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Global child labour developments: Measuring trends from 2004 to 2008

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Statistical Information
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on Child Labour (SIMPOC)

International Programme on the Elimination of Child Labour (IPEC)

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Summary of highlights

As part of its effort to increase the knowledge base on global child labour developments, the ILO produced new child labour estimates for the year 2008 and trends from 2004 to 2008. The new global and regional estimates on child labour benefited from refinements embodied in the Resolution concerning Statistics of Child Labour, adopted by the 18th International Conference of Labour Statisticians (ICLS) in 2008.

The child labour estimates are based on the datasets from 60 national household surveys carried out between 2004 and 2008. Key findings are presented according to:

- form of children's work (children in employment, child labour and hazardous work by children),
- age group,
- sex,
- region,
- sector of activity, and
- status in employment.

Children in employment

It is estimated that there were some 306 million children ages 5 to 17 in employment in the world in 2008. This is 17 million fewer than in 2004. However, this trend is not consistent across all major age groups (Table 1). From 2004 to 2008, employment in the 5- to 14- year core age group declined from 196 million to 176 million, a decrease of 20 million. Over the same period, employment among children aged 15-17 years rose by 2 million, from 127 million to 129 million. Boys continue to be more exposed to work than girls, with a 4.5 per cent higher incidence rate (Table 1).

Child labour

Child labour is a narrower concept than *children in employment*. It is defined by the ILO Minimum Age Convention, 1973 (No. 138) and the ILO Worst Forms of Child Labour Convention, 1999 (No. 182). Both in absolute and relative terms, the results indicate that far more boys than girls were engaged in child labour in 2008 (40 million more and a 4.2 per cent higher incidence rate).

The overall number of children aged 5-17 years in child labour decreased modestly by 7 million from 222 to 215 million over the four years. Most of the observed decline in child labour is in the number of girls and in the age group 5-14 years old (Table 1). The number of girl child labourers decreased by 15 million to 88 million and the overall number of child labourers of both sexes below the age of 15 declined from 170 million to 153 million.

Children in hazardous work

Hazardous work is a subcategory of child labour. The number of children in this worst form of child labour accounts for more than half of all child labourers (115 million). Boys outnumber girls in hazardous work (74 million and 41 million, respectively).

Table 1: Estimates of various forms of children's work, 2004 and 2008

	Total children ('000)	Children in employment		Child labour		Hazardous work	
		('000)	%	('000)	%	('000)	%
World							
2004	1,566,300	322,729	20.6	222,294	14.2	128,381	8.2
2008	1,586,288	305,669	19.3	215,269	13.6	115,314	7.3
Boys							
2004	804,000	171,150	21.3	119,575	14.9	74,414	9.3
2008	819,891	175,777	21.4	127,761	15.6	74,019	9.0
Girls							
2004	762,300	151,579	19.9	102,720	13.5	53,966	7.1
2008	766,397	129,892	16.9	87,508	11.4	41,296	5.4
5-14 years							
2004	1,206,500	196,047	16.2	170,383	14.1	76,470	6.3
2008	1,216,854	176,452	14.5	152,850	12.6	52,895	4.3
15-17 years							
2004	359,800	126,682	35.2	51,911	14.4	51,911	14.4
2008	369,433	129,217	35.0	62,419	16.9	62,419	16.9

The number of children in hazardous work declined by 13 million, from 128 million in 2004 to 115 million in 2008. The decrease was significant among girls and particularly strong in the 5- to 14- year-old age cohort. However, there was only a slight decrease among boys, and a trend reversal in the case of adolescents 15-17 years old (Table 1). In the latter age cohort, the number increased by 10.5 million to reach 62 million and the incidence rose by 2.5 percentage points.

Regional distribution of child labourers and trends in employment

In absolute terms, it is the Asian-Pacific region that has the most child labourers ages 5-17 (113.6 million) as compared with 65.1 million in Sub-Saharan Africa and 14.1 million in Latin America and the Caribbean. Yet Sub-Saharan Africa region has the highest incidence of child labour, with one in four children involved.

With regard to children ages 5 to 14 in employment, the Asia and the Pacific region experienced a considerable decrease, not only in absolute numbers but also in relative terms (from 122.3 million to 96.4 million and a 4 percentage point decrease in incidence). For the same age category, the number of children in employment also continued to decline in Latin America and the Caribbean, albeit at a slower rate. However, the number of children in employment was increasing in Sub-Saharan Africa in relative as well as absolute terms in the age group of 5-14 years old (Table 2). There were close to 9 million more children in employment in the region and the incidence rate rose by 2 percentage points.

Sectoral distribution of child labourers

Children engaged in child labour work in all the three broad groupings of economic activity (agriculture, industry and services). Among child labourers ages 5 to 17 in the world, 60 per cent are involved in the agricultural sector, 7 per cent are employed in industry and 26 per cent in services.

Table 2: Regional estimates of various forms of children's work (5-14 years old), 2004 and 2008

	Children ('000)	Children in employment		Child labour		Hazardous work	
		('000)	%	('000)	%	('000)	%
World							
2004	1,206,500	196,047	16.2	170,383	14.1	76,470	6.3
2008	1,216,854	176,452	14.5	152,850	12.6	52,895	4.3
Asia and the Pacific							
2004	650,000	122,300	18.8	-	-	-	-
2008	651,815	96,397	14.8	81,443	12.5	16,332	2.5
Latin America and the Caribbean							
2004	111,000	11,047	10.0	-	-	-	-
2008	110,566	10,002	9.0	9,722	8.8	4,529	4.1
Sub-Saharan Africa							
2004	186,800	49,300	26.4	-	-	-	-
2008	205,319	58,212	28.4	52,229	25.4	26,045	12.7
Other regions							
2004	258,800	13,400	5.2	-	-	-	-
2008	249,154	10,700	4.3	9,456	3.8	5,989	2.4

Status in employment of child labourers

The large majority of child labourers in the age group of 5-17 years are unpaid family workers (68 per cent). 21 per cent are in paid employment and 5 per cent in self-employment.

Introduction

1

This is the second issue of the ILO's global child labour trend estimation, which is undertaken on a four-yearly basis. The present report provides new global and regional estimates on child labour for the year 2008 and compares them with the previous 2004 estimates[1]. It also explains in detail the underlying estimation methodologies and gives an overview of the datasets used.

The report draws on an increasing number of data points from national-level child labour surveys (SIMPOC surveys)[2] and other sources. UCW, an inter-agency programme on child labour statistics and research, provided access to non-ILO data and assisted in the analysis[3].

The new child labour estimates are based on refined estimation techniques fully comparable with the ones employed in the 2002 and 2006 rounds. They also benefited from (i) the new international standards on child labour statistics adopted by the Eighteenth International Conference of Labour Statisticians (ICLS) in 2008[4] and (ii) an integrated approach in estimation using standardized tabulation schemes for national data and composite estimation procedures for arriving at regional and global trends.

For the first time, estimates on child labour and hazardous work by region and status in employment are provided. The available data also allowed us to produce some limited preliminary estimates of hazardous "household chores" undertaken in the child's own household, thereby addressing an increasingly prominent issue in the worldwide debate on child labour measurement related to the use of the general production boundary of the System of National Accounts (SNA). However, the data at hand fell short of estimating the number of children in the worst forms of child labour other than hazardous work.

The document is structured as follows. Section 2 highlights the main estimation findings for 2008 and compares these to the 2004 results. As far as possible, data are broken down by age group, sex, region, branch of economic activity, and status in employment. Section 3 spells out the concepts and definitions at the basis of the estimation and analysis. Section 4 describes the methodology underlying the new global and regional trends of child labour. Some preliminary estimates of hazardous unpaid household services (commonly called "household chores") are provided in Annex 3.

[1] Hagemann, F., Diallo, Y., Etienne, A., Mehran, F.,: *Global child labour trends 2000 to 2004* (Geneva, ILO, 2006).

[2] Numbers on the extent, characteristics and determinants of child labour are provided by the Statistical Information and Monitoring Programme on Child Labour (SIMPOC), which is the statistical arm of IPEC. SIMPOC assists countries in the collection, documentation, processing and analysis of child labour relevant data.

[3] UCW, or "Understanding Children's Work", is a joint programme by the ILO, UNICEF and the World Bank.

[4] The Resolution Concerning Statistics of Child Labour lays down statistical standards for the measurement of child labour.

Main findings

2

To maintain comparability with the earlier ILO global estimates, this section covers three main types of working children: children in employment, children in child labour and children in hazardous work.

2.1 Trends with regard to children in employment

Children in employment are those engaged in any activity falling within the production boundary of the SNA for at least one hour during the reference period. This refers to economic activities of children, covering all market production and certain types of non-market production (principally the production of goods and services for own use). It includes forms of work in both the formal and informal economy; inside and outside family settings; work for pay or profit (in cash or in kind, part-time or full-time), or as a domestic worker outside the child's own household for an employer (with or without pay). The terms "working children", "children in economic activity", and "children in employment" are used interchangeably in this publication. All denote a broader concept than child labour.

2.1.1 Children in employment by age group

In 2008, there were some 306 million children in economic activity among the 1'586 million children in the age group 5 to 17 years in the world (Table 3). This accounts for almost one-fifth of all children in this age group (19.3 per cent). In the age group 5 to 14 years, the total child population in economic activity was estimated at 176 million (14.5 per cent).

Table 3 compares the 2008 global estimates with those obtained in the previous round in 2004. Globally, the number of children in employment continues to decline.

Table 3: Global trends (2004-2008) in the number of children in employment, 5-17 years old

Year	Population ('000)		Children in employment ('000)		Activity rate (%)		Percentage point difference of activity rate
	2004	2008	2004*	2008	2004*	2008	
World	1,566,300	1,586,288	322,729	305,669	20.6	19.3	-1.3
Boys	804,000	819,891	171,150	175,777	21.3	21.4	0.1
Girls	762,300	766,397	151,579	129,892	19.9	16.9	-3.0
5-14	1,206,500	1,216,854	196,047	176,452	16.2	14.5	-1.7
15-17	359,800	369,433	126,682	129,217	35.2	35.0	-0.2

*The data for Latin America and the Caribbean for the benchmark year 2004 have been retrospectively adjusted because new available data for this region reveal that the estimated decline in the number of children in employment made in 2006 proved to be an overestimate. This revision of the 2004 estimates of children in employment in Latin America and the Caribbean slightly affects the corresponding global estimate as well as the global estimates of related variables. All 2004 estimates have thus been retrospectively adjusted. Further methodological details are provided in Annex 2.

