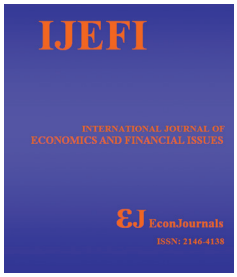

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Does Poverty Influence Prevalence of Child Labor in Developing Countries?

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ABSTRACT

The present article examined the impact of poverty on child labor prevalence across 42 developing countries based on system-generalize method of moment technique. The main result on the linkage between child labor prevalence and poverty deviated from the popular beliefs in majority of the existing literature that poverty caused child labor prevalence. The finding indicated that poverty is negatively related to child labor prevalence, in the sense that the higher the poverty the lower the child labor prevalence in the sample countries investigated, this finding therefore reconfirmed the wealth paradox of Bhalotra and Heady (2003).

Keywords: Poverty, Remittance, Child Labor Prevalence, System-Generalize Method of Moment, Wealth Paradox, Developing Countries
JEL Classifications: P46, F24, Z22.

1. INTRODUCTION

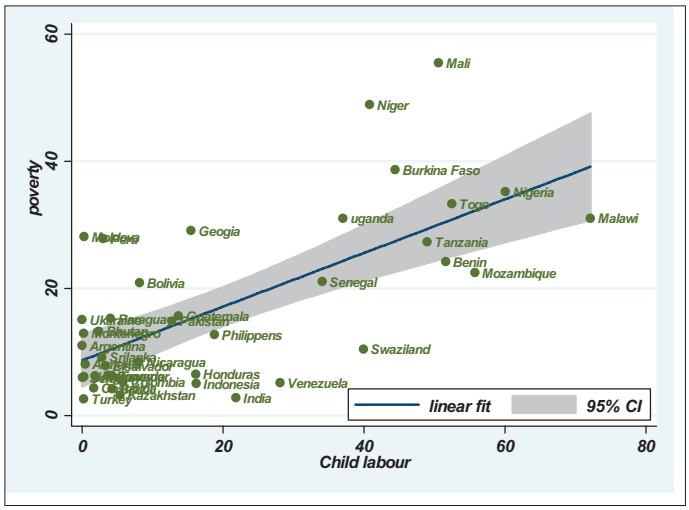
The use of children in employment in developing economies constitutes one of the major problems bedeviling the societies. In recent times, there has been an increase in the global focus regarding the menace of child labor. This emanates to various studies conducted by researchers with a view to provide policy recommendations so as to bring the menace to its barest minimal and subsequent elimination. According to International Programme on the Elimination of Child labor, an estimated 168 million children were involved into various economic activities worldwide, which account for approximately 11% of the entire children population as a whole (IPEC-ILO, 2013). Almost all of them are subjected to working for a longer period of time in activities that relates to unhealthy environments, mostly shouldering responsibilities, bigger than their individual capabilities, sometimes with meager pay, less food, lack of access to education and above all with less attention medically. It is a common but not disputed perception that children participation in labor activities is propelled by parents. It is however, not clear whether increase in household income helps in eliminating child labor or instrumental factor was the introduction of relevant legislation. This is because increase in aggregate income may not necessarily lead to an increase in the households' income who is the suppliers of labor. An empirical examination of whether child labor is influence by the poverty level in the developing countries will be provided in the section below.

Figure 1 indicates the selected developing countries during 2009-2013, poverty is positively related to child labor, since an increase in the rate of poverty results in a corresponding increase in the level of child labor. This is in support of the popular wisdom that poverty leads to an increase in child labor prevalence. However, the result of the study presented below, indicated a direct opposite of the trend that is a negative relationship as supported by wealth paradox advanced by Bhalotra and Heady (2003).

2. LITERATURE REVIEW

The role poverty plays in influencing the participation of children in labor activities draw an increasing attention in recent times. An early empirical support regarding whether poverty is influencing child labor or not in developing countries were provided by some scholars (Basu, 1998; Blunch and Verner, 2001; Nkamleu, 2006). Basu (1998) provided an early empirical study, which examines

Figure 1: Scattered plot of child labor and poverty in 42 developing countries 2009-2013



Source: Authors computation based on data from the United State Department of Labor and World Bank's WDI (2014)

luxury axiom in an attempt to highlight the fact that poverty caused child labor. His attention was focused on parent preference in which case parent value leisure of their children, though; when they are poor they will not be able to afford it. More concisely, he considered the hypothesis that parents preference towards child leisure is such that they send them to work only when their income is below a subsistence consumption level.

