to build an aggregated index of the effective enforcement of these core labor standards. In order to do this, we identify reliable data and build several indexes of respect of each of these standards. Using Multiple Correspondence Analysis, we endogenously attribute a weight for each standard according to their discriminating power.

The second contribution of this paper is the result, that, overall, a good enforcement of core labor standards has a positive and significant impact on long-term per-capita income. Countries with same characteristics of investment, human capital and labor force could have different growth path depending on their level of labor standards. This result is obtained correcting the problem of endogeneity using the instrumental variables and TSLS method. Following a strict methodology, we show that the instruments proposed are valid and pertinent. This result is valid both for a World sample and for developing countries.

These results are suggestive and call for future research on this field. We acknowledge the following limitations of this empirical work. First, the labor standards indicators, considering gender discrimination and child labor, are defined in terms of human capital outcomes. This is necessary to have a good estimation of the effective level of labor standards. Second, it is not possible to have a temporal analysis and to control for country-specific effects, due to the lack of reliable data on labor standards.

We identify in this paper some empirical findings of the impact on labor standards on long-term per-capita income. We suggest two directions for future researches. First, a theoretical approach seems necessary to motivate these empirical evidences. This was, however, out of the scope of this paper. Yet, the explanation of theoretical linkages between labor standards,

labor productivity and human capital can provide a useful explanation to the empirical evidences observed here. Second, we think it is necessary to build a temporal index of core labor standards in order to give a dynamical dimension to our results. It will also be useful to take into account the country specific effects which we have been unable to account for since this study has a cross-country dimension.

REFERENCES

Aidt, T. & Tzannatos, Z. (2002). *Unions and collective bargaining: Economic effects in a global environment.* p. xv, 168. Directions in Development series. Washington D.C.: the World Bank.

Altonji, J. & Blank, R. (1999). Race and Gender in Labor Market. In O. Ashenfelter & D. Card (Eds.), *Handbook of labor Economics.* (pp. 3143-3259). Elsevier Science.

Anti-Slavery International & ICFTU (2001). *Forced Labour in the 21st Century.* Brussels and London: Anti-Slavery International.

Bagwell, K. & Staiger, R.W (2000). The simple economics of Labor Standards and GATT. In *Social dimensions of U.S. trade policies*. (pp 195-231). Ann Arbor : University of Michigan Press, Studies in International Economics

Bardham, P. (1993). Symposium on Democracy and Development. *Journal of Economic Perspectives, 7*, 45-49.

Barro, R. (1996). Democracy and Growth. *Journal of Economic Growth, 1,* 1-27.

Barro, R. (1997). *Determinants of Economic Growth: a cross-country empirical study.* Cambridge: MIT Press

Barro, R. & Lee, J. (1996). International measures of Schooling Years and Schooling Quality. *American Economic Review*, 86(2), 407-443.

Barro, R. & Lee, J. (2000). International Data on Educational Attainment. Updates and Implications, *NBER Working Paper*, 7911.

Beaulieu, E. & Gaisford, J. (2002). The 'Lemons Problem' in International Trade Policy. *World Economy,* 25(1), 59-78.

Benabou, R. (1996). Equity and Efficiency in Human Capital Investment: The local Connection. *Review of Economic Studies.* 62, 237-264.

Benzecri, J. (1992). *Correspondence Analysis Handbook.* New York: Marcel Dekker

Bescond, D., Chataignier, A., & Mehran, F. (2003). Seven indicators to measure decent work : an international comparison. *International Labor Review, 142*(2), 179-211.

Bourdieu, P. & Passeron, J. (1977). *Reproduction in Education, Society and Culture*. London: Sage.

Brown, D.K. (2000). International Standards in the World Trade Organization and the International Labor Organization. *Federal Reserve Bank of St Louis Review*, 82(4), 105-26.

Brown, D.K., Deardorff, A.V., & Stern, R.M. (1996). International Labor Standards and Trade: a Theoretical Analysis. In J. Bhagwati and R. Hudec (Eds.), *Fair Trade and Harmonization: prerequities for Free Trade?* Cambridge and London: MIT Press.

Brown, D.K., Deardorff, A.V., & Stern, R.M. (2003). The effects of Multinational production on Wages and Working Conditions in Developing Countries. *NBER Working Paper*, W.9669.

Busse, M. & Braun, S. (2003). Trade and Investment effects of Forced Labor. An Empirical Assessment. *International Labor Review,* 142(1), 49-71.

Busse, M. & Spielmann, C. (2006). Gender Inequality and Trade. *Review of International Economics,* 14(3) , 362-79.

Carothers, T. (1994). Democracy and Human Rights: policy allies or rivals?, *The Washington Quarterly, 17*(3), 109-120

Casella, A. (1996). Free Trade and Evolving standards. In J. Bhagwati & R. Hudec, *Fair Trade and Harmonization: prerequisites for free trade?* (pp. 119-56). Cambridge: MIT Press.

Cattell, R.B. (1966). The Scree Test for the Number of Factors. *Multivariate Behavorial Research*. 1(2), 245-76.

Chamberlain, D. & S. Van Der Berg (2002). Earnings functions, labor market discrimination and quality of education in South Africa. *Stellenbosch working papers.* 2/2002/

Coate, S. & Loury, G. (1993). Will affirmative action policies eliminate negative stereotypes?. *American Economic Review, 83*(5), 1220-1240.

