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## **Abstract**

We study the number of hours children in Africa and Asia are involved in paid child labor on the basis of a newly developed database with information on 168,000 children living in 16 countries. The proportion of involved children varies between 1 and 8 percent, with generally lower figures in Asia. Children work on average 13 hours in Africa and 30-38 hours in Asia. Multilevel analysis shows the variation in child labor to be almost completely related to household level factors, with wealth and parental education being the major determinants. In Asia also demographic and cultural factors have significant effects. Gender differences are very large in Asia but relatively small in Africa. In both continents mostly factors at the household level and much less demand for child labor at the context level drive children into paid labor.

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## **Introduction**

There is broad agreement among governments, donor organizations and the public at large that a world without child labor would be in the best interest of children, their families, and the country they live in (UNICEF, 2008). Nevertheless, past initiatives to reduce child labor have not been able to prevent that over 200 million children are working as child laborers worldwide (ILO-IPEC, 2010b). To understand why parents choose to let their children engage in child labor could be an important step forward. The current study aims to contribute to this knowledge by performing a large-scale comparative research into the factors associated with children's involvement in paid labor in African and Asian countries.

Earlier research suffers from several shortcomings. The large bulk of it consists of small scale studies, focusing on the situation of specific groups in specific regions/countries (e.g. Patrinos and Psacharopoulos, 1997; Das and Mukherjee, 2007; Emerson and Souza, 2008). However valuable such studies are for clarifying those specific situations, their contribution to scientific knowledge is restricted, because it is not clear to which extent the acquired insights can be generalized to other situations and regions (Buchmann and Hannum, 2001). Available research that does transcend the case-study level and is really comparative in nature consists mostly of macro-level studies, in which country-level performance indicators are related to other country-level characteristics (e.g. Fan, 2004; Davies and Voy, 2009; Edmonds and Pavcnik, 2006). Although these studies have contributed to our knowledge of the macro-level conditions that influence child labor, they give little insight in the mechanisms through which macro-level factors exert their influences.

Another important drawback of the existing studies is that they tend to focus on the effects of factors at only one level (household or national). This is problematic, since we know that the decisions of parents regarding work and schooling of their children are influenced by factors at the household level as well as by characteristics of the context in which the household is living (Webbink, Smits and De Jong, forthcoming; Huisman and Smits, 2009). To achieve scientific progress in this field, it is necessary to use multilevel models, in which effects of household and context factors are estimated simultaneously. This paper provides such a multilevel approach.

In many studies, child labor is considered as an either-or problem, a child is engaged in child labor or it is not (e.g. Patrinos and Psacharopoulos, 1997; Canagarajah and Nielsen, 2001;

Emerson and Souza, 2008). This is problematic. The degree to which a child's development and schooling suffer from being employed in paid labor depends to a large extent on the number of hours they are involved in it. Children's lives are affected much less if they work a few hours a week than if they work many hours. The focus of this paper will therefore be on the number of hours children are engaged in paid work.

Starting point of our research is a recently developed theoretical framework that includes explanatory factors at both the household, sub-national regional (henceforth called 'district') and national level (Webbink et al., forthcoming). To test the hypotheses derived from this framework, we use a unique database containing information of 168,123 children aged 8-13 living in eighteen low-income countries in Africa and Asia. Of these children we know whether and how many hours per week they work for pay outside the household. We also have information on the socio-economic and demographic characteristics of their family background and of the context in which they are living. This context information is at the level of districts within the 16 countries. As we can distinguish 214 districts, there is ample explanatory power at the sub-national level for testing hypotheses on socio-economic and cultural context effects.

To find out which factors at which level of aggregation are most important in explaining the number of hours a child is engaged in paid labor, we apply multilevel regression models that allow us to simultaneously estimate the effects of factors at the household and context level. Each situation is unique, in the sense that the effects of the various relevant factors might differ depending on the circumstances. In a multilevel context, this uniqueness can be addressed by studying interactions between household and context factors (Huisman and Smits, 2009). In our analyses, this possibility is worked out by studying how the effects of risk factors differ between urban and rural areas.

## **Theoretical background**

To guide our research, we use a theoretical framework developed in earlier work (Webbink et al., forthcoming). This framework is influenced by models for understanding women's employment (Hijab, 2001; Spierings, Smits and Verloo, 2010) and is presented in Figure 1. It is based on four pillars: (1) The context in which children live has different levels (household, local, national, international). (2) Decisions regarding child labor are made at the household level, by parents,

caretakers, or other family members. (3) Different factors at the different levels influence these decisions simultaneously. (4) The strength of these influences may differ between contexts.

<Figure 1 about here>

The focus of our research is on the individual children, who are placed in the center of the figure. Each child is embedded in a multilayered context, represented by the concentric circles surrounding the child. The first circle represents the nearby context of the household in which the child lives, the second circle the local context in which the household is situated, and the third circle the more distant context of the national and international factors that may influence child labor. The factors at the inner, or lower, levels are supposed to be embedded in – and shaped by – more distant factors. In this way the model addresses the fact that determinants of child labor may be context-specific.