But the trend is not consistent across all major age groups. While the number of children in employment declined in both absolute and relative terms among the group of children aged 5-14 years, more older children (15-17 years) were working in 2008 than four years earlier.

Between 2004 and 2008, employment in the 5-to 14-year core age group declined by 1.7 percentage points, from 196 million (16.2 per cent) to 176 million (14.5 per cent), a decrease of 20 million. Over the same period, employment among children aged 15-17 years rose by 2 million, or from 127 million (35.2 per cent) to 129 million (35.0 per cent).

2.1.2 Children in employment by sex

Overall, in 2008, 176 million boys were in economic activity compared to 130 million girls. The activity rate was 4.5 percentage points higher among boys (21.4 per cent versus 16.9 per cent for girls).

The number of girls in employment steadily decreased in absolute terms by nearly 20 million during the period from 2004 to 2008, while in the case of boys it slightly increased by 5 million. In relative terms, the activity rate among girls dropped by 3 percentage points. Among boys, there was no change in the incidence rate (Table 3).

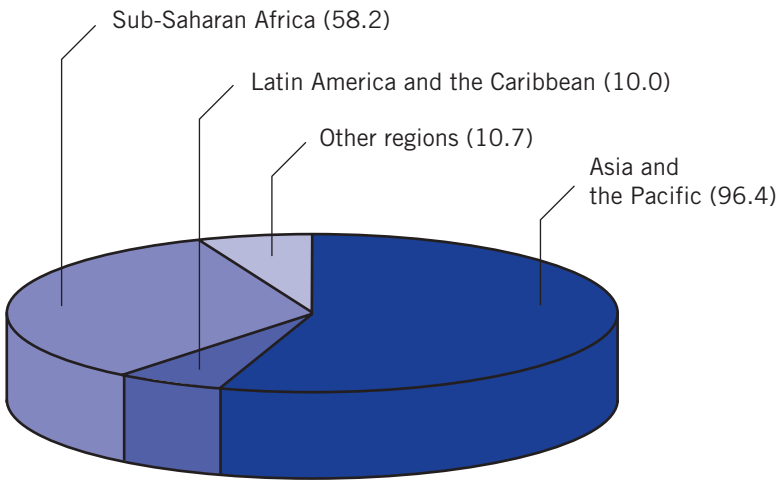
2.1.3 Children in employment by region

To ensure comparability with the previous rounds of the global and regional estimation of child labour[5], the number and structure of the regions were maintained, and all countries and territories were grouped into four regions: Asia and the Pacific; Latin America and the Caribbean; Sub-Saharan Africa; and a compound category of "Other Regions" which comprises the Middle East and North Africa, the developed countries and the former transition economies of Eastern Europe and Asia. The number of children in employment and activity rates are presented in Charts 1 and 2, respectively. Both concentrate on the 5-to 14-year age group.

The data in Chart 1 show that the Asian-Pacific region harbours the largest number of children in employment, 96.4 million. It is followed by Sub-Saharan Africa, Other Regions and Latin America and the Caribbean with 58.2 million, 10.7 million and 10 million, respectively.

This picture changes when examining the regional distribution in relative terms (see Chart 2). Here, Sub-Saharan Africa ranks highest. 28.4 per cent of all children below 15 years were working in the region compared to about 1 in 7 in the Asia-Pacific region (14.8 per cent) and almost 1 in 10 in Latin America and the Caribbean (9 per cent).

Chart 1.
Children in employment (5-14 years), by region (million)



[5] Hagemann, F., et al. *Global child labour trends 2000 to 2004* (Geneva, ILO 2006).

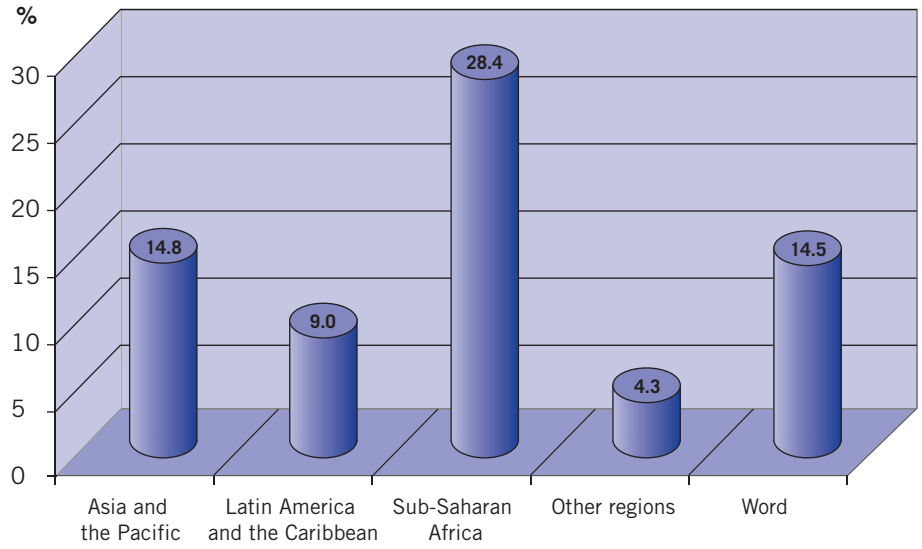


Chart 2. Children's activity rate by region, 2008 (5-14 years old)

Table 4 and Charts 3 and 4 give the trend of children in employment by region. For comparison purposes, regional trends are limited to children in the age group 5 to 14 years since the previous regional estimates did not cover children aged 15 to 17 years old[6]. As mentioned earlier, it should be also noted that the data on Latin America and the Caribbean for 2004 have been retrospectively adjusted because the new data on this region revealed that the estimated decline in the number of children in employment in 2004 was previously overestimated (see Annex 2 for details).

The data presented in Table 4 and Charts 3 and 4 show that all regions experienced a decline in the number of children in employment, both in absolute and relative terms, from 2004 to 2008, except for Sub-Saharan Africa.

The Asia and the Pacific region saw a remarkable decline in children involved in economic activities. The absolute number of children in employment declined by 26 million to a total of 96.4 million. In relative terms, the number of children in employment shrunk by 4 percentage points.

Latin America and the Caribbean, already with the smallest population of children in employment, continued its decline albeit at a slower rate. The number of children in economic activity dropped by 1 million in the four years following 2004, corresponding to a decline of 1 percentage point.

In contrast, in Sub-Saharan Africa, the number of children in employment increased sharply from 49.3 million in 2004 to 58.2 million in 2008 (with an increase in the activity rate from 26.4 to 28.4 per cent).

[6] Regional estimates concerning children aged 5-17 years old in economic activity are provided in Annex 4.

Table 4: Global trends in children's economic activity by region, 2004 and 2008 (5-14 years)

Year	Child population ('000)		Children in employment ('000)		Activity rate (%)		Percentage point difference of activity rate
	2004	2008	2004*	2008	2004*	2008	
World	1,206,500	1,216,854	196,047	176,452	16.2	14.5	-1.7
Asia and the Pacific	650,000	651,815	122,300	96,397	18.8	14.8	-4.0
Latin America and the Caribbean	111,000	110,566	11,047	10,002	10.0	9.0	-1.0
Sub-Saharan Africa	186,800	205,319	49,300	58,212	26.4	28.4	2.0
Other regions	258,800	249,154	13,400	10,700	5.2	4.3	-0.9

* As mentioned earlier, 2004 estimates have been retrospectively adjusted.

Chart 3.
Global trends in children's economic activity by region, 2004-2008 (5-14 years old) (million)

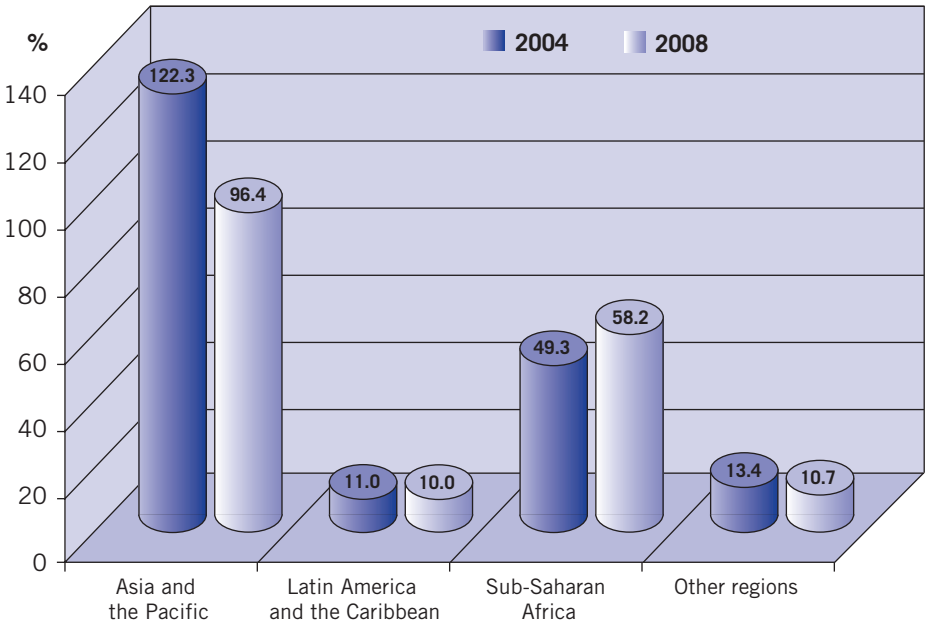
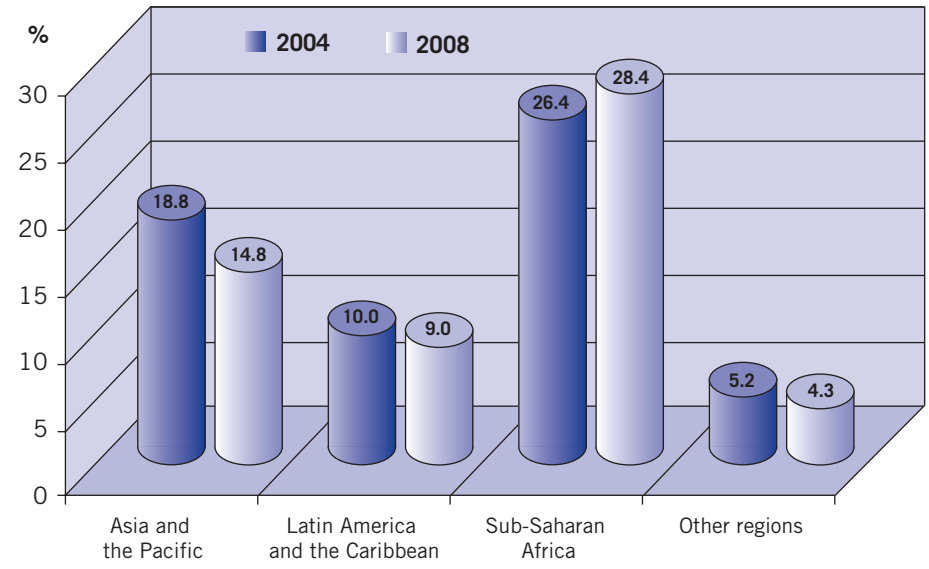


Chart 4.
Global trends in children's activity rate by region, 2004-2008 (5-14 years old)



2.2 Trends in child labour

Children in child labour under the SNA production boundary is a subset of *children in employment*. It includes those in worst forms of child labour and children in employment below the minimum age, excluding children in permissible light work, if applicable. It is therefore a narrower concept than "children in employment", excluding all those children who are working only a few hours a week in permitted light work and those above the minimum age whose work is not classified as a worst form of child labour, "hazardous work" in particular.