Cohen, D. & Soto, M. (2002). Why are poor countries poor? A message of hope which involves a resolution of a Becker/Lucas Paradox. *CEPR DP 3528*

Coleman, J.S. (1990). *Foundation of Social Theory.* Cambridge and London: The Belknap Press of Harvard University.

Committee for Economic Development (2001). From Protest to Progress: Adressing Labor and Environmental Conditions through Freer trade. *Report of the Research and Policy Committee of the Committee for Economic Development,* Washington D.C.

Dahl, R. (1966). *Political Opposition in Western Democracies.* New Haven: Yale University Press.

Davenport, C. & Armstrong, D.A. (2004). Democracy and the violation of Human Rights: a statistical analysis from 1976 to 1996. *American Journal of Political Science, 48*(3), 538-554.

De Gre, G. (1964). Freedom and Social Structure. *American Sociological Review, 11*.

De Jouvenal, B. (1945). *On Power: its nature and the History of Growth.* Boston: Beacon Press.

Durham, J. (1999). Economic Growth and Political Regimes. *Journal of Economic Growth, 4*, 81-111

Durlauf, S. (1999). A theory of Persistent Income Inequality. *Journal of Economic Growth,* 1(1), 75-93.

Fox, G. & Nolte, G. (1995). Intolerant Democracies. *American Journal of International Law, 36*(1), 1-70.

Ghai, D. (2003). Decent Work : concepts and indicators. *International Labor Review, 142*(2), 121-157.

Gleditsch, K.S & Ward, M. (1997). A re-examination of democracy and autocracy in modern politics. *Journal of Conflict Resolution, 41*(3), 361-383.

Gleditsch, K.S. (2003). Modified Polity P4 and P4D Data. Version 1.0. URL : http://weber.ucsd.edu/kgledits/Polity.html

Goldstein, R.J. (1978). *Political Repression in Modern America.* Cambridge : Schenkman Publishing Company.

Granger, C. (2005). Normes de travail fondamentales et échanges Nord-Sud. *Economie Internationale, 101*, 47-62.

Greenacre, M. (1984). *Theory and Applications for Correspondence Analysis.* London: Academic Press.

Griswold, D.T. (2001). Trade, Labor and the Environment: How Blue and Green sanctios threaten higher standards. *Trade Policy Analysis*, CATO Institute, August 2, 2001 – N°15.

Hahn, J. & Hausman, J. (2002). A new specification test for the validity of instrumental variables. *Econometrica, 70*. 163-189.

Hall, R. & Jones, C. (1999). Why do some countries produce so much more output per worker than others?. *Quarterly Journal of Economics*, *114*(1), 83-116.

Heston, A., Summers, R. & Atten, B. (2002). Penn World Table (PWT) Version 6.1. Center for International Comparisons at the University of Pennsylvania (CICUP).

ILO (1998). Understanding Rights at work. Declaration on Fundamental Principles and Rights at work. Geneva: International Labor Organization.

ILO (2001). Stopping Forced Labour. International Labour Conference, 89th session 2001, Report I(B). Geneva: ILO.

ILO (2002). Every child counts: new global estimation of Child Labor. *Discussion paper IPEC programme, ILO*. Geneva: ILO.

ILO (2006). The end of Child Labor, within reach. *Global Report under the follow-up to the ILO declaration on Fundamental Principles and Rights at Work, Report to the International Labor Conference, 95th Session 2006.*

Islam, N. (1995). Growth Empirics: a Panel Data Approach. *Quarterly Journal of Economics, 110*(4), 1127-1170.

Jolliffe, D. & Campos, M. (2005). Does Market liberalisation reduce gender discrimination? Lessons from Hungary, 1986 to 1998. *Labor Economics*; 12 (1), 1-22.

Jose, A. (2002). *Organized Labor in the 21st century,* Geneva: International Institute for Labour Studies.

Kucera, D. (2001). Measuring Fundamental Rights at work. *Statistical Journal, 18*(2-3), 175-88.

Kucera, D. & Sarna, R. (2004). How do Trade Union rights affect trade competitiveness? *Policy Integration Department Working Papers* N°39. Geneva: ILO.

Loury, G. (1977). A dynamic Theory of Racial Income Differences. In P. Wallace & A. Lamond, *Women, minorities and employment discrimination*. Lexington, MA: Hearth and Co.

Lundberg, S. & Startz, R. (1998). On the persistence of Racial Inequality. Journal of Labor Economics, 16(2), 292-324.

Mankiw, N.G., Romer, D. & Weil, D. (1992). A contribution to the empirics of Economic Growth.*Quarterly Journal of Economics, 107*, 407-438

Martin, W. & Maskus, K. (2001). Core Labor Standards and Competitiveness. Implications for Global Trade Policy. *Review of International Economy, 9*(2), 317-28.

Maskus, K.E. (1997). Should Core Labor Standards be imposed throught international trade policy? *World Bank Research Working Paper,* 1817.

Mills, C. (1956). *The power of elite.* New York: Oxford University Press.

Mosca, G. (1896). *Elementi di Scienza Politica*. Roma: Bocca.

Murdoch, J.C. and T. Sandler (2002). Economic Growth, Civil Wars and Spatial spillovers. *Journal of Conflict Resolution, 46*(1), 91-110.

Oaxaca, R. (1973). Male-Female Wage Differentials in Urban Labor Markets. *International Economic Review, 14*(3), 693-709.