The decisions of parent's (or other family members) regarding work or schooling of children are supposed to have four possible outcomes: the child can be in school, it can be engaged in paid work, it can be both in school and engaged in paid work and it can be neither in school nor engaged in paid work. The last situation is sometimes called 'idle' (Bocolod and Ranjan, 2008), although the child often is not really inactive but engaged in work at home, in the household or the family business (Webbink et al., 2012).

In our model, the many factors at different levels that may affect child labor decisions are grouped into three conditions according to the underlying causal mechanisms. These conditions, called resources, structure and culture, are discussed in the next sections.

### *Resources*

The role of resources has been studied extensively in the child labor literature; child labor is generally considered to be a strategy used by poor households in order to survive (Nkamleu and Kielland, 2006). The poverty hypothesis assumes that child labor does not exist when a household earns enough. However, other resource-related factors, like education and occupational status may also play roles. Children of more highly educated parents are more in school and less often engaged in child labor, because parents generally want their children to reach at least the same educational level as they reached themselves (Huisman and Smits, 2009;

Webbink et al., 2012). The educational level of the mother sometimes is more important than that of the father (Kurosaki et al., 2006). Education empowers women, and empowered women are more capable of using their influence to the benefit of their children (Das and Mukherjee, 2007).

Economic development at the district level is placed under context-level resources. More modern areas are influenced more by globalization, including the diffusion of value patterns that stress the importance of education and gender equality (Huisman and Smits, 2009). In urban areas, the road and transport infrastructure is generally better, the state influence is stronger and there may be more pressure on parents to send their children to school. District educational level is also an important contextual resource factor. It indicates the level of development of the area, but at the same time is related to the availability of educational facilities and to norms about the importance of sending children to school in the region. If most children in the neighborhood go to school, it will be more difficult for parents to send their children to work instead of school. As an indicator of the educational infrastructure, district educational level is also a structural factor; hence we will come back to it in the next section.

### *Structure*

Both family structure, such as the number of siblings (Edmonds, 2006), and structural context factors, like the educational infrastructure and labor market situation (Emerson and Souza, 2008; Huisman and Smits, 2009), may affect children's engagement in paid labor. Structural characteristics at the household level often are resource-dilution variables. Individuals with more siblings might be more engaged in child labor, because scarce resources have to be divided among more family members. On the other hand, a higher number of siblings also means more helping hands. This may lead to more time for school for the children (Patrinos and Psacharopoulos, 1997; Nauck, 2007). Children living in extended families might experience less need to work, because there are more adults present to generate income. In households where one of the parents is missing, children are expected to work more.

Birth order is important as well. In poor households, the older (first-born) children may have to work for pay or help at home and their labor may create the opportunity for their younger siblings to go to school (Edmonds, 2008). In this respect it is important to distinguish between the presence of brothers and sisters. Girls are more often involved in housework and boys more

in commercial work (Webbink et al., 2012; forthcoming). Hence, children with more brothers might be less engaged in commercial work, because there are more candidates to do the job (Edmonds, 2006). Foster children are likely to be more engaged in paid work than biological children. As biological children often take care of their parents when they are old, parents might be prepared to invest more in their education than in that of non-biological children (Serra, 2009).

Important structural context factors are the educational infrastructure and the local labor market structure. Without work opportunities, children will remain idle or be in school. When there are no (good) schools in the vicinity, they will have to work (at home or at the labor market) or remain idle (Kondylis and Manacorda, 2006). Differences between urban and rural areas are important too. Most child labor is concentrated in rural areas (ILO-IPEC 2010a, p.13.), where children may work on large farms (e.g. tobacco or cacao), or in the mining industry. Child labor in urban areas takes usually place in the informal sector, such as scavenging, vending and selling (ILO-IPEC, 2010b). The number of children working in factories or sweatshops is relatively low compared to other forms of child labor (ILO-IPEC, 2012).

### *Culture*

Our third group of variables is derived from the literature on cultural explanations (Lieten, 2003). Parents' attitudes towards child labor are expected to be influenced by norms and values dominant in the context where they live. The way children and child labor are looked upon is not everywhere the same and is related to the position of women (Kandiyoti, 1988; Nieuwenhuys, 1996). In a classical patriarchal system, a woman is subordinated to her husband and works in his house. She may not be allowed to develop a business or work outside the home (Moghadam, 2004; Gündüz-Hosgör and Smits, 2008). As a consequence, many women in patriarchal societies do not cumulate assets and may depend on male family members (their husbands, brothers, and sons) for old-age security. If education is regarded as a way of enhancing a child's future income, women in such a system can be expected to invest more in the education of their sons than of their daughters.

Systems of classical patriarchy are found in North Africa, the Middle East and South and East Asia (Kandiyoti, 1988, 278). The patriarchal system dominant in sub-Saharan Africa is different. In sub-Saharan African countries, the insecurities of polygyny are matched with greater

autonomy for women. Sub-Saharan African women are primarily responsible for their children's sustenance, including the costs of education. The contribution of men varies (Kandiyoti 1988, 277). This might mean that in these countries women are more inclined to let their children work for pay, since they need their children's income.