2.2.1 Child labour by age group

Table 5 shows that in 2008 there were 215 million child labourers in the world, of whom more than two thirds (153 million) were in the age group 5 to 14 years old. About 4 in 10 child labourers were younger than 12 years (91 million).

Table 5: Global estimates of child labour by major age group, 2004 and 2008

Major age group	Child labour ('000)	Child labour ('000)
	2004*	2008
5-11	110,655	91,024
12-14	59,728	61,826
Total 5-14	170,383	152,850
Total 15-17	51,911	62,419
Total 5-17	222,294	215,269

* As mentioned earlier, 2004 estimates have been retrospectively adjusted.

From 2004 to 2008, the results indicate that globally the number of child labourers continued its declining trend, falling by 3 per cent over the four years. The overall number decreased by 7 million from 222 to 215 million. In relative terms, the worldwide incidence of child labour also dropped from a rate of 14.2 per cent to 13.6 per cent. This reflects the downward trends observed with regard to children in economic activity (Table 6).

Chart 5 presents a graphical overview of child labour trends by age group. Note that the sub-group of younger children shows a more positive trend than the one of older children (15-17 years).

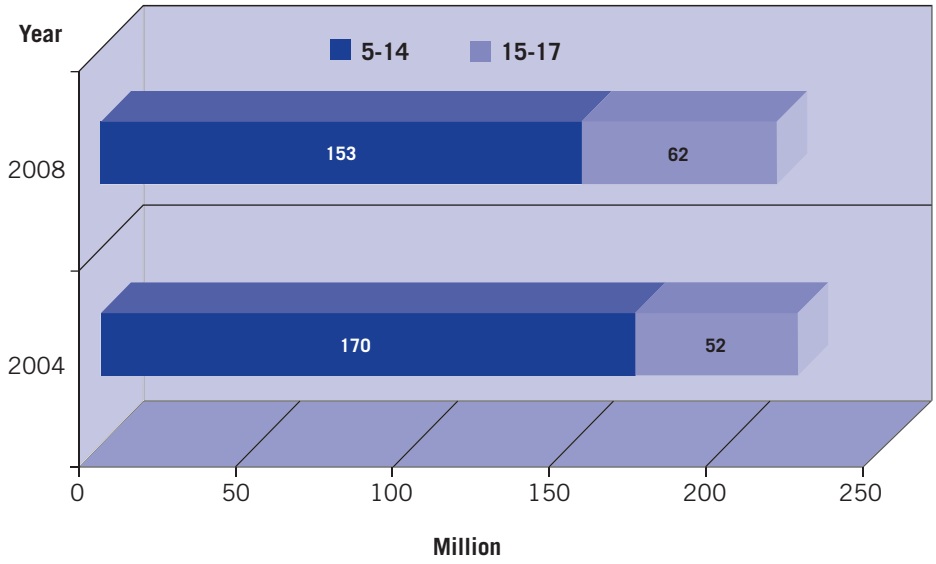
Among 5-14 year olds, the number of child labourers declined by 17 million between 2004 and 2008, corresponding to a change of 10 per cent over four years (Table 6). In the case of older children, 15-17 years old, there was a reversal in the downward trend in child labour, as the number increased from 52 to 62 million (a change of 20 per cent).

Table 6: Estimates of number of children in child labour and hazardous work, 2004 and 2008

Age		Child population		Child labour		Hazardous work	
		2004	2008	2004*	2008	2004*	2008
5-17	Number ('000)	1,566,300	1,586,288	222,294	215,269	128,381	115,314
	Incidence (% of age group)	100.0	100.0	14.2	13.6	8.2	7.3
	% change (2000 to 2004)	**2.3**	-	**-9.5**	-	**-24.7**	-
	% change (2004 to 2008)	-	**1.3**	-	**-3.2**	-	**-10.2**
5-14	Number ('000)	1,206,500	1,216,854	170,383	152,850	76,470	52,895
	Incidence (% of age group)	100.0	100.0	14.1	12.6	6.3	4.3
	% change (2000 to 2004)	**0.6**	-	**-8.5**	-	**-31.3**	-
	% change (2004 to 2008)		**0.9**		**-10.3**		**-30.8**
15-17	Number ('000)	359,800	369,433	51,911	62,419	51,911	62,419
	Incidence (% of age group)	100.0	100.0	14.4	16.9	14.4	16.9
	% change (2000 to 2004)	**8.4**	-	**-12.3**	-	**-12.3**	-
	% change (2004 to 2008)	-	**2.7**	-	**20.2**	-	**20.2**

* As mentioned earlier, 2004 estimates have been retrospectively adjusted.

Chart 5: Global trends in child labour by age group and year (million)



2.2.2 Child labour by sex

Both in absolute and in relative terms, the data indicate that far more boys than girls were engaged in child labour in 2008 (Table 7). Overall the difference by sex is about 40 million (128 million boys compared to 88 million girls). As demonstrated already in the previous global estimates, gender differentials with regard to child labour increase with age (Table 8).

Child labour distribution by sex among those aged 5-11 years tilts towards boys (54 per cent boys versus 46 per cent girls). At a later age, the gap widens among those aged 12-14 years – about 60 per cent of child labourers in this category are boys. The difference becomes most pronounced among youth aged 15-17 (Table 8). Here, as in earlier findings of global estimates on child labour, boys clearly dominate and girls constitute only one third of child labourers (34 per cent).

Table 7: Global trends of child labour by sex, 2004-2008

Sex		Child population		Children in employment		Child labour		Hazardous work	
		2004	2008	2004*	2008	2004*	2008	2004*	2008
World	Number ('000)	1,566,300	1,586,288	322,729	305,669	222,294	215,269	128,381	115,314
	Incidence (% of age group)	100.0	100.0	20.6	19.3	14.2	13.6	8.2	7.3
	% change (2004 to 2008)	-	**1.3**	-	**-5.3**	-	**-3.2**	-	**-10.2**
Boys	Number ('000)	804,000	819,891	171,150	175,777	119,575	127,761	74,414	74,019
	Incidence (% of age group)	100.0	100.0	21.3	21.4	14.9	15.6	9.3	9.0
	% change (2004 to 2008)		**2.0**		**2.7**		**6.8**		**-0.5**
Girls	Number ('000)	762,300	766,397	151,579	129,892	102,720	87,508	53,966	41,296
	Incidence (% of age group)	100.0	100.0	19.9	16.9	13.5	11.4	7.1	5.4
	% change (2004 to 2008)	-	**0.5**	-	**-14.3**	-	**-14.8**	-	**-23.5**

* As mentioned earlier, 2004 estimates have been retrospectively adjusted.

Table 8: Child labour and its sex distribution in 2008

Sex and age group	Number of child labourers (`000)	Distribution by sex (%)
5-11	**91,024**	**100.0**
Boys	49,490	54.4
Girls	41,534	45.6
12-14	**61,826**	**100.0**
Boys	36,946	59.8
Girls	24,880	40.2
Total 5-14	**152,850**	**100.0**
Boys	86,436	56.5
Girls	66,414	43.5
Total 15-17	**62,419**	**100.0**
Boys	41,325	66.2
Girls	21,094	33.8
Total 5-17	**215,269**	**100.0**
Boys	127,761	59.3
Girls	87,508	40.7

Note that over the four-year period under observation, data revealed a declining trend in child labour among girls. In fact, most of the observed decline in total child labour is in the number of girls. There were 15 per cent fewer girl child labourers in 2008. Boys, on the other hand, saw their numbers increase, not only in absolute terms but also in incidence rates. There were 7 per cent more boy child labourers in 2008 than four years before, i.e. 8 million more (Table 7).

2.2.3 Child labour by region

For the first time, the available data permit an inter-regional comparison of child labour, as opposed to previous regional estimates which were possible only for children 5 to 14 years in employment.

In 2008, the largest number of child labourers was in Asia and the Pacific (113.6 million), but in relative terms Sub-Saharan Africa had by far the highest incidence rate (25.3 per cent versus 13.3 per cent in Asia and the Pacific). One in ten children were child labourers in Latin America and the Caribbean.

Table 9: Regional estimates of child labour in 2008, 5-17 years old

Region	Total children (‘000)	Child labour (‘000)	Incidence rate (%)
World	1,586,288	215,269	13.6
Asia and the Pacific	853,895	113,607	13.3
Latin America and the Caribbean	141,043	14,125	10.0
Sub-Saharan Africa	257,108	65,064	25.3
Other regions	334,242	22,473	6.7

2.3 Trends in hazardous work by children

Hazardous work by children is defined as any activity or occupation that, by its nature or type, has or leads to adverse effects on the child's safety, health and moral development. In general, hazardous work may include night work and long hours of work, exposure to physical, psychological or sexual abuse; work underground, under water, at dangerous heights or in confined spaces; work with dangerous machinery, equipment and tools, or which involves the manual handling or transport of heavy loads; and work in an unhealthy environment which may, for example, expose children hazardous substances, agents or processes, or to temperatures, noise levels, or vibrations damaging their health. Hazardous work by children is often treated as a proxy category for the *Worst Forms of Child Labour*. This is for two reasons. First, reliable national data on the worst forms other than hazardous work, such as children in bonded and forced labour or in commercial sexual exploitation, are still difficult to come by. Second, children in hazardous work account for the overwhelming majority of those in the worst forms (more than 90 per cent).