OECD (1996). *Trade, Employment and Labor Standards: a study of core worker's right and international trade*. Paris, France: OECD.

OECD (2004). *Institutional Efficiency and its determinants: the role of political factors in economic growth.* Development Center Studies. Paris: OECD Development Center.

Pareto, V. (1916). *Trattado di Sociologia generale.* Firenze: Barbera.

Rawls, J. (1971). *A theory of justice.* Cambridge: Harvard University Press.

Rummel, R.J. (1997). *Power Kills.* New Brunswick: Transaction Publishers.

Russel, B. (1993). *Power*. New York: Routledge.

Solow, R.M. (1956). A contribution to the Theory of Economic Growth. *Quarterly Journal of Economics.* LXX, 65-94.

Srinivasan, T.N. (2004). Labor Standards and International Trade. *Labor History. 45*(4). 509-16.

Staerkle, C., Clemence, A. & Doise, W. (1999). Representation of Human Rights accross different national contexts: the role of democratic and non-democratic populations and governments. *European Journal of Social Psychology, 28*, 207-226.

Staiger, D. & Stock, J.H. (1997). Instrumental Variable Regression with weak instruments. *Econometrica, 65*, 557-586.

Stern, R.M. (1999). Labour Standard and International Trade. *Integration and Trade. 3*(7-8), 15-38.

US Department of State (2003). Country Reports on Human Rights Practices 2002. Bureau of Democracy, Human Rights and Labor.

[1] We first estimate the model for the year 1996 for a large panel of countries (104) and then only for developing countries. Because of a lack of temporal data concerning labor standards, it is not possible to make a temporal analysis.

[2] See the conclusions of the Social Summit of Copenhagen (1995), the WTO declaration of Singapore (1996) or the ILO declaration on fundamental Rights of Workers (1998).

[3] See Annex 1: « Core Labor Standards and ILO conventions ».

[4] The methodology used is quite closed to the one of Granger (2005). We build a set of indexes measuring different core labor standards. However, our index is available for a larger number of countries while the one of Granger is more precise for a more limited number of countries.

[5] Further explanations concerning the methodology used to build each index are available upon request.

[6] $NR_{Raw} = \frac{N_1 \times (N_2)^2}{11776}$ with N_1 the number of conventions ratified and N_2 the number of *core* conventions ratified.

[7]

$$CL_{Adjusted} = MAX(CL_{Raw}; \frac{CL_{Raw} + Percentage\ of\ \ children\ who\ does\ not\ go\ to\ \ primary\ school}{2})$$

[8] Estimation of ILO (2002)

[9] Ghai (2003) considers this category of indicator is based on the outcome of freedom of association in terms of number or proportion of workers belonging to organizations concerned with work-related matters. *"In general, the higher the union density is, the stronger the defence of workers interests in negotiations with employers and the government, and the greater the participation by workers in matters affecting their work"*. However, there are different problems. Unionization rate is also based on historical traditions or political systems (Jose, 2002). Ghai (2003) also argues it is a problem for developing countries because of the small size of the labor force in the formal economy. Nevertheless, it is the only index available based on the outcome of freedom of association and therefore is useful for our study.

[10] More precisely, we should speak about gender inequality rather than gender discrimination especially concerning employment rate. As noticed by Busse and Spielmann (2005) concerning employment rate, "*as we*

cannot determine whether differences in labor market participation rates are voluntary or not, we prefer to use the term gender inequality rather than discrimination."

[11] However, we will compare these results with the ones obtained using individual sub-component of this index. See the part "Robustness".

[12] Correspondence Analysis has been relatively seldom used in social science research in the united Kingdom or in the United States. However, the French scientists, for example, use much more this technique, following the work of Benzecri (1992).

[13] In the MRW model, total factor productivity is assumed to be equal for all countries. This hypothesis was broadly criticized (See Cohen and Soto (2002) and Hall and Jones (1999). But we consider it has no impact on what we try to measure. Indeed, the goal is to test the general impact of labor standards and not the impact of each determinant.

[14] For OECD countries, they find that countries with coordinated bargaining system performed better than countries with less coordinated system in the 1970s and the 1980s. Results in the 1990s are more ambiguous suggesting that dynamics benefits are more important than static effects.

[15] Islam (1995) provides an excellent summary of the MRW model.

[16] However, this is not triggered by a drive for competitiveness but rather by the underlying demand for standards.

[17] See Gleditsch & Ward (1997) for a detailed presentation of the index. Basically, this is a combined index of several sub-dimension measuring different aspects of 'authority' (competitiveness of political participation, regulation of political participation, competitiveness of executive recruitment, openness of executive recruitment, constraints on chief executive.)

[18] The index takes values included between 0 and 5. coding: Not Applicable (0), suppressed (1), restricted, (2), fractional (3), transitional (4) and competitive (5).

[19] Coding from 1 to 7. unlimited power (1), intermediate3 (2) slight to moderate limitations (3), intermediate 2 (4), substantial limitations (5), intermediate 1 (6), parity or subordination (7).

[20] Coding from 1 to 7. Closed (1) Dual : hereditary and designation (3) dual : hereditary and elections (5) election (7).

[21] Coding from 1 to 4. Selection (1), Transitional (2), elections (3).

[22] As noticed by Gleditsch & Ward (1997), there is very little change in the degree of democracy for individual component over relatively short periods of time. On average, it takes between two an three decades before one observes a propensity for the authority characteristics to change.