### **Urban-rural differences**

Our theoretical framework's fourth pillar is the idea that effects of risk factors of child labor may differ depending on the circumstances. In this respect, we focus on differences between urban and rural areas. In urban areas of poor countries, facilities are often better, the influence of globalization stronger, and the idea that child labor is objectionable and children should be in school more dominant (Huisman and Smits, 2009). In those areas, we expect children to work less and be more in school, even if they are (relatively) poor. In rural regions, schooling may entail higher costs due to more limited availability and accessibility of schools (Hazarika, 2001; Huisman and Smits, 2009; Mugisha, 2006). Under these circumstances, parents with few resources might have fewer possibilities to get their children into school and choose to have them help at home or work for pay instead. Hence according to our *situational dominance hypothesis*, the effects of resources depend on the circumstances. A more severe situation is associated with stronger positive effects, because resources can make more of a difference (compare Spierings et al, 2010).

### **Data and methods**

#### *Data*

Data are used from the UNICEF Multiple Indicator Cluster Surveys (MICS, [www.childinfo.org](http://www.childinfo.org)) for five developing countries in Asia and eleven in Africa. MICS-surveys use large representative samples of households and collect information on all household members. The data are derived from the Database Developing World ([www.databasedevelopingworld.org](http://www.databasedevelopingworld.org)), a multilevel data infrastructure in which MICS and other surveys are connected and supplemented with context information at district and national level. The data are from the third MICS- round (2005-2006). The countries are Burundi, Central African Republic, Côte D'ivoire, Gambia, Ghana, Guinea Bissau, Sierra Leone, Togo, Malawi, Mauritania, Somalia, Bangladesh, Syria, Thailand, Vietnam and Yemen.



Besides household-level data, we use context information at the district and national level. Within the 16 countries, 214 districts can be distinguished for which we included district-level context factors. Since the samples are large, these district-level variables could be created by calculating the district's average of households' and individuals' characteristics (compare Huisman and Smits, 2009). Given the huge cultural and institutional differences between Asia and Africa, we performed separate analyses for these continents. Since Yemen is geographically very close to Africa and resembles its African neighbors more than its Arab neighbors, we included Yemen in the African subsample.

### *Method*

The data are analyzed with multilevel regression models (also called mixed models or hierarchical linear models; see Snijder and Bosker, 1999), with hours spent during the past week (seven days) on paid labor as the dependent variable. We apply three-level models, because we use data on families nested within districts nested within countries and we include explanatory variables at household and district level. District and country differences in paid labor are dealt with by estimating random intercepts at district and country level. This can be represented by a model with a response  $Y_{ijk}$  (hours spent on paid labor) for child  $i$  in district  $j$  of country  $k$  given by the following equation:

$$y_{ijk} = \beta_0 + \beta_{ijk}x_{ijk} + c_{jk}W_{jk} + \gamma_k Z_k + u_{0jk} + v_{0k} + e_{0ijk}$$

In this equation  $\beta_0$  represents the mean number of hours spent on paid labor work across the sample.  $X_{ijk}$ ,  $W_{jk}$  and  $Z_k$  represent vectors of household, district and country-level independent variables. The parameters  $u_{0jk}$  and  $v_{0k}$  represent the random differentials from the overall mean at the district and the country level. In all analyses robust standard errors (sandwich estimators) are used. To determine the variance is explained by factors at the different levels, we compute the intraclass correlations  $\rho$  ( $\rho$ ), or Variance Partition Coefficients (VPC) (Snijder and Bosker, 1999; Goldstein, 2011). The analyses are estimated with MLwiN (Rasbash et al., 2005). In this analysis, also the nearby level of the cluster (village, neighborhood) is included,

The analyses focus on children aged 8-13. The questions on paid labor in the MICS surveys are formulated as follows. "During the past week did (name) any kind of work for someone who

is not a member of this household?” If this question was answered with yes, it was subsequently asked whether this work was “For pay in cash or kind” and “About how many hours did he/she do this work for someone who is not a member of this household?” The hours worked variable has a minimum value of 0 hours and a maximum of 95 hours. Children who worked for a non-household member and were paid in cash or kind are considered to be engaged in paid labor for the number of hours mentioned. All other children are considered to work zero hours in this kind of work.

Independent variables at the household level are socio-economic characteristics (parental education, household wealth), demographic characteristics (sex, age, number of brothers and sisters, birth order, whether or not the child is a biological child and household composition). Household wealth is measured by an index constructed on the basis of household assets, such as TVs, cars, telephones, and housing characteristics, such as floor material, roofing, toilet facilities. Using a method developed by Filmer and Pritchett (1998), all households within a country were ranked from low to high on the basis of their assets and this variable was subsequently divided into wealth deciles. Education of the father is measured with three categories: (1) none, (2) at least some primary, (3) at least some secondary. Given the low educational levels of the mothers, their education was measured with a dummy indicating whether (1) or not (0) she completed primary education.

Age of the child is measured in years. Number of sisters and brothers and birth order are interval variables. Presence of the parents is measured with dummy variables indicating whether (1) or not (0) the mother or father is missing from the household. Extended family structure is measured with three categories (0) nuclear family, (1) more than two adults in the household but no grandparent(s), (2) more than two adults in the household including grandparent(s).