2.3.1 Hazardous work by age group

Data emerging over the last few years have shown that the majority of working children are in hazardous work. In other words, most working children are engaged in activities that endanger their safety, health, and moral development.

The new estimates for 2008 corroborate these earlier findings. As Chart 6 shows, in 2008 115 million children were involved in hazardous work. This means that children in hazardous work constituted more than half of those in child labour (53.6 per cent) and about one-third of children in employment (37.7 per cent).

In terms of age groups (see Table 10), the data indicate that the incidence of hazardous work increases with age; it is 3.0 per cent among children 5 to 11 years old (26 million), 7.4 per cent among teenagers 12 to 14 years old (27 million) and 16.9 per cent among adolescents 15 to 17 years old (62 million).

Table 10: Global estimates of child labour and hazardous work by age and sex, 2008

Sex and age	Total children	Child labour		Hazardous work	
	('000)	('000)	%	('000)	%
World	**1,586,288**	**215,269**	**13.6**	**115,314**	**7.3**
Boys	819,891	127,761	15.6	74,019	9.0
Girls	766,397	87,508	11.4	41,296	5.4
5-11 years	852,488	91,024	10.7	25,949	3.0
12-14 years	364,366	61,826	17.0	26,946	7.4
(5-14 years)	1,216,854	152,850	12.6	52,895	4.3
15-17 years	369,433	62,419	16.9	62,419	16.9

From 2004 to 2008, the global number of children in hazardous work declined by 13 million based on a significant decrease of 23 million among children in the 5-to 14-year age group and an increase of 10 million in the case of the older children, 15 to 17 years old (Chart 6).

2.3.2 Hazardous work by sex

Chart 7 illustrates the distribution of hazardous work by sex and age group. It shows that boys outnumber girls in hazardous work across all age groups, especially at

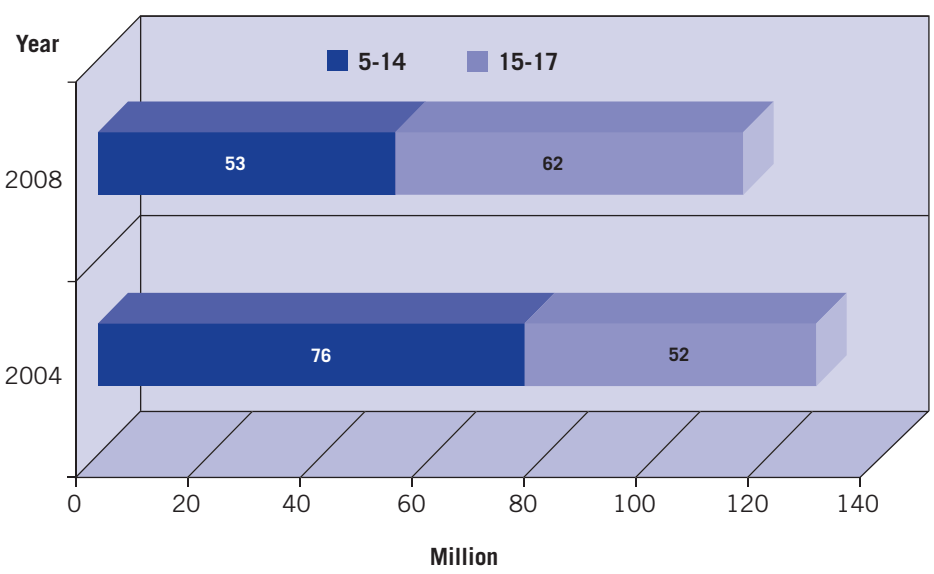


Chart 6:
Global trends in hazardous work by age group and year (million)

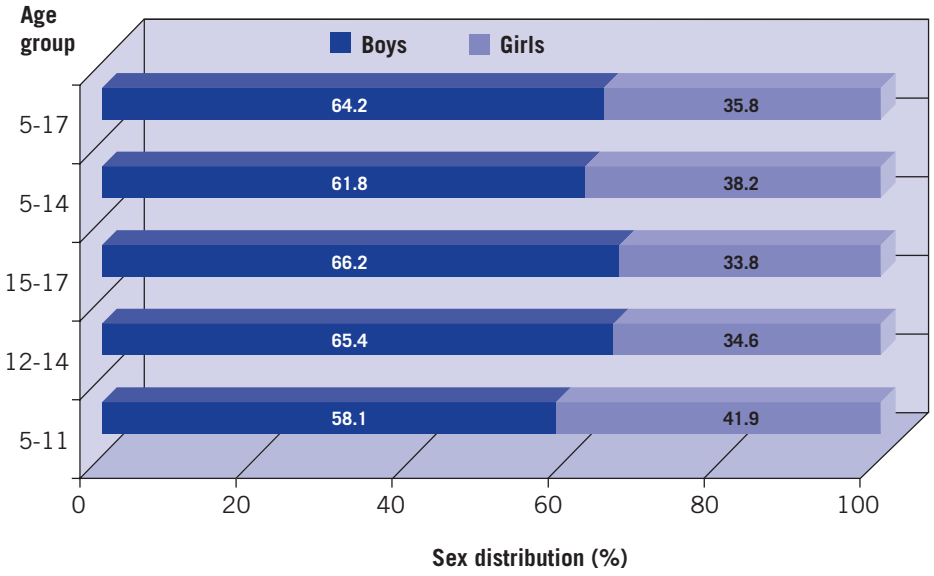


Chart 7:
Children in hazardous work by sex and age group

older ages. For instance, among children aged 12-14 and 15-17 years, boys constitute more than 60 per cent of children in hazardous work as indicated in the previous estimates. This confirms the dominance of boys in hazardous work.

Between 2004 and 2008, the number of girls in hazardous work declined by 24 per cent (from 54 to 41 million). However, there was only a slight decline among boys, with a reversal in the case of adolescents 15-17 years old. Indeed, hazardous work increased by 10.5 million in the latter group compared to four years earlier (see Tables 6 and 7 above).

2.3.3 Hazardous work by region

For the first time, the new global estimates provide an inter-regional comparison of children in hazardous work. In 2008, the estimated number of children in hazardous work ranged from 48.2 million in Asia and the Pacific to 9.4 million in Latin America and the Caribbean. In relative terms, Sub-Saharan Africa presents the most alarming picture. While 15.1 per cent of all children were in some form of hazardous work in the region (38.7 million), only 5.6 and 6.7 per cent were exposed to hazardous work in Asia/Pacific and Latin America/Caribbean, respectively.

Table 11: Regional estimates of children in hazardous work in 2008 (5-17 age group)

Region	Total children ('000)	Hazardous work ('000)	Incidence rate (%)
World	1,586,288	115,314	7.3
Asia and the Pacific	853,895	48,164	5.6
Latin America and the Caribbean	141,043	9,436	6.7
Sub-Saharan Africa	257,108	38,736	15.1
Other regions	334,242	18,978	5.7

2.4 Comparative trends in different categories of work by children

As presented in previous sections, globally child labour continues to decline, albeit at varying degrees. To what extent these various changes over time relate to the different forms of work when taking into account age and sex differentials?

Most of the observed decline in child labour is in the number of girls and in the age group 5-14. In fact, among this core group, all forms of children's involvement in work – economic activity, child labour and hazardous work – declined during 2004 to 2008, both in absolute and relative terms. The number of children in employment declined by 10 per cent, from 196 million to 176 million. The same proportion of change can be noted with regard to child labour slated for abolition, from 170 million in 2004 to 153 million in 2008 (-10 percentage change). The biggest decline was observed among children in hazardous work, from 76 million to 53 million, representing a decline of 31 per cent. Consequently, the number of children aged 5-14 years in non-hazardous child labour increased (Chart 8).

These detailed trends are similar to the ones in the previous estimates and confirm that child labour declines faster in its worst forms and among the more vulnerable (girls and younger children).

Results also show that children's involvement in work increases with age. For instance, among older children 15-17 years old the number of child labourers increased from 52 million in 2004 (14.4 per cent) to 62 million in 2008 (16.9 per cent).

Contrary to boys, among which child labour increased, from 120 million in 2004 to 128 million in 2008 (7 percentage change), there was a significant decrease in the number of girls involved in child labour, from 103 million to 88 million in the same period (-15 percentage change).

Chart 8: Global trends in child labour by form of work, age group and year (million)

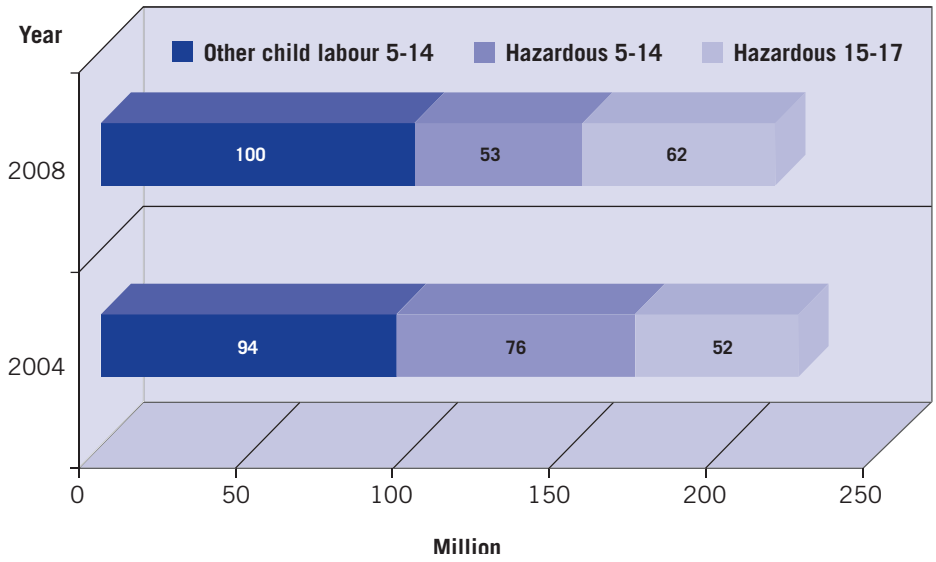


Table 12: Children in employment, child labour, and hazardous work (by sex and age), 2008