[23] See Davenport & Armstrong (2004) for a review of the literature on this issue.

[24] All variables are in log.

[25] The standardized beta coefficient is the coefficient obtained by first standardizing all variables to have a mean of 0 and a standard deviation of 1.

[26] A one standard deviation change in education will increase the GDP per-capita by around 50%.

[27] Each individual index of labor standard takes a value included between 1 and 5 with 1 for a good enforcement of labor standards and 5 a weak enforcement of such a standard. The standardization of this variable is different from the one of the aggregated index of core labor standards.

[28] We use here PARCOMP as instrument. However, results are equivalent with the use of other subsets of instruments (results not reproduced here).

Table 1. Results of the estimation Steady-states per capita income (1996) - TSLS method (World Sample)

Dependant variable : y_{96}	*(1)*	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
Instrument set	IV_2	$IV_{1,2}$	$IV_{2,4}$	$IV_{2,5}$	$IV_{2,4,5}$	$IV_{2,3,5}$
constant	2.88	1.99	2.57	2.21	2.19	2.01
	(1.46)	(1.18)	(1.37)	(1.24)	(1.24)	(1.20)
Investment	0.40	0.43	0.41	0.42	0.43	0.43
	(2.75)***	(3.16)***	(2.89)***	(3.05)***	(3.06)***	(3.15)***
$(n + g + \delta)$	-1.43	-1.67	-1.51	-1.62	-1.62	-1.67
	(-2.08)**	(-2.75)***	(-2.29)**	(-2.55)**	(-2.56)***	(-2.75)***
Education	0.45	0.46	0.45	0.46	0.46	0.46
	(4.61)***	(4.97)***	(4.73)***	(4.88)***	(4.89)***	(4.97)***
labor Standards	0.58	0.47	0.54	0.50	0.50	0.48
	(3.42)***	(3.69)***	(3.44)***	(3.48)***	(3.49)***	(3.75)***
Statistical tests:						
R^2	0.70	0.73	0.71	0.73	0.73	0.73
Hansen test	na	1.12	0.45	1.01	1.032	1.17
		(0.50)	(0.31)	(0.68)	(0.60)	(0.76)
Partial R^2 (excluded instruments)	0.24	0.38	0.27	0.31	0.31	0.39
F-test	31.47	29.84	18.01	22.17	14.76	15.30
Number of observations	104	104	104	104	104	104

** 10%, ** 5%, *** 1% level of significance*

Table 2. Restricted Equation (World Sample)

Dependant variable : y_{96}	*(1)*	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
Instrument set	IV_2	$IV_{1,2}$	$IV_{2,4}$	$IV_{2,5}$	$IV_{2,4,5}$	$IV_{2,3,5}$
constant	5.44	4.95	5.34	5.12	5.11	4.96
	(6.40)***	(6.74)***	(6.53)***	(6.61)***	(6.60)***	(6.80)***
Investment - $(n+g+\delta)$	0.45	0.50	0.46	0.48	0.48	0.50
	(2.89)***	(3.57)***	(3.03)***	(3.32)***	(3.33)***	(3.56)***
Education	0.47	0.49	0.47	0.48	0.48	0.49
	(4.48)***	(5.00)***	(4.59)***	(4.82)***	(4.83)***	(4.99)***
labor Standards	0.68	0.56	0.66	0.60	0.60	0.57
	(4.40)***	(4.56)***	(4.50)***	(4.48)***	(4.47)***	(4.65)***
R^2	0.67	0.70	0.68	0.69	0.69	0.70
Number of observations	104	104	104	104	104	104

** 10%, ** 5%,*
**** 1% level of significance*

According to the theoretical model, the restriction imposed is: $\gamma_1 = \gamma_2 = \frac{\alpha}{1-\alpha}$

Table 3. Results of the estimation - TSLS method (Developing countries)

Dependant variable : y_{96}	*(1)*	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
Instrument set	IV_2	$IV_{1,2}$	$IV_{2,4}$	$IV_{2,5}$	$IV_{2,4,5}$	$IV_{2,3,5}$
constant	3.34	2.88	3.11	2.89	2.89	2.93
	(2.31)**	(1.35)	(1.40)	(1.33)	(1.33)	(1.37)
Investment	0.38	0.40	0.39	0.40	0.40	0.39
	(2.63)***	(2.47)**	(2.25)**	(2.87)***	(2.87)***	(2.87)***
$(n+g+\delta)$	-1.14	-1.25	-1.20	-1.25	-1.25	-1.24
	(-1.36)	(-1.56)	(-1.45)	(-1.55)	(-1.55)	(-1.54)
Education	0.47	0.48	0.47	0.48	0.48	0.48
	(4.85)***	(5.12)***	(4.98)***	(5.10)***	(5.11)***	(5.10)***
labor Standards	0.40	0.32	0.37	0.33	0.32	0.33
	(2.31)**	(2.47)**	(2.25)**	(2.22)**	(2.23)**	(2.56)**
Statistical tests:						
R^2	0.56	0.58	0.57	0.58	0.58	0.58
Hansen test	na	0.549	0.457	.847	0.848	0.855
		(0.46)	(0.50)	(0.36)	(0.65)	(0.83)
Partial R^2 (excluded instruments)	0.22	0.37	0.30	0.28	0.30	0.38
F-test	21.33	21.77	12.30	15.56	10.35	11.08
Number of observations	80	80	80	80	80	80