Urbanization is measured by a dummy indicating whether (1) or not (0) the household lives in a rural area. For educational infrastructure we use the average number of years of education for people aged over 13 in the district. For district level patriarchy, the mean age difference between husbands and wives is used. The higher this difference, the more patriarchal a district is supposed to be. Patriarchy is also indicated by the percentage of married couples living in households with grandparents from father’s side, indicating the tendency of girls to marry into the family of their husband.

For children with a missing parent, the dummy variable adjustment method (Allison, 2001) was used to address missing values on the parental characteristics. In this procedure, the cases with missing values get the mean of the valid values and a dummy is added to the model to identify the cases for which the mean was substituted. According to Allison (2001, p. 87), this procedure delivers unbiased estimates of the variables if the missing values are due to non-existence of the respective cases, as is the case here with the characteristics of parents who are missing.

We tested for nonlinearity of the continuous variables by adding quadratic terms to the models. To test whether the effects of the explanatory variables differ between boys and girls we computed interactions between all variables and sex. If the interaction was significant, separate coefficients for boys and girls were estimated. If not, a general coefficient was presented. In this way, a clear and concise overview of the relevant coefficients is obtained. To address the possibility that effects differ between urban and rural areas, we also tested for interactions with urbanization and added the significant interactions to the model.

## **Results**

### *Description of the data*

Table 1 presents an overview of the means and standard deviations of the independent variables. There are many differences between Asia and Africa. In almost all cases these differences point into the direction of a higher level of development in Asia. Parental educational levels and GDP per capita are higher in Asia and the demographic situation is better there, with smaller families and fewer households with parents missing. Almost two-third of children in Asia and three quarter in Africa live in rural areas. The average age difference between spouses is somewhat higher in Africa. The percentage of households with grandparents from father's side does not differ between the continents.

<Table 1 about here>

Table 2 presents information on the hours children work for pay. Note that a child can be engaged in other activities too. For instance, a substantial number of children are involved in unpaid housework or family business work (Webbink et al., 2012). On average, 3.5% of African

girls, 4.3% of African boys, 1.5% of Asian girls and 3.3% of Asian boys in our data are engaged in paid labor. These figures are reasonably in line with ILO figures based on partly overlapping countries. According to ILO-IPEC (2010a), in 2008 about 2.6% of Asian children and 5% of African children aged 5-14 were involved in paid work and globally about 43% of involved children were girls.

Within both continents, child labor figures differ substantially among countries. In Africa they range for girls from 1% in Gambia and Mauritania to 6.3% in Malawi and for boys from 0.8% in Somalia to 7.8% in Togo. In Asia they range for girls from 0.5% in Syria to 2.3% in Thailand and for boys from 0.9% in Vietnam to 4.6% in Bangladesh. In most countries, boys are more involved in paid labor than girls. Exceptions are Ghana, Somalia, Thailand and Vietnam, where boys are slightly less engaged than girls.

Although the number of children working for pay work does not seem very large, the number of hours these children work is substantial. In the week before the survey, girls engaged in paid labor on average 18 hours and boys 24 hours, which is a considerable workload for this age group. In Asia, girls tended to work even as much as 30 hours and boys 38 hours; in Africa girls worked on average 13 hours and boys 14 hours. Hence, in Asia fewer children are engaged in paid labor, but the ones who do work are engaged for much more hours than in Africa.

<Table 2 about here>

### *Multivariate analyses*

The variance components of the multilevel regression models show that in Asia as much as 95% of the variance in hours worked in paid labor is explained by household level factors. In Africa this percentage is with 90% somewhat lower, but still substantial. Hence in these countries it is mainly the household situation that determines whether children work for pay. There are hardly any differences in this respect between boys and girls, but substantial differences between urban and rural areas, which, interestingly, are in opposite direction in the two continents. In Africa the proportion of variation explained by household level factors is 96% in urban areas and 89% in rural areas, whereas in Asia it is 91% in urban areas and 97% in rural areas.

Table 3 presents the multilevel regression coefficients. For variables that interacted significantly with sex, separate coefficients for boys and girls are presented; otherwise a general

coefficient is presented under 'All' (columns 1 and 4). Significant interactions with urbanization are presented in the bottom part of the table.

< Table 3 about here >

A first striking finding is that in Asia the coefficients of all variables but one are significant, whereas in Africa this is only the case with one third of the variables. All Asian coefficients are also larger than the corresponding ones for Africa and the differences between boys and girls and between urban and rural areas are much larger there. In Asia more than half the coefficients differ according to sex and over one third between urban and rural areas. In Africa only two coefficients (wealth and age) differ according to sex and between urban and rural areas. Hence, in all respects there is much more variation in Asia than in Africa.

Education of both parents reduces child labor of their children. In Asia this effect is significantly larger for boys than for girls; in Africa girls and boys benefit to the same amount of their parents' education. African fathers' secondary education has no significant effect. Household wealth shows the expected effect: children are significantly less engaged in paid work if the household is wealthier. This wealth effect is stronger for boys than for girls in both continents. We tested for nonlinear effects of this variable, but it turned out to be linear.