In a similar vein, Blunch and Verner (2001), revisited the link between poverty and child labor in Ghana. The research finding reaffirmed that poverty is positively related to child labor as against the postulation by the recent literature which question the existence of positive relationship between poverty and child labor. Furthermore, Nkamleu (2006), postulated that recent researches in the field of economics, questioned the validity of the proposed link between poverty and child labor which was traditionally established, suggesting that child labor is more noticeable in the richest households (wealth paradox). His study revisited the link between poverty and farm child labor in Africa, with the aim of testing the paradoxical wealth effect. The research findings indicated a mixed reaction, with the effect of different commonly used wealth proxies showing a negative effect on child labor participation, while the relevant and robust wealth proxies show a positive relationship between poverty and child labor.

Recent studies on poverty and child labor comprises of the work by Dumas (2007) who explored that, often argued by various researchers is the fact that the predominant factor leading to child labor is poverty. Though, majority of the children that partake into child laboring dwells from rural areas which are mostly identified by substantial labor market imperfections. Using a model of rural households' labor supply which is developed to provide testable implication for the two contradicting hypotheses on poverty which includes; that child labor occurs resulting from subsistence constraint and that children leisure is a luxury good. The research finding indicated that in rural Burkina Faso children do not engage in child laboring in order to meet subsistence needs of their families. Labor market imperfection is identified as the main factor that motivates children's engagement in child labor activities in Burkina Faso.

Basu et al. (2010) postulated that it was revealed by some studies that greater possession of land wealth by households were responsible for higher participation of children in child labor, hence casting doubt on the hypothesis which says child labor is caused by poverty. Their paper developing a simple model which suggested the possibility of an inverted-U-relationship between land possession and child laboring using a data from northern India. It was found that after controlling for child, households and village characteristics, the turning point beyond which possession of more land results in a decrease of child labor happened around 4 acres of land per household. It could be deduced that additional land possession beyond 4 acres enable the families to experience decrease in their child labor participation rate, which means that the families with 1 acre that experience rise in land possession up to 4 acres tend to have increase in their child labor participation rate. This indicated existence of an inverted U relationship between land possession and child labor participation rate, with initial increase in child labor resulting from increase in land possession from 1 acre to 4 acres and a subsequent fall in child labor participation rate resulting from land possession beyond 4 acres of land.

Furthermore, Bhalotra and Heady (2003) conducting a study on Ghana and Pakistan found that child labor use mostly emerges from the richest households. The study finding was based on the observation that children in land rich households are more likely to work and attend school less compared to the children in land poor households. This phenomenon is referred to as wealth paradox. This results from the fact that greater majority of the children that engages in child labor activities in developing countries relates to agricultural sub-sector such as farms operated by families. That is to say that land is the most significant store of wealth in agrarian societies and its distribution is uneven. Therefore, families with greater possession of land has the highest possibility of having their children working than schooling in comparison to families of the poor land possession which finds it extremely difficult to send their children to work even if they wish doing so due to non-possession of land.

3. CONCEPTUAL FRAMEWORK

This study employed the use of the model of multiple equilibria and government intervention advanced by (Basu and Van, 1998; Basu, 1998). The model examined the correlation between child labor and poverty. This reiterated that in the labor market consisting of children as potential workers, there exists more than one equilibrium. This is explained in Basu and Van model (1998) and Basu (1998) which discussed the relationship between child labor, household poverty and adult unemployment.

3.1. Assumptions of the Model

1. Luxury axiom: No household will be willing to send it's child to work so long as it's level of income from non-child labor is reasonably high

2. Substitution axiom: Adult laborer is assumed to be a perfect substitute for a child laborer. That is, what an adult labor can do will equally be done by a child laborer.

For simplistic exposition, the two basic assumptions are explained below.

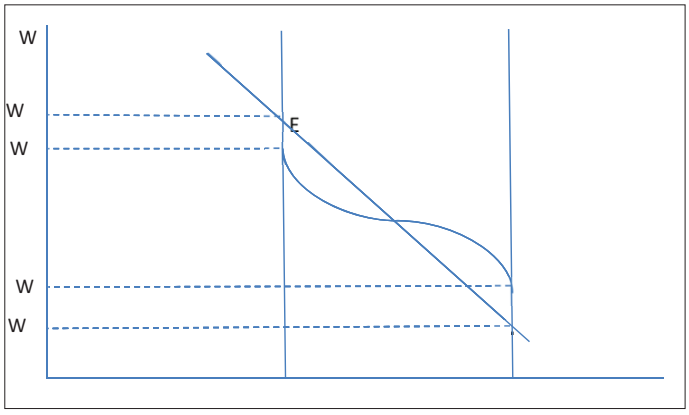
1. For every given household *i*, there is a corresponding wage w_i so that household can allow its children to work only if the adult wage prevailing in the labor market is less than w_i
2. Child and adult laborers are viewed as a perfect substitute as earlier buttressed by the axiom of the model. Both of these assumptions can be relaxed without hurting the models conclusion.