** 10%, ** 5%,*** 1% level of significance*

Table 4. Restricted Equation - Developing countries

Dependant variable : y_{96}	*(1)*	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
Instrument set	IV_2	$IV_{1,2}$	$IV_{2,4}$	$IV_{2,5}$	$IV_{2,4,5}$	$IV_{2,3,5}$
constant	5.27	4.97	5.16	5.01	5.00	5.00
	(6.67)***	(7.13)***	(6.80)***	(6.92)***	(6.92)***	(7.19)***
Investment - $(n+g+\delta)$	0.39	0.42	0.40	0.42	0.42	0.42
	(2.69)***	(3.04)***	(2.81)***	(2.98)***	(2.99)***	(3.01)***
Education	0.48	0.49	0.49	0.49	0.49	0.49
	(4.91)***	(5.28)***	(5.04)***	(5.22)***	(5.23)***	(5.25)***
labor Standards	0.43	0.33	0.40	0.34	0.34	0.34
	(2.49)**	(2.50)**	(2.46)**	(2.35)**	(2.34)**	(2.61)***
R^2	0.54	0.57	0.55	0.57	0.57	0.57
Number of observations	80	80	80	80	80	80

** 10%, ** 5%,*** 1% level of significance*

Table 5. OLS estimation with different labor standards

Dependant variable : y_{96}	*Coef.*	*t-stat*
Constant	4.68**	2.88
Investment	0.36***	3.20
$(n+g+\delta)$	- 1.49***	-2.78
Education	0.09	1.05
Number of Ratifications	-0.02	0.50
Child Labor	0.47***	7.45
Freedom of Association	0.008	0.15
Discrimination	0.06	1.34
Forced Labor	0.007	0.16

** 10%, ** 5%,*** 1% level of significance*

Table 6. OLS estimation with different labor standards

Dependant variable : y_{96}	*Coef.*	*t-stat*	*With restriction*	*Coef.*	*t-stat*
Constant	9.15***	3.16		8.45***	9.81
Investment	0.23*	1.75	(investment- $(n+g+\delta)$)	0.23*	1.67
$(n+g+\delta)$	0.03	0.03			
Education	0.24**	2.21		0.23**	2.29
Child Labor	0.35***	4.51		0.35***	4.50
Labour standards without child labor	1.07**	2.12		1.01***	2.93

** 10%, ** 5%,*** 1% level of significance*

ANNEX 1 : CORE LABOR STANDARDS AND ILO CONVENTIONS

Adopted in 1998, the ILO Declaration on Fundamental Principles and Rights at Work is an expression of commitment by governments, employers' and workers' organizations to uphold basic human values - values that are vital to our social and economic lives.

- Freedom of association and the right to collective bargaining
  - The Freedom of Association and Protection of the Right to Organise Convention (No.87), 1948, 142 ratifications
  - The Right to Organize and Collective Bargaining Convention (No.98), 1949, 154 ratifications
- The elimination of forced and compulsory labor
  - The Forced labor Convention (No.29), 1930, 163 ratifications
  - The abolition of Forced labor Convention (No.105), 1957, 161 ratifications
- The abolition of child labor
  - Minimum Age Convention (No.138), 1973, 131 ratifications
  - The Abolition of the Worst Forms of Child labor Convention (No.182), 1998, 147 ratifications
- The elimination of discrimination in the workplace.
  - The Equal Remuneration Convention (No.100), 1951, 159 ratifications
  - The Discrimination (Employment and Occupation) Convention (No.111), 1958, 161 ratifications

The ILO's standards take the form of international labor Conventions and Recommendations. The ILO's Conventions are international treaties, subject to ratification by ILO member

States. Its Recommendations are non-binding instruments - typically dealing with the same subjects as Conventions - which set out guidelines which can orient national policy and action. Both forms are intended to have a concrete impact on working conditions and practices in every country of the world. However, countries can decide to not ratify conventions. When ratified, these promotional standards oblige a country to use means appropriate to national circumstance to promote these goals - and to be able to demonstrate progress over time in achieving the goals. ILO cannot apply sanctions.

Moreover, United Nations have adopted several measures concerning Human Rights and more precisely Rights of Workers. Following the Universal Declaration of Human Rights, the UN has adopted two covenants: the International Covenant on Economic, Social and Cultural Rights (1966) and the International Covenant on Civil and Political Rights (1966) (prohibition of forced labor). These covenants are ratified by more countries than the ILO core conventions. The UN has also adopted a convention on the Rights of the Child (1989).

ANNEX 2: THE SCALAR INDEX OF CORE LABOUR STANDARDS

Descriptive statistics of variables included in the scalar index of core labour standards

N = 155 countries	Ratifications ILO	Child Labour	Freedom of Association	Non-discrimination	Forced labour
Frequencies of modalities					
Highest	21,94	28,39	20,00	20,00	46.45
High	21,29	18,71	20,65	16,13	28.39
Medium	20,65	21,94	19,35	16,77	07.10
Low	17,42	15,48	21,29	19,35	10.96
Lowest	18,70	15,48	18,71	27,75	07.10
Total	100	100	100	100	100
Correlation matrix					
ILO ratifications	1				
Child Labour	0,364**	1			
Freedom of Association	0,461**	0,474**	1		
Non-discrimination	0,073	0,355**	0,282**	1	
Forced Labour	0,293**	0,286**	0,399**	0,282**	1
Weight used in the scalar index					
Arithmetic mean	0,200	0,200	0,200	0,200	0,200
MCA	0,189	0,243	0,266	0,127	0,176

N.B. (**) 5% significant.