In Africa, the only significant demographic effects are those for sex, age, and missing the father. Boys, older children and children with a missing father work significantly more. In Asia, all demographic factors have significant effects. There, the effect of age is nonlinear. All boys in our sample and girls older than 9 are more engaged in paid labor the older they get. For boys this increase in workload is higher than for girls. The gender difference in child labor is much more pronounced in Asia than in Africa. This could reflect the traditional system of patriarchy.

If the father or mother (Asia only) is missing from the household, children spend more time on paid labor, probably because they have to compensate for the labor of the missing parent. In Asia living in an extended family reduces the hours children work for pay. Apparently, other members of the extended family are willing and able to reduce the hours children have to spend on paid labor. Our idea that adopted or foster children would be more involved in paid work than biological children is not confirmed by the data; in Asia biological children even work more than

foster children. Asian parents might consider their biological children's work experience valuable for adult life.

Later-born Asian children tend to spend fewer hours on paid labor than their older siblings. In Asia, having more siblings generally means more paid work, but having more brothers only generate more work for boys. In households with young children, boys tend to work less for pay. Overall, these findings suggest that if there are boys in a household, they will be the first to be sent out to work. In Asia, the place of girls is much more in the home than in Africa; they only seem to work if there is no other option.

Regarding the context factors, we see that Asian children work less if they live in a rural area. Asian boys also work less if they live in a more highly educated area. Living in a more traditional area, as indicated by a larger age difference between husbands and wives, significantly increases hours worked by Asian boys. In Africa, a larger age difference between partners is associated with less paid labor of children. This might be due to availability of fewer opportunities for paid work in more traditional areas. The degree to which women live in the household of their partners has no significant effect.

### **Interactions with urbanization**

To test the fourth pillar of our model, the idea that determinants of child labor may work different under different circumstances, we analyzed interaction effects with living in a rural area. In Africa, only the effects of age and wealth differ in this respect. Both factors are more positive in rural areas, which means that the increase in child labor with age is stronger and the influence of wealth weaker there.

In Asia, there are much more differences between urban and rural areas. Rural children seem to start working at an older age; missing a father is less problematic for them, but missing a mother is associated with more hours work. Parental education is less important in rural areas of Asia and wealth less in rural areas of Africa. The effect of the number of sisters is almost reduced to zero in rural areas. Also in more traditional rural areas of Asia, indicated by a larger age difference between partners, children work less.

### **Conclusions**

This article aimed at gaining insight into the determinants of paid child labor, by analyzing representative data for 168,000 children living in 214 districts of 16 developing countries. Our data show child labor incidence to vary between 0.5% and 8%, with generally higher percentages in Africa than in Asia. These percentages might not be extremely high, but the children who do work spend on average a high number of hours on it. This is particularly true in Asia, where girls work on average 30 hours a week and boys even 38. In Africa the average is with about 13 hours lower, but still substantial. The lower number of hours worked in Africa might be due to a lack of paid work in this poorest continent. If so, child labor may rise in Africa if the continent's level of development increases.

To gain insight into the driving factors behind paid child labor, a multilevel analysis was performed in which effects of socio-economic, demographic and cultural factors at the household and context level were studied simultaneously. Given the huge differences between the Asian and African context, this analysis was performed for each continent separately. With the exception of Yemen (which was included in the African group), the Asian countries were more developed than the African countries and the continents also differed with regard to the form of patriarchy (Kandiyoti, 1988).

Our multilevel analyses indeed revealed large differences between Africa and Asia. In Asia, almost all explanatory variables contributed significantly to the explanation of child labor; in Africa this was the case with only a few variables. Gender differences were also much more pronounced in Asia. The continents are similar in that more household resources, in the form of parental education or wealth, reduce the number of hours children spent on paid work. However in Africa hardly any other factors were important, whereas in Asia besides resources also structural and cultural factors played roles. It seems that in the least developed (African) countries, lack of resources is the major driving factor behind child labor, whereas at a higher level of development (such as in the Asian countries), other factors become important.

Living in an extended family, reduces child labor in Asia, whereas having more siblings increases it. This especially applies to boys. Asian girls are substantially less involved in paid labor. This does not imply that Asian girls are always better off. The Asian girls who do engage in paid labor tend to work much more hours than their African counterparts. The same is true for Asian boys.

An important contribution of our study is that for the first time effects of household and context factors are studied simultaneously for such a large number of countries. Our findings shows that it is to a very large extend the household situation that determines the number of hours a child is involved in paid labor. This is important, because in the child labor literature much attention has been paid to demand factors in the context where children live. Our study indicates that poverty is the major driving factor and not so much the opportunities available in the context.