Supposing that child labor is equivalent to γ units of an adult labor, where $0 < \gamma < 1$. In other word adults and child laborers are perfect substitutes as highlighted by the model axiom. This indicated that production depends on the entire amount of labor committed to production. Each adult, working all through the day, produces 1 unit of labor, while each child, working all day, produces γ units of labor.

In Figure 2, let y axis represent wage earn by adult laborer for working a full day and x axis represent labor supply for both adult and child laborers. Considering a competitive model where all agents are price takers, let A'A represent the aggregate adult labor supply curve in an economy. Furthermore, consider the total amount of effective labor that all children can supply, if *x* children exist in an economy it will be equivalent of γx. Adding to the aggregate labor supply by the adult, the effective labor that can potentially be supplied in the economy will be represented by T'T. Hence A'T' is equal to γx, which represent the total amount of labor available from the children in the economy. More so, if there is legislation in the country that everyone should always have to supply labor, the aggregate labor supply curve will be represented by T'T.

It is easy to pinpoint the aggregate labor supply in the actual sense. If the market adult wage is below w_l, the entire children are sent to work by parents who generally consider the wage earned from labor market inadequate to meet their ends. The aggregate labor supply is OT'. On the other hand, when the market wage rate exceeds

Figure 2: Multiple equilibria and government intervention model



Source: Basu and Van (1998), Basu (1998)

W_H, no child is sent to work because parents are contented with their remuneration from the labor market, hence total labor supply is OA'. As wages rise from w_L to w_{E1}, household withdraws their children from labor force one after the other as a result of which the total labor supply keeps on decreasing as indicated by the curve CB. Thus, the aggregate supply of all kinds of labor, i.e., adult and child labor plotted against alternative adult wage gives us the curve A'BCT', which is quite different from the normal upward sloping supply curve. Along A'B consist of pure adult labor. As we move from B to T' it comprises of available labor in the economy. The likelihood of the existence of multiple equilibrium is glaring. When the adult wage is *w*, the corresponding child wage will be γ_w.

Suppose the aggregate demand curve for labor is given as DD_L which indicated the total effective labor demand by firms for every possible adult wage *w*. If an economy is caught at point E_2, the wage will be the lowest (w_L for adults and γw_L for children) and children will be motivated to work. Similarly, the economy can, however, be at equilibrium at point E_1, where wages are high and children do not work.

If the economy arrived equilibrium at point E_2, there is room for policy intervention which is described by Basu and Van (1998) as "benign intervention." Assuming the child labor is banned by the authority, the labor supply will be A'A. Therefore, if the condition remains unchanged, the economy will be at the only equilibrium position i.e., point E_1. Interestingly, once equilibrium settles at point E_1, the law that bans child labor will not be effective anymore, since the equilibrium position E_1 was the original equilibrium of the economy. Where the demand curve intersect the supply curve only once on segment CT, then banning child labor will cause a decline in welfare of workers, child laborers inclusive. If the model is fitted into the Walrasian description of the whole economy, then each of the equilibrium positions E_1 and E_2 will be regarded as Pareto optimal. Hence, between E_1 and E_2 no equilibrium position that dominates the other. However, the preference of the households dominated by the working class will be for equilibrium position E_1 i.e., they will be better off at E_1.

The model by Basu and Van (1998) as described above, assumes that engagement of children into labor activities results from parent poverty. This assumption is in fact on the parent preference that value leisure of their children, though if they are poor, may not be able to afford it. More specifically, they offered two version of the poverty hypothesis. The first one which is described as the "stronger" version indicated that parent preference towards child leisure is such that they send them to work if their income is below the subsistence threshold, in which case contribution by children to income is just sufficient to reach the subsistence consumption level.

The second form of the hypothesis which is described as the "weak" indicated that above the subsistence level, there exist a tradeoff between leisure of children and household consumption. The two hypothesis above, enable Basu and Van (1998) to show that in an economy where the labor market consist of children, there exist the possibility of multiple equilibrium as described earlier.