MCA Summary

N = 155 Countries	**Principals**	**F1**	**F2**	**F3**	**F4**
	Eighen value	0.512	0.320	0.294	0.276
	% total inertia	0.725	0.108	0.066	0.043
	% cum. Total inertia	0.725	0.833	0.942	0.967

Variables	**Items**	**Coord. (F1)**	**QLT**	**Test Value**	**CTR (%)**
ILO's Ratifications (NR)	Highest	1.236	0.429	8.129**	13.094
	High	-0.061	0.001	-0.395	0.031
	Medium	-0.316	0.026	-1.997**	0.803
	Low	-0.267	0.015	-1.523	0.486
	Lowest	-0.782	0.141	-4.656**	4.474
	Total				**18.888**
Child Labour (CL)	Highest	1.087	0.468	8.490**	13.102
	High	0.330	0.025	1.962**	0.794
	Medium	-0.580	0.094	-3.812**	2.880
	Low	-0.731	0.098	-3.884**	3.237
	Lowest	-0.838	0.129	-4.451**	4.250
	Total				**24.263**
Freedom of association (FA)					
	Highest	1.388	0.482	8.613**	15.066
	High	0.492	0.063	3.115**	1.954
	Medium	-0.543	0.071	-3.304**	2.235
	Low	-0.698	0.132	-4.506**	4.057
	Lowest	-0.670	0.103	-3.990**	3.285
	Total				**26.597**
Non-Discrimination (DISCRI)	Highest	0.909	0.207	5.641**	6.461
	High	0.159	0.005	0.865	0.159
	Medium	0.292	0.017	1.627	0.560
	Low	-0.500	0.060	-3.040**	1.892
	Lowest	-0.576	0.127	-4.425**	3.592
	Total				**12.664**
Forced Labour (FL)	Highest	0.678	0.399	7.836**	8.347
	High	-0.327	0.042	-2.557**	1.188
	Medium	-0.809	0.050	-2.775**	1.816
	Low	-0.727	0.065	-3.166**	2.265
	Lowest	-1.197	0.109	-4.104**	3.972
	Total				**17.588**

N.B. (**) 5% significant.

ANNEX 3 : DESCRIPTIVE STATISTICS OF THE VARIABLES

Table 1. Descriptive statistics of the variables - World Sample

	Mean	Std. Dev.	Min	Max
$\ln GDP$	8.32	1.19	5.73	10.47
$\ln LS$	3.51	0.88	-2.30	4.6
$\ln Invest$	2.58	0.61	0.64	3.72
$\ln(n+g+\delta)$	-2.66	0.14	-2.94	-2.33
$\ln edu$	2.82	0.91	0.53	4.20

Table 2. Descriptive statistics of the variables - Developing countries

	Mean	Std. Dev.	Min	Max
$\ln GDP$	7.88	0.95	5.74	10.12
$\ln LS$	3.22	0.86	-2.30	4.43
$\ln Invest$	2.42	0.59	0.64	3.72
$\ln(n+g+\delta)$	-2.60	0.09	-2.92	-2.34
$\ln edu$	2.57	0.88	0.53	3.96

Table 3. Correlation Matrix

	$\ln GDP$	$\ln LS$	$\ln Invest$	$\ln(n+g+\delta)$	$\ln edu$
$\ln GDP$	1				
$\ln LS$	0.59	1			
$\ln Invest$	0.72	0.44	1		
$\ln(n+g+\delta)$	-0.69	-0.53	-0.47	1	
$\ln edu$	0.75	0.43	0.64	-0.54	1

ANNEX 4 : RELEVANCE AND VALIDITY OF INSTRUMENTS

Table 1. Instruments relevance

EXCLUDED INSTRUMENT	PARTIAL R^2	F-STAT
(1) COMBINED POLITY SCORE	0.0141	1.04
		(0.31)
(2) COMPETITIVENESS OF PARTICIPATION	0.2412	31.47
		(0.000)
(3) EXECUTIVE CONSTRAINTS	0.0024	0.24
		(0.62)
(4) OPENNESS OF EXECUTIVE RECRUITMENT	0.00	0.00
		(0.96)
(5) COMPETITIVENESS OF EXECUTIVE RECRUITMENT	0.004	0.42
		(0.52)

P-VALUES IN PARENTHESES

Table 2. Instruments validity and relevance

EXCLUDED INSTRUMENT	HANSEN-TEST	DIFF-HANSEN	SUBSET OF INSTRUMENTS TESTED	PARTIAL R^2	F-STAT
(1) AND (2)	1.121			0.3785	29.84
	(0.29)				(0.000)
(2) AND (3)	3.041			0.35	26.38
	(0.08)				(0.00)
(2) AND (4)	0.454			0.2687	18.01
	(0.50)				(0.00)
(2) AND (5)	1.013			0.3115	22.17
	(0.31)				(0.00)
(1), (2) AND (4)	1.158	0.676	(1)	0.3788	19.71
	(0.56)	(0.41)			(0.000)
(1), (2) AND (4)	1.158	0.64	(2)	0.3788	19.71
	(0.56)	(0.42)			(0.000)
(1), (2) AND (4)	1.158	0.036	(4)	0.3788	19.71
	(0.56)	(0.85)			(0.000)
(1), (2) AND (5)	1.168	0.048	(5)	0.3815	19.95
	(0.56)	(0.83)			(0.000)
(2), (4), (5)	1.032			0.3134	14.76
	(0.60)				(0.000)
(1),(2),(4) AND (5)	1.170			0.3893	15.30
	(0.76)				(0.000)