Sex and age group	Children in employment CE ('000)	Child labour CL ('000)	Child labour as % of CE	Hazardous work HW ('000)	HW as % of CE	HW as % CL
5-11	**91,024**	**91,024**	**100.0**	**25,949**	**28.5**	**28.5**
Boys	49,490	49,490	100.0	15,073	30.5	30.5
Girls	41,534	41,534	100.0	10,876	26.2	26.2
12-14	**85,428**	**61,826**	**72.4**	**26,946**	**31.5**	**43.6**
Boys	49,679	36,946	74.4	17,621	35.5	47.7
Girls	35,749	24,880	69.6	9,325	26.1	37.5
Total 5-14	**176,452**	**152,850**	**86.6**	**52,895**	**30.0**	**34.6**
Boys	99,169	86,436	87.2	32,694	33.0	37.8
Girls	77,283	66,414	85.9	20,201	26.1	30.4
Total 15-17	**129,217**	**62,419**	**48.3**	**62,419**	**48.3**	**100.0**
Boys	76,608	41,325	53.9	41,325	53.9	100.0
Girls	52,609	21,094	40.1	21,094	40.1	100.0
Total	**305,669**	**215,269**	**70.4**	**115,314**	**37.7**	**53.6**
Boys	175,777	127,761	72.7	74,019	42.1	57.9
Girls	129,892	87,508	67.4	41,296	31.8	47.2

2.5 Child labour by economic sector

Data presented here are for child labourers aged 5 to 17 years. Following the three broad groupings of economic activity – agriculture, industry and services[7] – , the new estimates indicate that agriculture was the largest sector with 60 per cent of all child labourers. It is followed by services and industry sectors with 26 per cent and 7 per cent of child labourers, respectively.

While boys are more likely to undertake activities in agriculture (62.8 per cent for boys versus 37.2 per cent for girls) and industry (68.5 per cent for boys versus 31.5 per cent for girls), girls outnumber boys in services (47.4 per cent for boys versus 52.6 per cent for girls).

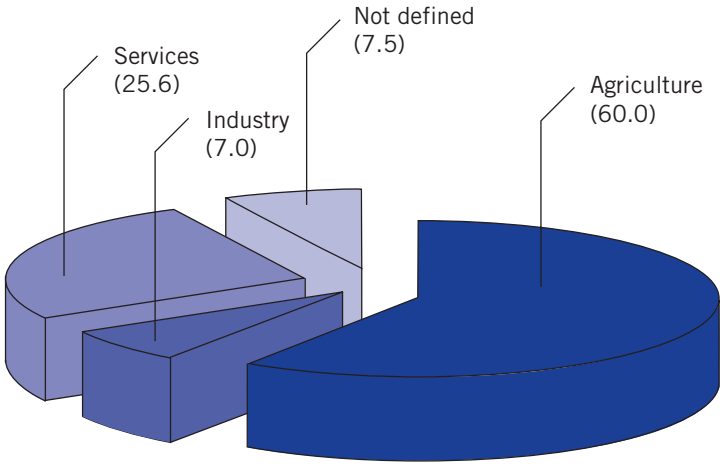
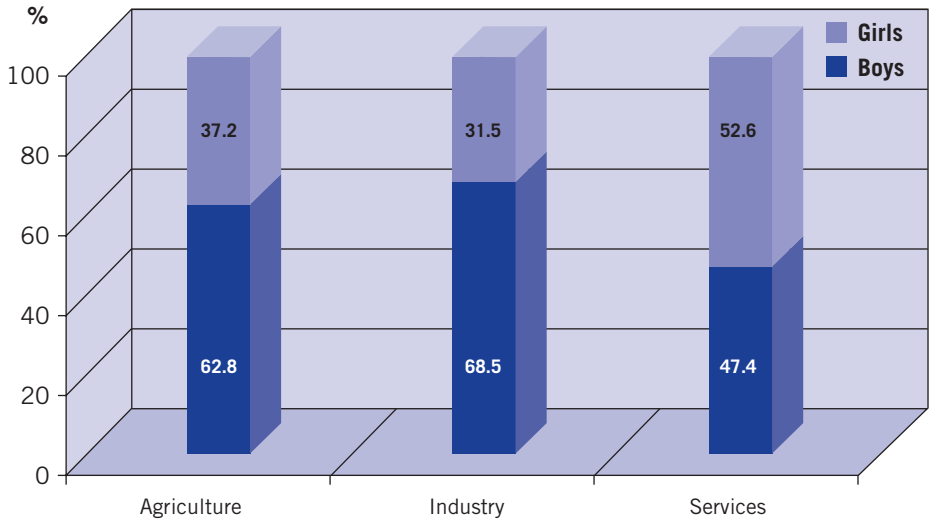


Chart 9: Child labour, distribution by branch of economic activity (%), 5-17 years old

[7] The agriculture sector comprises activities in agriculture, hunting, forestry, and fishing. The industry sector includes mining and quarrying, manufacturing, construction, and public utilities (electricity, gas and water). The services sector consists of wholesale and retail trade; restaurants and hotels; transport, storage, and communications; finance, insurance, real-estate, and business services; and community as well as social personal services.

Chart 10.
Child labour, distribution by economic sector and sex (%), 5-17 years old

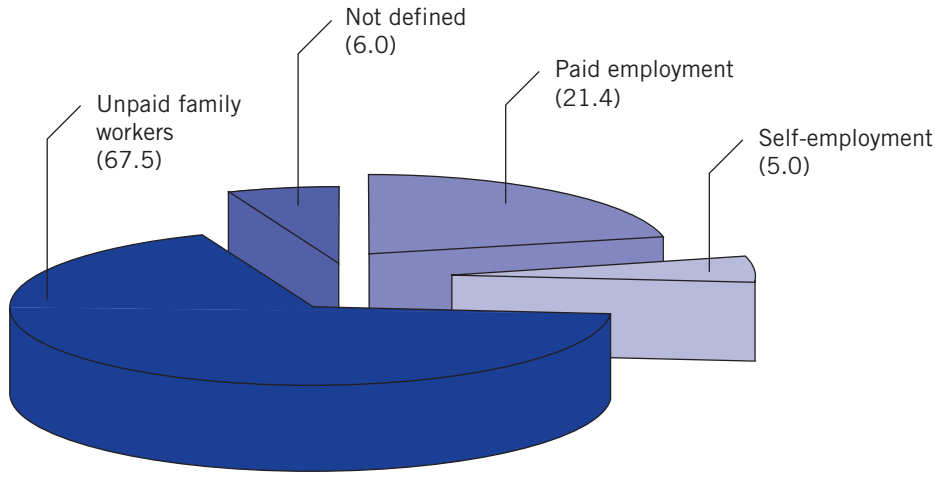


2.6 Child labour by status in employment

This is the first time we are in a position to present reliable estimates on the type of employment of children, in terms of paid employment, self-employment or as unpaid family workers[8].

Two thirds of child labourers in the age group 5 to 17 years old are unpaid family workers (64 per cent for boys versus 73 per cent for girls). Paid employment and self-employment account respectively for 21 and 5 per cent of all child labourers in the same age group.

Chart 11.
Child labour, distribution by status in employment (%), 5-17 years old



[8] Based on the Resolution concerning the International Classification of Status in Employment, adopted by the 15th International Conference of Labour Statisticians (1993). Paid employment consists of employees; self-employment comprises employers, own-account workers and members of producers' cooperatives; unpaid family workers include all the contributing family workers.

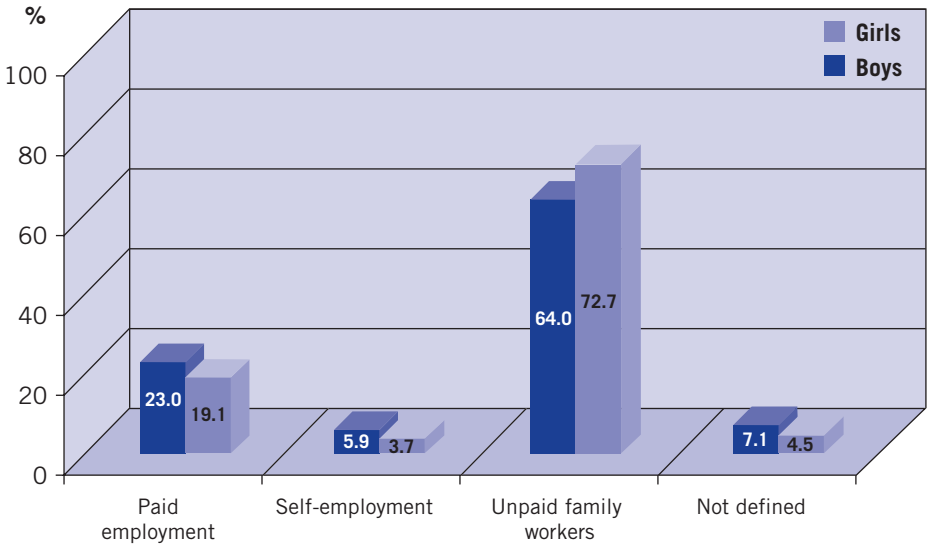


Chart 12:
Child labour, status in employment by sex (%), 5-17 years old

Concepts and definitions

3

The International Conference of Labour Statisticians (ICLS) is responsible for setting international standards in the world of labour statistics. The 18th conference, meeting in Geneva in November / December 2008, was a crucial event in that it examined and established directions for the statistical measurement of child labour. The resulting *Resolution concerning Statistics of Child Labour* adopted at the Conference set forth the definitions that are at the basis of the estimates in this report and that will guide all subsequent statistical work on child labour.

Note that the definitions underlying the 2008 estimates are in line with the exercises conducted earlier[9].

3.1 International statistical standards on child labour[10]

The international standards define the target population for measuring child labour as "all persons in the age group from 5 to 17 years, where age is measured as the number of completed years at the child's last birthday." (paragraph 9)

The procedure to measure child labour is schematically presented in the diagram below. It starts with the concept of *children in productive activities*. These are children, 5 to 17 years old, who have been engaged in any activity falling within the general production boundary as defined by the System of National Accounts (SNA).[11] Children in productive activities are then divided into those *in employment* and those in *other productive activities*.