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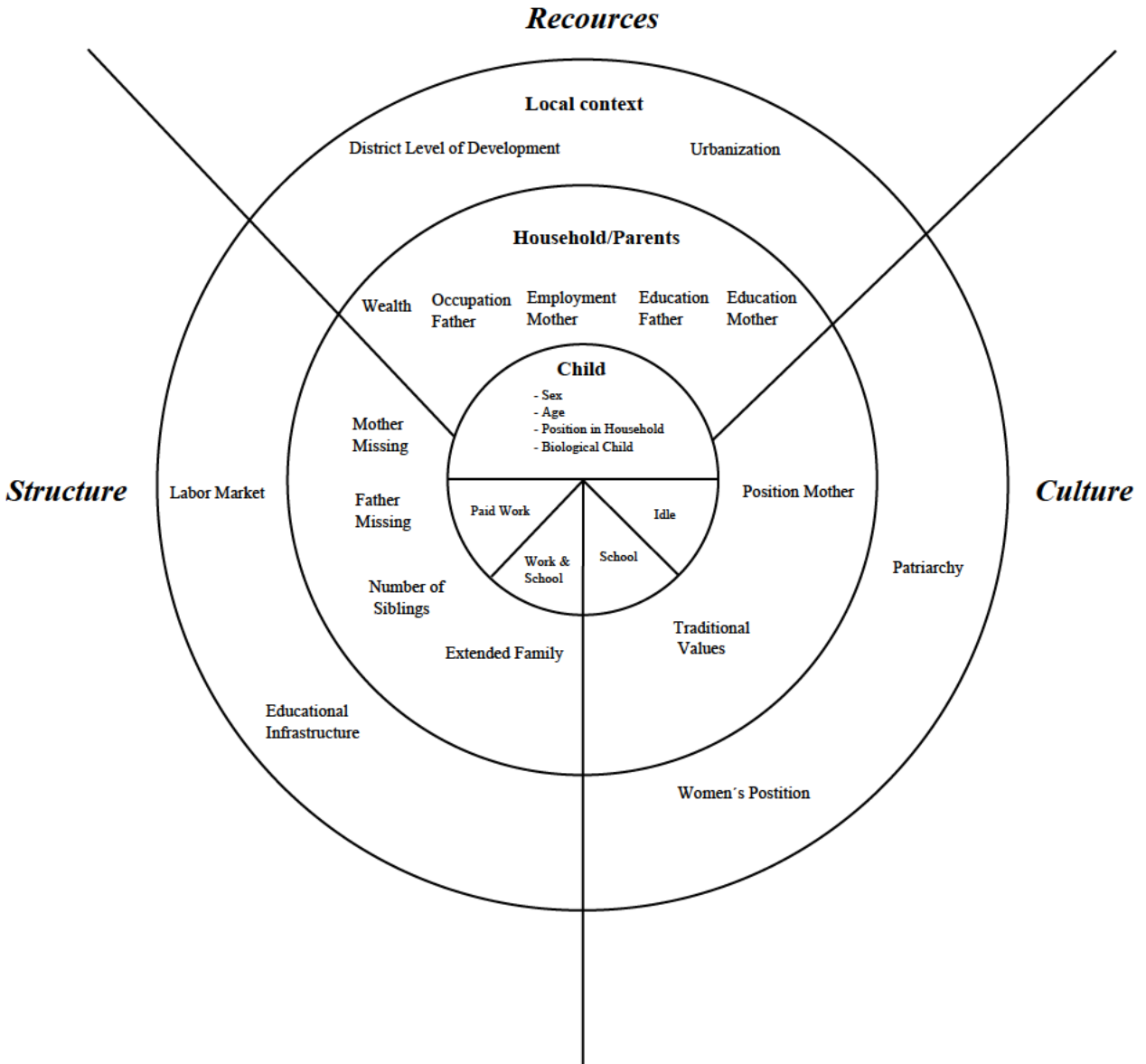
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**Figure 1: Theoretical model for the study of hours worked in paid employment by children aged 8-14 in 16 developing countries**



**Table 1. Descriptive statistics: Percentages of children in category or mean**

|   | Asia   |                | Africa |                |
|---|--------|----------------|--------|----------------|
|   | Mean   | Std. Deviation | Mean   | Std. Deviation |
| <b>Household factors</b>                      |        |                |        |                |
| <i>Socio Economic Factors</i>                 |        |                |        |                |
| Education father none                         | 30.6%  | 0.46           | 49.4%  | 0.50           |
| Education father primary                      | 31.4%  | 0.46           | 34.2%  | 0.47           |
| Education father > primary                    | 38.0%  | 0.49           | 16.4%  | 0.37           |
| Education mother primary or                   | 61.4%  | 0.49           | 38.6%  | 0.49           |
| Wealth Index                                  | 5.3    | 2.86           | 5.4    | 2.88           |
| <i>Demographic factors</i>                    |        |                |        |                |
| Age   | 10.5   | 1.71           | 10.4   | 1.72           |
| Father missing                                | 14.9%  | 0.36           | 36.1%  | 0.48           |
| Mother missing                                | 1.6%   | 0.13           | 5.3%   | 0.22           |
| Extended family with grandparents             | 22.6%  | 0.42           | 39.6%  | 0.49           |
| Extended family without grandparents          | 10.0%  | 0.30           | 6.8%   | 0.25           |
| Biological child                              | 99.3%  | 0.08           | 96.2%  | 0.19           |
| Birth order child                             | 1.9    | 1.02           | 2.3    | 1.36           |
| Number of sisters                             | 1.0    | 1.10           | 1.6    | 1.44           |
| Number of brothers                            | 1.1    | 1.10           | 1.7    | 1.52           |
| Number of children <5 in household            | 0.5    | 0.72           | 1.1    | 1.17           |
| <b>Context factors</b>                        |        |                |        |                |
| Lives in rural area                           | 63.3%  | 0.48           | 72.5%  | 0.45           |
| District level of development                 | 0.6    | 0.34           | 0.2    | 0.22           |
| Mean years education adults                   | 7.5    | 0.74           | 5.4    | 1.58           |
| Age difference between spouses                | 7.2    | 2.52           | 8.6    | 2.63           |
| Household has grandparents from father's side | 0.1    | 0.06           | 0.1    | 0.05           |
| GDP per capita                                | 996.6  | 839.58         | 349.6  | 217.68         |
| Number of children                            | 79,217 |                | 88906  |                |