P-VALUES IN PARENTHESES

ANNEX 5: DETAILS OF THE INDEX OF CORE LABOR STANDARDS

COUNTRY CODE	COUNTRY NAME	NR	CL	FA	DISCRI	FL	LS1.2
AGO	ANGOLA	3	4	5	2	2	3.47
ALB	ALBANIA	3	1	3	3	2	2.34
ARE	UNITED ARAB EMIRATES	5	3	4	4	4	3.95
ARG	ARGENTINA	1	2	2	4	1	1.89
ARM	ARMENIA	5	3	3	2	2	3.07
AUS	AUSTRALIA	3	1	1	1	1	1.37
AUT	AUSTRIA	2	1	1	3	1	1.44
AZE	AZERBAIJAN	2	1	4	1	1	1,99
BDI	BURUNDI	3	5	5	2	1	3,54
BEL	BELGIUM	1	1	1	2	1	1,13
BEN	BENIN	3	4	1	5	5	3,32
BFA	BURKINA FASO	2	5	3	4	2	3,25
BGD	BANGLADESH	2	4	4	5	5	3,93
BGR	BULGARIA	1	1	2	1	2	1,44
BHR	BAHRAIN	5	1	5	5	5	4,03
BHS	BAHAMAS, THE	3	2	2	1	1	1,89
BLR	BELARUS	2	1	5	1	2	2,43
BLZ	BELIZE	2	2	1	5	1	1,94
BOL	BOLIVIA	2	3	3	5	3	3,06
BRA	BRAZIL	1	3	2	3	4	2,53
BRB	BARBADOS	2	2	1	1	1	1,43
BWA	BOTSWANA	4	3	2	1	1	2,32
CAF	CENTRAL AFRICAN REPUBLIC	2	5	4	4	2	3,51
CAN	CANADA	4	1	2	1	1	1,83
CHE	SWITZERLAND	2	2	1	3	1	1,68
CHL	CHILE	1	1	1	5	1	1,51
CHN	CHINA	5	3	5	2	4	3,96
CIV	COTE D'IVOIRE	3	4	3	5	5	3,85
CMR	CAMEROON	2	4	5	5	2	3,66
COG	CONGO, REP.	3	4	3	4	1	3,02
COL	COLOMBIA	2	3	3	3	1	2,46
COM	COMOROS	4	5	3	4	2	3,62
CPV	CAPE VERDE	5	3	2	4	1	2,89
CRI	COSTA RICA	2	2	2	4	2	2,25
CUB	CUBA	1	1	5	1	4	2,59
CYP	CYPRUS	2	3	1	4	1	2,05
CZE	CZECH REPUBLIC	2	1	1	2	1	1,32
DEU	GERMANY	1	1	1	2	1	1,13
DNK	DENMARK	1	1	1	1	1	1
DOM	DOMINICAN REPUBLIC	3	3	2	4	4	3,04
DZA	ALGERIA	2	1	4	5	1	2,49
ECU	ECUADOR	1	2	3	5	1	2,28
EGY	EGYPT, ARAB REP.	1	3	5	5	1	3,06
ERI	ERITREA	5	5	5	4	2	4,35
ESP	SPAIN	1	1	2	3	1	1,52
EST	ESTONIA	4	2	1	1	2	1,99
ETH	ETHIOPIA	4	5	4	5	2	4,02

FIN	FINLAND	1	1	1	1	1	1
FJI	FIJI	4	1	2	5	1	2,34
FRA	FRANCE	1	1	2	1	1	1,27
GAB	GABON	3	4	3	1	2	2,81
GBR	UNITED KINGDOM	1	1	1	1	1	1
GEO	GEORGIA	4	3	3	1	3	2,94
GHA	GHANA	3	4	2	2	1	2,50
GIN	GUINEA	1	5	4	4	2	3,32
GMB	GAMBIA, THE	5	5	4	5	1	4,03
GNB	GUINEA-BISSAU	4	5	4	5	2	4,02
GNQ	EQUATORIAL GUINEA	4	5	5	5	2	4,28
GRC	GREECE	1	2	2	4	2	2,06
GTM	GUATEMALA	1	3	3	5	4	3,05
GUY	GUYANA	2	2	1	4	1	1,81
HND	HONDURAS	4	3	3	5	2	3,27
HRV	CROATIA	2	3	1	2	1	1,80
HTI	HAITI	4	4	5	2	4	4,01
HUN	HUNGARY	1	1	1	2	2	1,30
IDN	INDONESIA	4	3	4	4	5	3,93
IND	INDIA	5	3	3	5	5	3,98
IRL	IRELAND	1	1	1	3	1	1,25
IRN	IRAN, ISLAMIC REP.	5	2	5	5	2	3,74
ISL	ICELAND	4	2	2	1	1	2,07
ISR	ISRAEL	3	1	2	3	2	2,07
ITA	ITALY	1	1	1	3	1	1,25
JAM	JAMAICA	4	1	2	1	1	1,83
JOR	JORDAN	4	3	4	5	1	3,35
JPN	JAPAN	3	1	2	4	2	2,20
KAZ	KAZAKHSTAN	4	2	4	1	2	2,78
KEN	KENYA	2	5	4	3	2	3,39
KGZ	KYRGYZ REPUBLIC	3	1	4	1	2	2,35
KHM	CAMBODIA	5	4	4	2	3	3,76
KOR	KOREA, REP.	5	2	2	5	1	2,77
KWT	KUWAIT	5	3	4	4	5	4,12
LAO	LAO PDR	5	4	5	3	1	3,80
LBY	LIBYA	3	1	5	5	3	3,30
LKA	SRI LANKA	2	2	3	4	5	3,05
LSO	LESOTHO	4	4	3	3	1	3,08
LTU	LITHUANIA	3	2	1	2	1	1,75
LUX	LUXEMBOURG	1	1	1	3	1	1,25
MAR	MOROCCO	2	3	4	5	2	3,15
MDA	MOLDOVA	3	2	3	2	2	2,45
MDG	MADAGASCAR	3	5	3	3	3	3,49
MEX	MEXICO	2	2	2	5	4	2,73
MKD	MACEDONIA, FYR	2	1	3	1	1	1,72
MLI	MALI	3	5	2	4	2	3,17
MLT	MALTA	1	1	1	5	1	1,51
MMR	MYANMAR	5	4	5	2	5	4,38
MNG	MONGOLIA	5	3	2	1	1	2,51
MOZ	MOZAMBIQUE	5	5	3	3	1	3,51