Child labour under the SNA production boundary is a subset of *children in employment*. It includes those in worst forms of child labour and children in employment below the minimum age, excluding children in permissible light work if applicable.

The international standards include provisions for a broader definition of child labour under the general production boundary of the System of National Accounts (SNA). Under this definition, *child labour* also includes *hazardous unpaid household services*, i.e., unpaid household services performed (a) for long hours, (b) in an unhealthy environment, involving unsafe equipment or heavy loads, (c) in dangerous locations, and so forth.

The new international standards provide a sound framework for measuring child labour, within which details such as the choice between the SNA production boundary or the general production boundary, the age limit below which employment should be regarded as child labour, the number of hours of work that determine long hours for children can be specified in light of particular measurement objectives and national circumstances.

[9] See Hagemann, F., et al., op. cit, 2006; and IPEC (2002): *Every child counts: New global estimates on child labour (Geneva, ILO, 2002).*

[10] The terms "international statistical standards" refer to the resolution concerning statistics of child labour. The same goes for paragraphs indicated in this publication.

[11] United Nations, *System of National Accounts 2008 (2008 SNA)*, http://unstats.un.org/unsd/nationalaccount/.

Graphic 1: International standards on child labour statistics

<table>
<tr><th colspan="4">Children (5-17 years old) in productive activities</th></tr>
<tr><th colspan="3">Children in employment</th><th rowspan="3">Children in other productive activities
of which included as child labour under the general production boundary
Hazardous unpaid household services</th></tr>
<tr><th colspan="2">CHILD LABOUR</th><th rowspan="2">Permissible light work (12-14 years old)
–
Work not designated as worst forms (15-17 years old)</th></tr>
<tr><th colspan="2">Worst forms of child labour</th><th rowspan="2">Employment below minimum age</th></tr>
<tr><th>Hazardous work by children</th><th>Other worst forms of child labour</th></tr>
<tr><td>Exposure to physical, psychological or sexual abuse
Underground, under water, dangerous heights, confined spaces
Dangerous machinery, equipment or tools, heavy loads
Unhealthy environment, hazardous substances, temperatures, noise levels or vibrations damaging to health
Long hours, night work, other particularly difficult conditions</td><td>All forms of slavery or similar practices, trafficking, debt bondage, serfdom, forced or compulsory labour, forced or compulsory recruitment in armed conflict
Child prostitution, pornography
Illicit activities, production and trafficking of drugs, etc.</td><td colspan="3"></td></tr>
</table>

* Resolution adopted by the 18th International Conference of Labour Statisticians (ICLS), Geneva, 2008.

3.2 ILO global estimation

For the purpose of global estimation, a specific sequential procedure for measuring child labour has been adopted within the framework of the international standards as schematically represented in the diagram below[12].

To maintain comparability with the earlier ILO global estimates, it was decided to continue to measure child labour on the basis of the SNA production boundary, and not on the general production boundary. This decision was also motivated by the fact that only a few countries provided the necessary data on unpaid household services (often referred to as household chores) carried out by children at home. Some technical issues regarding thresholds and combined economic activities and unpaid household services need to be settled before full measurement of child labour on the basis of the general production boundary can be adequately carried out[13]. Moreover, in order to facilitate comparison of child labour data across countries, it is recommended to measure child labour on the basis of the SNA production boundary even if the general production boundary is applied for national child labour measurement purposes (paragraph 16).

The starting point of the measurement of child labour for the purpose of global estimation is therefore the population of children in employment. These are children (5 to 17 years old) who were engaged in any economic activity during the reference period of the survey, where economic activity includes essentially all production of goods whether intended for sale on the market or not, and all paid services[14].

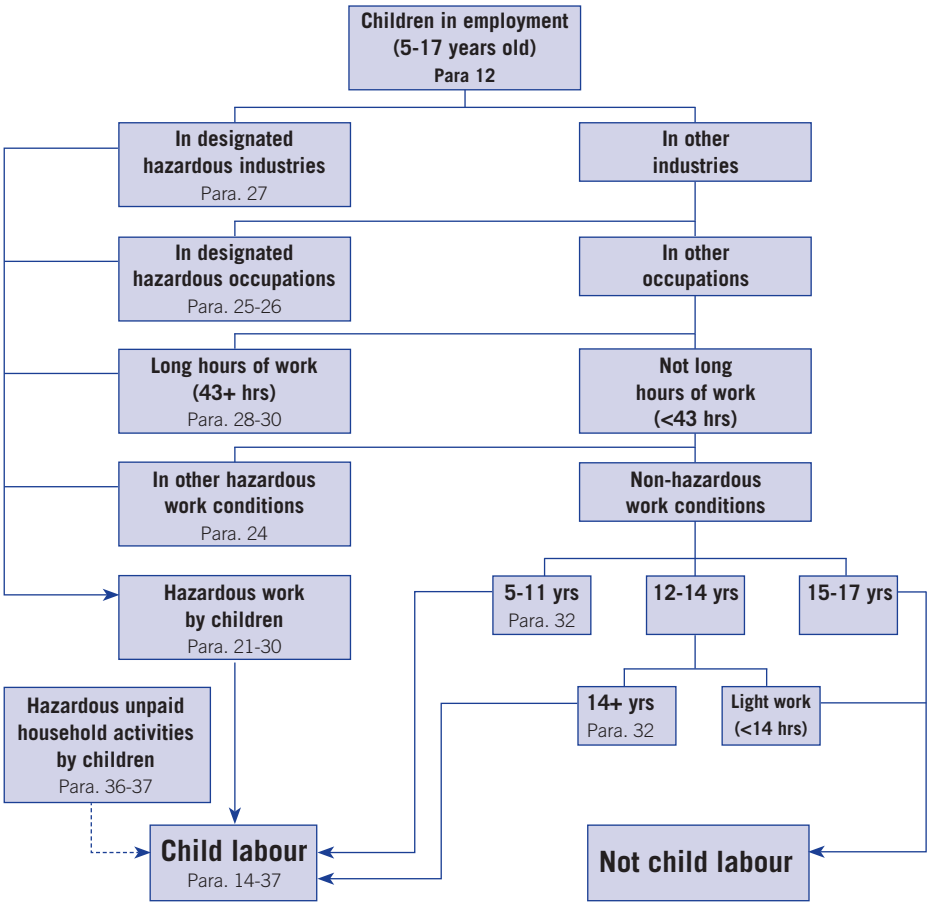
Economic activity was measured in relation to a reference week during the school year, as opposed to a longer reference period such as a year. The reference week is a

[12] Note that the cut-off criteria chosen and used for the purpose of these estimates by no means replace, revise or put into question the existing international labour standards, or national legislation in force in each country.

[13] Some preliminary estimates of hazardous "household chores" by children are reported in Annex 3 of the present report.

[14] For further explication of the concept "economic activity", see Hussmann, R., Mehran, F., Verma, V., Surveys *of economically active population, employment, unemployment and underemployment: An ILO manual on concepts and methods* (Geneva, ILO, 1990).

Graphic 2: Conceptual framework of the ILO global estimation of child labour



18th International Conference of Labour Statisticians, Resolution concerning statistics of child labour (ILO, Geneva, 2008)

more convenient reference period, since it permits a sharper measurement of economic activity and minimizes ambiguities due to the higher incidence of multiple statues and changes in economic activity and work intensity that may arise during a longer reference period. Moreover, all sources of data on which the estimations rely have adopted the reference week as the basic reference period.

Not all children in employment are considered as child labour. Among children in employment, all engaged in designated hazardous industries are first sorted out. Designated hazardous industries, referred to in paragraph 27 of the international standards, are – for the purpose of ILO global estimation – the following two branches of economic activity:[15]

- Mining and quarrying (ISIC Rev 3 codes 10-14)
- Construction (ISIC Rev 3 code 45)

Among the children engaged in other branches of economic activity, those employed in designated hazardous occupations are then identified. Designated hazardous occupations (paragraphs 25-26 of the international standards) are defined for the purpose of global estimation by the following ISCO-88 codes:[16]

[15] United Nations, *International Standard Industrial Classification of All Economic Activities, ISIC-88, Rev. 3*, http://unstats.un.org/unsd. The correspondence table between ISIC Rev. 3 and the new industrial classification (ISIC Rev. 4) can be found at the UN website cited above. The present study uses the earlier version of the classification because essentially all country data available for the study were based on this earlier classification (ISIC Rev. 3).

[16] ILO, *International Standard Classification of Occupations, ISCO-88*, http://laborsta.ilo.org. The occupational codes listed here correspond to the hazardous occupations and processes found in national legislations reported in Annex 3 of *Hagemann et al, op.cit.*. The correspondence table between ISCO-88 and the new occupational classification (ISCO-08) can be found at the ILO website cited above. The present study uses the earlier version of the classification because essentially all country data available for the study were based on this earlier classification (ISCO-88).

Table 13: Designated hazardous occupations used in the ILO global estimation of child labour

ISCO-88 313	313 Optical and electronic equipment operators
ISCO-88 322-323	322 Modern health associate professionals (except nursing) 323 Nursing and midwifery associate professionals
ISCO-88 516	516 Protective service workers
ISCO-88 614-615	614 Forestry and related workers 615 Fishery workers, hunters and trappers
ISCO-88 711-713	711 Miners, shot-firers, stone cutters and carvers 712 Building frame and related trades workers 713 Building finishers and related trades workers
ISCO-88 721-724	721 Metal moulders, welders, sheet-metal workers, structural-metal preparers, and related trades workers 722 Blacksmiths, tool-makers and related trades workers 723 Machinery mechanics and fitters 724 Electrical and electronic equipment mechanics and fitters
ISCO-88 731-732	731 Precision workers in metal and related materials 732 Potters, glass-makers and related trades workers
ISCO-88 811-817	81 Stationary-plant and related operators
ISCO-88 821-823	821 Metal-and mineral-products machine operators 822 Chemical-products machine operators 823 Rubber- and plastic-products machine operators
ISCO-88 825-829	825 Printing-, binding- and paper-products machine operators 826 Textile-, fur- and leather-products machine operators 827 Food and related products machine operators 828 Assemblers 829 Other machine operators and assemblers
ISCO-88 832-834	832 Motor-vehicle drivers 833 Agricultural and other mobile-plant operators 834 Ships' deck crews and related workers
ISCO-88 911-912	911 Street vendors and related workers 912 Shoe cleaning and other street services elementary occupations
ISCO-88 915-931	915 Messengers, porters, doorkeepers and related workers 916 Garbage collectors and related labourers 921 Agricultural, fishery and related labourers 931 Mining and construction labourers
ISCO-88 933	933 Transport labourers and freight handlers

Next, among the children not engaged in either hazardous industries or hazardous occupations, those who worked long hours during the reference week are then sorted out. Long hours (paragraphs 28-29 of the international standards) are defined for the present purpose as 43 or more hours of work during the reference week. The 43-hour threshold was also used in earlier ILO global estimations. It corresponds to about the mid-point of normal hours of work stipulated in national legislations, which are mostly in the range of 40 to 44 hours.