**Table 2: Percentages and averages hours worked of girls and boys aged 8-13 engaged in paid child labor by number of hours worked last week**

| Country                | girls |               |      |      |       |       |               |        | boys |      |               |      |      |       |       |               |       |   |
|------------------------|-------|---------------|------|------|-------|-------|---------------|--------|------|------|---------------|------|------|-------|-------|---------------|-------|---|
|                        | work  | Average hours |      |      |       | rural | Average hours |        | N    | work | Average hours |      |      |       | rural | Average hours |       | N |
|                        |       | 1-5           | 6-15 | 16+  | total |       | urban         | total  |      |      | 1-5           | 6-15 | 16+  | total |       | urban         | total |   |
| Côte D'ivoire          | 2.5   | 34.0          | 28.2 | 37.9 | 16.9  | 16.0  | 16.6          | 4,201  | 5.9  | 22.9 | 45.1          | 32.0 | 14.3 | 14.9  | 14.4  | 4,538         |       |   |
| Gambia                 | 1.0   | 37.1          | 40.0 | 22.9 | 12.8  | 12.2  | 12.5          | 3,586  | 1.2  | 37.2 | 34.9          | 27.9 | 13.0 | 9.6   | 11.6  | 3,484         |       |   |
| Ghana                  | 5.1   | 37.2          | 38.3 | 24.5 | 13.5  | 6.1   | 12.0          | 1,870  | 4.6  | 33.0 | 36.3          | 30.8 | 16.1 | 10.3  | 15.1  | 1,957         |       |   |
| Guinea Bissau          | 3.2   | 33.3          | 57.0 | 9.7  | 10.1  | 10.4  | 10.1          | 2,871  | 4.4  | 38.2 | 48.5          | 13.2 | 9.5  | 11.2  | 9.7   | 3,127         |       |   |
| Sierra Leone           | 4.7   | 19.0          | 62.0 | 19.0 | 11.0  | 6.9   | 10.2          | 2,591  | 5.5  | 31.0 | 49.0          | 20.0 | 10.3 | 5.6   | 9.5   | 2,649         |       |   |
| Togo                   | 3.9   | 47.5          | 38.6 | 13.9 | 9.6   | 8.0   | 9.3           | 2,590  | 7.8  | 44.5 | 39.7          | 15.8 | 9.9  | 7.3   | 9.4   | 2,684         |       |   |
| Mauritania             | 1.0   | 20.0          | 40.0 | 40.0 | 22.2  | 22.6  | 22.4          | 4,716  | 1.9  | 17.0 | 38.6          | 44.3 | 23.2 | 21.2  | 22.6  | 4,792         |       |   |
| Burundi                | 2.7   | 21.1          | 37.9 | 41.1 | 17.5  | 31.3  | 18.5          | 3,594  | 2.7  | 20.9 | 38.4          | 40.7 | 19.4 | 8.0   | 19.0  | 3,446         |       |   |
| CAR                    | 4.2   | 30.1          | 22.0 | 48.0 | 14.5  | 10.2  | 13.6          | 2,954  | 5.9  | 35.0 | 21.7          | 43.3 | 12.6 | 19.3  | 13.7  | 3,079         |       |   |
| Malawi                 | 6.3   | 39.1          | 42.3 | 18.6 | 10.6  | 9.9   | 10.6          | 10,231 | 6.6  | 34.6 | 41.2          | 24.2 | 12.7 | 11.3  | 12.6  | 10,144        |       |   |
| Somalia                | 1.3   | 2.9           | 2.9  | 94.1 | 42.5  | 39.5  | 41.4          | 2,615  | 0.8  | 0.0  | 25.0          | 75.0 | 32.9 | 30.5  | 32.5  | 2,795         |       |   |
| Yemen                  | 1.3   | 18.5          | 48.1 | 33.3 | 21.0  | 17.3  | 20.4          | 2,155  | 3.2  | 13.9 | 34.7          | 51.4 | 23.5 | 21.1  | 23.2  | 2,237         |       |   |
| <b>African Average</b> | 3.5   | 33.6          | 40.5 | 25.9 | 12.8  | 13.6  | 12.9          | 43,974 | 4.3  | 32.0 | 39.6          | 28.3 | 13.7 | 12.8  | 13.5  | 44,932        |       |   |
| Syria                  | 0.5   | 7.5           | 20.0 | 72.5 | 26.2  | 26.4  | 26.3          | 8,433  | 2.0  | 11.2 | 33.5          | 55.3 | 23.4 | 25.3  | 24.6  | 9,010         |       |   |
| Thailand               | 2.3   | 49.4          | 35.4 | 15.2 | 9.7   | 8.3   | 9.0           | 7,072  | 2.1  | 43.4 | 32.2          | 24.3 | 9.9  | 10.5  | 10.2  | 7,419         |       |   |
| Vietnam                | 1.5   | 9.4           | 15.6 | 75.0 | 28.9  | 38.0  | 29.8          | 2,206  | 0.9  | 4.5  | 27.3          | 68.2 | 25.4 | 35.0  | 26.3  | 2,335         |       |   |
| Bangladesh             | 1.6   | 7.1           | 15.6 | 77.3 | 33.6  | 46.1  | 40.2          | 20,995 | 4.6  | 3.9  | 14.4          | 81.7 | 43.1 | 47.6  | 44.6  | 21,747        |       |   |
| <b>Asian Average</b>   | 1.5   | 19.3          | 21.6 | 59.1 | 25.5  | 34.5  | 29.8          | 38,706 | 3.3  | 9.4  | 19.2          | 71.4 | 37.8 | 37.7  | 37.8  | 40,511        |       |   |
| <b>Total Average</b>   | 2.5   | 29.7          | 35.3 | 35.1 | 15.2  | 25.00 | 17.6          | 82,680 | 3.8  | 22.7 | 31.2          | 46.1 | 29.1 | 21.8  | 23.5  | 85,443        |       |   |