In the high equilibrium, parent's wage is sufficiently high which consequently make parent avoid sending their children to work. If an economy is in the low equilibrium, ban on child labor could lead to an automatic switch to the higher equilibrium. This obviously relies on the poverty hypothesis. The poverty hypothesis as described by the model by Basu and Van (1998) will be utilized to test the axiom of the model which specify that no parent sent their children to work if the level of income they earn from non-child labor is high which invariably highlighted that poverty of parent is what motivated them to allow their children to work. From Figure 1, when wage rate is high (WE) few parents are willing to send their children to work but when the WE is low many families to be prone to poverty, hence send their children to work to supplement their income.

This study intends to empirically test the luxury axiom to ascertain whether poverty of parent play an exerting effects on the incidence of child labor at the macro level for 42 selected developing countries.

4. DATA AND METHODOLOGY

Data for this study is obtained from the World Bank (World Development Indicators) as well as United States Department of Labor data base. System-generalize method of moment (S-GMM) will be employed to analyze the data. In most of the developing countries, parent allows their children into labor market at early age because of economic hardship. To augment the role of poverty into this framework, the study will make use of empirical justification from Ebeke (2012). The purpose for augmenting poverty in to the model is to ascertain whether the a priori expectation that parent send their children to work when they are poor upholds. Following the work by Ebeke (2012), the augmented model which is intended to be used so as to evaluate the effect of poverty on child labor in developing countries is thus specified as follows:

$$CL_{it} = \beta CL_{it-1} + \varphi POV_{it} + \lambda_1 RM_{it} + \lambda_2 RM_{it} FD_{it} + \lambda_3 FD_{it} + X'_{it}\,\beta + n_i + n_t\,\varepsilon_{it} \quad (1)$$

Applying a dynamic model and logging the variable produces:

$$\ln CL_{it} = \alpha + \beta \ln CL_{it-1} + \varphi \ln POV_{it} + \lambda_1 \ln RM_{it} + \lambda_2 \ln RM_{it} FD_{it} + \lambda_3 \ln FD_{it} + X'_{it} + n_i + n_t + \varepsilon_{it} \quad (2)$$

Where, *CL* represent the log child labor prevalence, *POV* is the log of poverty head count, *RM* refers to log of remittance as share of gross domestic product (GDP), *FD* refers to the log of domestic credit to private sector (% of GDP), X'_{it} is the other determinants of child labor at the macro level. n_i is the country specific effect, n_t is the time effect and ε_{it} random error term.

5. RESULTS AND DISCUSSIONS

Table 1 provided the descriptive statistics of the research, while the result of the specified model as estimated using S-GMM is presented in Table 2.

Table 1: Descriptive statistics

Variables	Observation	Mean	Standard deviation	Min	Max
Child labor	210	2.472	0.861	0.693	4.285
Poverty	210	4.043	1.131	0	5.094
Remittances	210	0.838	1.643	−4.044	3.215
Domestic credit to private sector	210	3.436	0.502	2.396	4.506
Remittance* domestic credit to private sector	210	2.992	5.711	−13.069	11.839
GDP per-capita	210	7.269	0.967	5.215	9.316
Fertility	210	1.083	0.456	0.336	2.026

GDP: Gross domestic product

Table 2: GMM estimation on the effect of poverty on child labor in selected developing countries

Variables	Two step (full sample)	Two step (after removing outlier)
Child labor	0.927*** (0.006)	0.905*** (0.007)
Poverty	−0.025*** (0.009)	−0.013 (0.009)
Remittance	−0.202*** (0.053)	−0.233*** (0.085)
Domestic credit to private sector	−0.134*** (0.023)	−0.193*** (0.035)
Remittance*domestic credit to private sector	0.064*** (0.016)	0.071*** (0.024)
GDP per-capita	−0.016*** (0.005)	−0.018*** (0.005)
Fertility	0.048** (0.022)	0.026 (0.018)
Intercept	0.735*** (0.147)	0.993*** (0.156)

*P<0.1, **P<0.05, ***P<0.01. GDP: Gross domestic product, GMM: Generalize method of moment

The estimated result indicated that poverty is negatively related to child labor and is statistically significant at 1%. The sign doesn't change even after removing outliers, though not statistically significant in the second instance, this invariably supported the paradoxical wealth effect proposition as advanced by Bhalotra and Heady (2003) which indicated that child labor use mostly emerges from the richest households. That is to say those children in land rich households are more likely to work and attend school less compared to the children in land poor households. This phenomenon is referred to as wealth paradox. This may be accounted to the fact that greater majority of the children that engages in child labor activities in developing countries relates to agricultural sub-sector such as farms operated by families. Other control variable such as GDP per-capita expressed expected sign of being negatively relating to child labor prevalence, which means increase in per-capita GDP tends to reduce child labor prevalence in the sample countries. The over identification test (Sargan test) failed to reject the hypothesis that instruments are not correlated with the error terms of the structural equations. Similarly there exist no second order serial autocorrelation in the model.