The next step involves separating among the children not engaged in hazardous industries or occupations, nor in long hours of work, those who were exposed nevertheless to some hazardous working conditions not captured by the designated hazardous industries or occupations, or by long hours of work.

In general, hazardous work conditions include night work and long hours of work, exposure to physical, psychological or sexual abuse; work underground, under water, at dangerous heights or in confined spaces; work with dangerous machinery, equipment and tools, or which involves the manual handling or transport of heavy loads; and work in an unhealthy environment which may, for example, expose children to hazardous substances, agents or processes, or to temperatures, noise levels, or vibrations damaging their health (paragraph 20 of the international standard).[17]

[17] The measurement of children in these hazardous work conditions depends on the extent to which the appropriate elements are covered by the national survey. Full comparability of national datasets has therefore not always been possible in this respect.

As indicated in the diagram, the total number of children in designated hazardous industries, designated hazardous occupations, as well as children with long hours of work and those working in other hazardous work conditions comprise in aggregate the total number of children in hazardous work.

It is important to note that our statistical determination of hazardous work by children does not take into account the criterion set out in ILO Convention No. 138, Art. 3 (para. 3) that provides for exceptional authorization of work of a potentially hazardous nature under strict condition from 16 years of age (ILO Recommendation No. 190, Para. 4 contains the same idea). For the purpose of this study, we decided to apply a single cut-off point of 18 years of age.

The final estimate of *child labour* is then obtained by adding to the total number of children in *hazardous work*, the number of other children aged 5 to 11 years who were engaged in any economic activity during the reference period (*employment below minimum age*), and the number of other children 12 to 14 years old who were engaged in an economic activity that could not be considered as *permissible light work* during the reference period.

Permissible light work is defined in the present context as any non-hazardous work by children (12 to 14 years) of less than 14 hours during the reference week. The 14-hour threshold was also used in earlier ILO global estimations. The choice was based on provisions in the ILO Minimum Age (Non-Industrial Employment) Convention, 1932 (No. 33), which sets two hours per day, on either school days or holidays, as the maximum for light work from the age of 12 years.[18]

In this process, children in *worst forms of child labour other than hazardous work* are not measured directly. They are included in the global estimate to the extent that they also form part of the measurement of employment below minimum age and hazardous work by children. Children in worst forms of child labour other than hazardous work were measured in 2002 using qualitative methods, as part of the first round of the ILO global estimates. The results showed that they constitute about 3 per cent of global child labour. It is hoped that with improved methodologies and statistical tools this category of child labour can be measured directly in future ILO global estimates.

The terms "worst forms of child labour other than hazardous work by children" refer to those forms covered by items (a) to (c) of Article 3 of ILO Convention No. 182 which read:

"(a) all forms of slavery or practices similar to slavery, such as the sale and trafficking of children, debt bondage and serfdom and forced or compulsory labour, including forced or compulsory recruitment of children for use in armed conflict;

(b) the use, procuring or offering of a child for prostitution, for the production of pornography or for pornographic performances;

(c) the use, procuring or offering of a child for illicit activities, in particular for the production and trafficking of drugs as defined in the relevant international treaties; …".

[18] Article 3 (para. 1) of the Convention states that "Children over twelve years of age may, outside the hours fixed for school attendance, be employed in light work (a) which is not harmful to their health or normal development; (b) which is not such as to prejudice their attendance at school or their capacity to benefit from the instruction there given; and (c) the duration of which *does not exceed two hours per day on either school days or holidays*, the total number of hours spent at school and on light work in no case to exceed seven per day" (emphasis added).

Methodology

4

4.1 Data sources

– *National datasets*

In total, 60 datasets from 50 countries were used for the current round of the ILO global estimation of child labour. The national datasets covered the period from 2004 to 2008, with some countries, mostly in Latin America, having multiple datasets covering different years. Sixteen datasets were derived from specialised surveys on child labour (SIMPOC surveys), while others were obtained from national labour force surveys or other national household surveys such as UNICEF's Multiple Indicator Cluster Surveys (MICS) or the World Bank sponsored Living Standards Measurement Studies (LSMS). The list of datasets and their characteristics are given in Annex 1 of the present report. On the basis of the 60 datasets, two samples of countries were constructed for global estimation. One sample is called the *full sample* and the other the *matched sample*.

– *Full sample*

The full sample includes the latest datasets of the 50 countries, i.e., the datasets closest to 2008 (50 national datasets). It was used to derive a direct estimate of child labour in the world in 2008.

According to the following table, the countries covered by the full sample represent some 704 million children 5 to 17 years old in mid 2008, corresponding to 44.4% of the world child population in that age group in mid 2008. In terms of regions, the highest coverage is in Latin America and the Caribbean (92.0%) and the lowest in the Middle East and North Africa (23.7%). The residual category "Other" with only 10.4% coverage includes western industrialised countries and some countries and territories not elsewhere classified.[19, 20]

[19] The regional groupings follow the classification of countries and territories reported in the fifth edition of ILO *Key Indicators of Labour Markets (KILM)*, 2007.

[20] Data on child populations are from United Nations, Department of Economic and Social Affairs, Population Division (2009). *World Population Prospects: The 2008 Revision*, CD-ROM Edition.

Table 14: Coverage of national datasets used to measure child labour by region, 2008 survey round (Child population 5-17 years old in million)

Region		Children 5-17 years old		
		Total (in million)	National datasets (in million)	Rate (%)
1.	Asia and the Pacific	854	405	47.4
2.	Latin America and the Caribbean	141	130	92.0
3.	Sub-Saharan Africa	257	104	40.6
4.	Middle East and North Africa	109	26	23.7
5.	CIS and Non European Union	56	22	39.3
6.	Other	170	18	10.4
	WORLD	**1,586**	**704**	**44.4**

Because of the relatively low coverage of the Middle East and North Africa (MENA) and the Commonwealth of Independent States (CIS) and other European countries not member of the European Union (CIS and Non European Union), the regional estimates presented in this report are limited to the first three regions: Asia and the Pacific; Latin American and the Caribbean; and Sub-Saharan Africa. The regional break-down of the 2006 ILO global estimates was also limited to these regions.

– *Matched sample*

Among the countries for which national datasets were available for the present round of ILO global estimation, 27 were also countries from which data were used in the previous round of global estimation or which are in multiple years in the present round of global estimation. These countries form a matched sample and thus contribute – by way of helping control variability – to an improved accuracy of the estimation process. The countries in the matched sample are listed below:

Table 15: Matched sample countries used in the ILO global estimation of child labour by region, 2000 to 2004 and 2004 to 2008 survey rounds

ILO GLOBAL ESTIMATION 2000 TO 2004	ILO GLOBAL ESTIMATION 2004 TO 2008
Asia and the Pacific	
Bangladesh (2002), Cambodia (2002), India (1999-2000), Mongolia (2000)	Bangladesh (2006), Cambodia (2003-4) India (2004-5), Mongolia (2006)
Latin America and the Caribbean	
Bolivia (2000), Brazil (2003), Colombia (2001), Costa Rica (2002), Ecuador (2004), El Salvador (2001), Guatemala (2000), Honduras (2004), Mexico (2004), Paraguay (2004), Venezuela (2000)	Bolivia (2005), Brazil (2005,6,7), Colombia (2005), Costa Rica (2004), Ecuador (2006), El Salvador (2005,6,7) Guatemala (2004,6), Honduras (2007), Mexico (2007), Paraguay (2005), Venezuela (2006)
Sub-Saharan Africa	
Cameroon (2001), Ethiopia (2001), Ghana (2000), Kenya (2000), Madagascar (2001), Mali (2005), Senegal (2000)	Cameroon (2007), Ethiopia (2005), Ghana (2006), Kenya (2005-6), Madagascar (2007), Mali (2007), Senegal (2005)
Other regions	
Azerbaijan (2000), Bosnia & Herzegovina (2000), Uzbekistan (2000), Turkey (1999), Yemen (2001)	Azerbaijan (2005), Bosnia & Herzegovina (2006), Uzbekistan (2006), Turkey (2006), Yemen (2006)

Source: ILO, *Every child counts: New global estimates on child labour* (Geneva, 2002) and Hagemann, F., et al.: *Global child labour trends 2000 to 2004* (Geneva, April 2006)

In the previous round of global estimation, there were 17 matched sample countries for estimating working children, of which only 8 allowed for estimating child labour, compared with the present number of 27.

– *China and Nigeria*

China and Nigeria are the countries with the largest populations in Asia and Africa, respectively. Yet, they are not represented in the datasets available for the 2008 ILO global estimates. The number of children, 5-17 years old, in China in 2008 is estimated at 255 million, corresponding to about 30% of the total in Asia. Similarly, in Nigeria, the number of children, 5-17 years old, in 2008 is estimated at about 50 million, or roughly 20% of the total in Sub-Saharan Africa.

Omitting China and Nigeria in the calculations of the global and regional estimates is equivalent to assuming that the incidence of child labour in these two countries is equal to their corresponding regional averages. This assumption is of course subject to debate and has been criticised in the past.

A more general approach, adopted in the present round of global estimation, was to use a proxy indicator for deciding on whether China or Nigeria were at or below or above the child labour incidence rate of their respective regional average. After some experimentation, net school non-enrolment rates were found to be a convenient indicator for this purpose. Data for this indicator were available for most countries of the world and the indicator was found to be significantly correlated to child labour.

Thus, for example, if school non-enrolment in China was found to be below the Asian median, child labour in China was imputed at the lower quartile of the incidence rates of the Asian countries covered by the available datasets. The other situations and the case of Nigeria were treated in similar fashions.