**Table 3: Coefficients of multilevel linear regression models for children age 8-13 with hours spent on paid child labor as dependent variable.**

|  | <i>Asia</i> |            |           | <i>Africa</i> |            |           |
|--|-------------|------------|-----------|---------------|------------|-----------|
|  | All<br>1    | Girls<br>2 | Boys<br>3 | All<br>4      | Girls<br>5 | Boys<br>6 |
| <b>Household factors</b>                           |             |            |           |               |            |           |
| <b>Socio-economic factors</b>                      |             |            |           |               |            |           |
| Education father<br><i>none</i>                    |             |            |           |               |            |           |
| <i>at least some primary</i>                       |             | -0.238 *   | -0.827 ** | -0.085 *      |            |           |
| <i>at least some secondary</i>                     |             | -0.373 **  | -1.140 ** | -0.081        |            |           |
| Education mother at least some primary             |             | -0.401 **  | -1.046 ** | -0.116 **     |            |           |
| Wealth   |             | -0.045 **  | -0.132 ** |               | -0.050 **  | -0.077 ** |
| <b>Demographic factors</b>                         |             |            |           |               |            |           |
| Sex = boy  | 1.251 **    |            |           | 0.126 **      |            |           |
| Age  |             | -0.869 **  | -0.508 ** |               | 0.092 **   | 0.144 **  |
| Age squared  | 0.049 **    |            |           |               |            |           |
| Father missing                                     | 0.470 **    |            |           | 0.086 **      |            |           |
| Mother missing                                     | 0.329 **    |            |           | 0.084         |            |           |
| Extended family without grandparents               | -0.146 **   |            |           | 0.017         |            |           |
| Extended family with grandparents                  | -0.181 *    |            |           | -0.012        |            |           |
| Biological child                                   | 0.721       |            |           | -0.081        |            |           |
| Birth order child                                  |             | -0.080     | -0.351 ** | -0.027        |            |           |
| Number of sisters                                  | 0.159 **    |            |           | 0.014         |            |           |
| Number of brothers                                 |             | 0.077      | 0.276 **  | 0.019         |            |           |
| Number of young children in household              |             | -0.077     | -0.238 ** | 0.025         |            |           |
| <b>Economic context factors</b>                    |             |            |           |               |            |           |
| Living in rural area                               |             | -0.698 **  | -0.952 ** | -0.033        |            |           |
| Mean years education adults in district            |             | -0.148     | -0.479 ** | -0.073        |            |           |
| <b>Cultural context factors</b>                    |             |            |           |               |            |           |
| Mean age difference between spouses in district    |             | 0.060      | 0.387 **  | -0.197 **     |            |           |
| District % HH with grandparents from father's side | 0.030       |            |           | 0.050         |            |           |
| <b>Interactions with living in a rural area</b>    |             |            |           |               |            |           |
| Age  |             | -0.157 **  | 0.021     | 0.071 **      |            |           |
| Father missing                                     | -0.469 **   |            |           |               |            |           |
| Mother missing <sup>1</sup>                        | 1.449 **    |            |           |               |            |           |
| Education father at least some primary             |             | 0.174      | 0.795 **  |               |            |           |
| Education father at least some secondary           | 0.356 *     |            |           |               |            |           |
| Education mother at least some primary             | 0.755 **    |            |           |               |            |           |
| Wealth   | --          |            |           | 0.027 *       |            |           |
| Number of sisters                                  | -0.203 **   |            |           |               |            |           |
| Mean age difference between spouses in district    |             | -0.320 **  | -0.060    |               |            |           |
| N  | 79,217      | 38,706     | 40,511    | 88,906        | 43,974     | 44,932    |

\* P<0.05 \*\* P<0.01