6. CONCLUSION AND POLICY RECOMMENDATIONS

The present study empirically analyzed the impact of poverty on the prevalence of child labor across 42 developing countries. The result revealed that poverty increased rather than decreased

child labor prevalence in developing countries over the period under review. The study justified the paradoxical wealth effect as advanced by Bhalotra and Heady, (2003). The implication is that developing countries in their quest to eliminate child labor should institute proper legislation in order to address the child labor problem considering the fact that the richer the households are in selected developing countries, the more vulnerable they become to child labor syndrome. Which means poverty of parents is not the main stimulus of child labor prevalence in the selected developing countries.

Therefore, governments of the developing countries should institute legislations inform of banning child labor in an attempt to eliminate the syndrome from developing countries. This may be connected to the fact that greater proportion of child labor participation is in agricultural sub-sector, hence, the more land you possess, the higher the possibility of sending children to employment. Families that don't have land possession may not be able to send their children to employment even if they wish doing so.

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APPENDIX A

Appendix A List of countries for the study (Table 1)

Table A1: List of sample countries for the study

Argentina	Armenia	Benin	Bhutan	Bolovia
Brazil	Burkina-Faso	Colombia	Costarica	Cuador
Elsalvador	Georgia	Guatemala	Honduras	India
Indonesia	Kazakhstan	Malawi	Mali	Moldova
Montenegro	Morocco	Mozambique	Nicaragua	Niger
Nigeria	Pakistan	Panama	Paraguay	Peru
Philippines	Senegal	Serbia	Sri Lanka	Swaziland
Tanzania	Togo	Turkey	Uganda	Ukaraine
Uruguay	Venezuela			

APPENDIX B

The study employs the use of DFITS test ignored to identify the countries that serves as outliers. The DFITS test which is given in the statistics as follows: DFITS = $r_j\sqrt{h_j/(1-h_j)}$ where r_j represent the residualas given by $r_j = e_j/(s_{(j)}\sqrt{(1-h_j)})$ with $s_{(j)}$ and s referring to the root mean square errors (s) of the regression equation with j^{th} observation removed and h as the leverage statistics (Belsley et al., 1980; Azman-Saini et al., 2010; Slesman, 2014). DFITS test identifies any observation which has the high combination of leverage and residual, which according to Belsley et al. (1980), is regarded as an outlier when DFITS statistics is greater than 2 $\sqrt{k/n}$. k represent the number of regressors and n represent number of countries. Below is presented the result of DFITS test for the study (Figure B1).

The DFITS test result for full sample indicated that the following countries are considered as outliers; Argentina (0.185), Ukraine (0.253)

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lvr2plot, mlabel(country)

predict d1, cooksd

quietly generate cutoff = d1> 4/42
.list country d1 if cutoff
+----------------------+

| country d1 |

|----------------------|
1. | Argentina .1846527 |
40. | Ukaraine .2528348 |
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Figure B1: Scatter plot of leverage versus residual squared for full sample

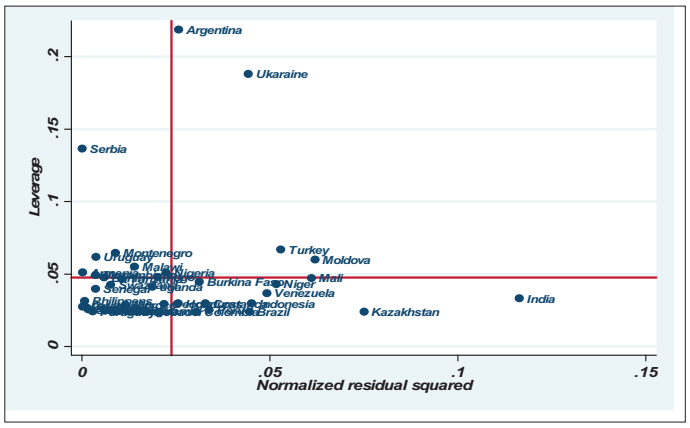

Figure B2: Scatter plot of leverage versus residual squared after removing outliers from the sample