MRT	MAURITANIA	2	4	4	4	3	3,45
MUS	MAURITIUS	3	2	2	5	1	2,39
MWI	MALAWI	3	5	2	3	1	2,87
MYS	MALAYSIA	5	2	4	4	2	3,35
NAM	NAMIBIA	5	4	3	3	4	3,80
NER	NIGER	3	5	3	5	1	3,39
NGA	NIGERIA	3	4	4	5	2	3,59
NIC	NICARAGUA	1	3	2	3	1	2,00
NLD	NETHERLANDS	1	1	1	2	1	1,13
NOR	NORWAY	1	1	1	1	1	1
NPL	NEPAL	5	5	4	5	5	4,73
NZL	NEW ZEALAND	4	1	2	1	1	1,83
OMN	OMAN	5	3	5	5	3	4,16
PAK	PAKISTAN	3	4	4	5	5	4,11
PAN	PANAMA	1	2	2	4	1	1,89
PER	PERU	1	2	3	5	3	2,63
PHL	PHILIPPINES	4	3	2	3	4	3,10
PNG	PAPUA NEW GUINEA	3	4	2	4	1	2,75
POL	POLAND	1	1	1	1	1	1
PRT	PORTUGAL	1	2	1	2	1	1,37
PRY	PARAGUAY	3	3	3	5	3	3,25
QAT	QATAR	5	3	5	4	4	4,21
ROM	ROMANIA	2	1	1	3	2	1,62
RUS	RUSSIAN FEDERATION	1	1	4	2	2	2,10
RWA	RWANDA	3	5	5	2	4	4,07
SAU	SAUDI ARABIA	5	3	5	5	4	4,34
SDN	SUDAN	4	5	5	5	4	4,64
SEN	SENEGAL	2	4	3	3	2	2,88
SGP	SINGAPORE	5	2	4	4	2	3,35
SLB	SOLOMON ISLANDS	5	4	4	1	1	3,28
SLE	SIERRA LEONE	4	5	4	5	4	4,37
SLV	EL SALVADOR	4	3	3	4	2	3,14
SVK	SLOVAK REPUBLIC	1	1	1	2	1	1,13
SVN	SLOVENIA	1	2	1	1	2	1,42
SWE	SWEDEN	1	1	1	1	1	1
SWZ	SWAZILAND	3	3	4	4	1	3,04
SYR	SYRIAN ARAB REPUBLIC	2	2	5	5	1	3,00
TCD	CHAD	4	5	5	5	1	4,11
TGO	TOGO	4	4	4	5	4	4,13
THA	THAILAND	5	3	3	2	2	3,07
TJK	TAJIKISTAN	3	2	5	2	4	3,34
TKM	TURKMENISTAN	5	1	5	1	3	3,17
TTO	TRINIDAD AND TOBAGO	4	1	2	2	1	1,96
TUN	TUNISIA	2	1	4	5	1	2,49
TUR	TURKEY	2	3	4	5	2	3,15
TZA	TANZANIA	3	5	3	2	2	3,18
UGA	UGANDA	4	5	4	3	2	3,76
UKR	UKRAINE	2	3	4	3	2	2,90
URY	URUGUAY	1	2	2	3	1	1,76
USA	UNITED STATES	5	1	3	1	1	2,29

UZB	UZBEKISTAN	5	3	5	1	1	3,30
VEN	VENEZUELA, RB	2	2	4	4	1	2,61
VNM	VIETNAM	5	3	5	2	2	3,61
YEM	YEMEN, REP.	3	4	5	5	1	3,68
ZAF	SOUTH AFRICA	4	1	2	3	2	2,26
ZAR	CONGO, DEM. REP.	2	5	5	4	3	3,95
ZMB	ZAMBIA	2	4	3	4	1	2,83
ZWE	ZIMBABWE	3	4	5	3	1	3,42