The implementation of this adjustment procedure gave the following results:

In the case of Nigeria, it was found that the net non-enrolment rate was about equal to the median rate of the other Sub-Saharan African countries covered by the study. Therefore, the statistical treatment of Nigeria in the estimation procedure was based on the average of its region.

In the case of China, it was found that its net non-enrolment rate was significantly lower than the corresponding Asian median. Accordingly, in the adjustment process, China was given the incidence rate of children in employment and child labour corresponding to the lower quartile of the incidence rates of countries in Asia and the Pacific covered by the study.

In the final application, however, it was decided to treat China like Nigeria as the median of its region in order to maintain comparability with the results of the previous rounds of global estimation.

4.2 Data harmonization

While there is some uniformity in the child labour surveys designed by SIMPOC, the national datasets derived from other sources may differ substantially from one another. There are differences in age groups, types of questions and response categories included in the questionnaires, and the extent to which missing values are present in the raw estimates.

For these reasons, the national datasets were harmonized to the extent possible before being processed further for global and regional estimation. The harmonization methodologies are described in this section.

– *Child labour status*

The first step in the harmonization process was the construction of a single variable called child labour status (CLS). The variable is composed of six mutually exclusive and exhaustive categories as indicated in the tabulation below.

Each child for a given sex and age group was categorized in one and only one CLS category: CLS=1 representing hazardous work; CLS=2 other child labour, CLS=3 permissible light work, CLS=4 other employment, not child labour employment, CLS=5 not in employment and CLS=9 for unknown status.

CLS=1 plus CLS=2 gave the number of children ages 5 to 17 in child labour in their respective sex and age group. CLS=1 to 4 gave the number of children in this age population in employment and CLS=1-5 plus CLS=9 gave the total number of children between 5 and 17 in the corresponding sex and age category.

Based on this structure, the harmonization process consisted of the standardization of the age groups if they differed from those indicated in the columns of the table;

Table 16: Child labour status by sex and age group

Country: _____ Region: _____ Date: _____ Survey: _____ Unit: _____		Boys				Girls			
			Age group				Age group		
		Total	5-11	12-14	15-17	Total	5-11	12-14	15-17
1-5, 9	Total number of children (CLS=1-5, 9)								
1-4	In employment (CLS=1-4)								
1-2	• Child labour (CLS=1-2)								
1	– Hazardous work (CLS=1)								
2	– Other child labour (CLS=2)								
3	• Permissible light work (CLS=3)								
4	• Other employment, not child labour (CLS=4)								
5	Not in employment (CLS=5)								
9	Missing values (CLS=9)								

imputing missing variables if the national datasets did not include the relevant variable for assigning the children in any of the CLS categories indicated in the rows of the table; and finally correcting for any missing values that may have existed for some of the underlying variables used to classify children in one or other CLS category. The harmonization steps are in turn described below.

– *Standardization of age groups*

Age selection from the national surveys may differ from the range adopted for the present study in any one of three situations:

- ➔ The full age category 15-17 years is missing.
- ➔ The full age category 5-11 years is missing.
- ➔ The lower age bound is higher, e.g. 5-7 year olds are missing.

In the first two circumstances, it means that no data at all were available for the required age group.

The missing data were imputed with the help of two logistic regression models: one for the percentage of children in employment, the other for the percentage of children in hazardous work (CLS=1), both as a function of age.

Method[21]**:** For each missing value, a logistic regression model was fitted with the available data on countries of the region for each sex separately:

$$\log\left(\frac{p}{1-p}\right) = \beta_0 + \beta_1 \cdot age + \beta_2 \cdot country,$$

where p is the percentage of children in employment or the percentage of children in hazardous work (CLS=1), age is the mid-point of the missing age group and country is a dummy variable corresponding to the countries with available data in the region. After estimating the logistic regression, the factor β_1 was applied to the closest available information in order to deduce the percentage of the missing ages. Finally the percentage was applied to the full population of the missing ages.

This method assumes that the logarithm of the odds is linear and has a similar slope over the countries of the same region for the children of the same sex. A logistic model was used in order to ensure that the estimated percentages were within 0 and 100 as required. Of course, the standardisation of age groups must take place after the

[21] Dobson, A., and A. Barnett, *An Introduction to Generalized Linear Models*, Boca Raton, CRC Press, 2008.

standardisation of child labour status so that the data between countries are comparable when fitting the model.

Numerical example: In the present study, the percentage of girls in age group 15-17 years in employment was missing for Ghana. Fitting the logistic regression on the girls in employment in Sub-Saharan countries, an age factor was obtained, $\beta_1 = 0.164$. The closest available information was the percentage of 12-14 year old Ghanaian girls in employment: $P_{12\text{-}14} = 0.509$. For this result, the percentage of 15-17 year old Ghanaian girls was obtained by solving:

$$\log\left(\frac{p_{15\text{-}17}}{1-p_{15\text{-}17}}\right) = \log\left(\frac{p_{12\text{-}14}}{1-p_{12\text{-}14}}\right) + \beta_1 \cdot d_{\text{age}},$$

with an age difference $d_{\text{age}} = 3$ years between the mean of the two age groups. Therefore, the imputed percentage of Ghanaian girls in employment was $p_{15\text{-}17} = 62.9\%$.

– *Standardization of child labour status*

Data on variables used to determine the child labour status were missing in some cases from national surveys data. There were four situations:

- data for the variables *industry* and *occupation* were both missing.
- only data on *occupations* were missing.
- only *hours of work* data were missing.
- *hours of work* and *occupation* data were both missing.

The missing data were imputed with the help of comparison with a reference country of the same region. The reference country in each region was selected on the basis of the completeness of the data with respect to age groups, hours of work, industries and occupations.

Method: In the first and fourth situations, the distribution of the children in employment of the reference country was applied to the number of children in employment of the country with missing variables.

In the second situation, the child labour status (CLS) was computed for the reference country leaving out the occupation variable as if it was missing. The odds ratio r of the proportion of children in the child labour status 1 (CLS=1) among the children in employment (CLS=1-4) was then calculated as:

$$r = \frac{p_{ref,all} \big/ 1 - p_{ref,all}}{p_{ref,woo} \big/ 1 - p_{ref.woo}},$$

where $P_{ref,all}$ is the proportion of children with CLS=1 among the children in employment (CLS=1-4) of the reference country using all the available variables and $P_{ref,woo}$ is the proportion of children with CLS=1 among the children in employment (CLS=1-4) of the reference country computed without the occupation variable.

The imputed proportion of children with CLS=1 among the children in employment of the country with missing occupation data $P_{miss,imp}$ was finally found by solving:

$$\frac{P_{miss.imp}}{1-p_{miss.imp}} = r \cdot \frac{P_{miss.woo}}{1-p_{miss.woo}},$$

where $P_{miss,woo}$ is the proportion of children with CLS=1 among the children in employment measured in the country of interest that does not contain the occupation variable.

For the age group 12-14 years, the proportion of children with CLS=2 or CLS=3 was set so that the ratio remains constant in relative terms:

$$\frac{N_{CLS=2,imp}}{N_{CLS=2,imp} + N_{CLS=3,imp}} = \frac{N_{CLS=2,woo}}{N_{CLS=2,woo} + N_{CLS=3,woo}}$$

The third situation was handled almost like the second, except for the distinction between CLS=2 and CLS=3. There, the proportions of the reference country were applied.

Numerical examples: In the present study, Syria had missing information on children in employment by industry and occupation. The reference country for its region was Jordan. 47% of Jordanian boys in employment in the age group 5-11 years are in CLS=1. Thus we have set 47% of Syrian boys in employment in the age group 5-11 to CLS=1.

Another example is the Guatemala survey where information on occupation was missing. Its country of reference was El Salvador. The percentage of girls with CLS=1 in the age group 12-14 is 29.8% and 14.9% computed with and without the occupation variable, respectively. This resulted to an odds ratio of $r = 2.43$. This ratio was then applied to the percentage $P_{miss,woo} = 25\%$ of Guatemalan girls aged 12-14 classified CLS=1 without the occupation variable giving the final percentage, $P_{miss,imp} = 45\%$. The percentages of girls with CLS=2 and CLS=3 were $P_{CLS=2,woo} = 43\%$ and $P_{CLS=3,woo} = 32\%$, respectively. In order to keep these proportions, they were set to $P_{CLS=2,imp} = 32\%$ and $P_{CLS=3,imp} = 23\%$, respectively.

4.3 Methodology of the global and regional estimation

After the national datasets had been harmonized as described above, the results were used for global and regional estimation of the CLS variable for 2008. Three different estimates were produced based on (i) the full sample, (ii) the matched sample and (iii) a mixture of the full and matched samples. The estimation based on the full sample is called "direct estimation", the estimation based the matched sample "indirect estimation" and that based on the mixture "composite estimation". The three methods are described below.

– *Direct estimation*

The direct estimation methodology consists of extrapolating the full sample to regional and global values by weighting each country according to its relative share of children among the total in the region. The weighting factors were calculated for each sex and each age group separately, and were calibrated to conform to the 2008 UN population data which formed the benchmark for all estimation procedures in this report.

Specifically, the weight for a given country i, and specific sex and age categories, j and k, with survey date t, was calculated as the product of three terms as follows.

$$w = w_1 * w_2 * w_3$$

where

$$w_1 = (\Sigma_i\, x_{ijk2008}) / x_{ijk2008}$$
$$w_2 = x_{ijk2008} / x_{ijkt}$$
$$w_3 = x_{ijkt} / x'_{ijkt}$$

where Σ_i refers to the sum over all countries in the region, and x_{ijkt} denotes the number of children in country i for sex and age categories j and k at time t according to the UN population benchmark data, and x'_{ijkt} the corresponding national survey estimate.

In this system, w_1 is the initial extrapolation factor, w_2 is an adjustment for the year of the national dataset in case it is different than 2008, and w_3 is another adjustment for any differences in the national survey and the UN benchmark data.

The adjustment factors w_2 and w_3 were generally close to one. Any great deviation from one is an indication of a possible bias in the coverage or the execution of the national survey, or an error in the UN benchmark data. Only three countries were found to have adjustment factors above 1.4 or below 0.6. These were Bangladesh (girls, 15-17 years old), Benin (girls and boys, 15-17 years old) and Argentina (all sex and age categories).

– *Indirect estimation*

The indirect estimation methodology involved two steps: First, the trend in incidence of child labour between 2004 and 2008 was estimated based on the national datasets in the matched sample. The resulting estimate was then added to the 2004 estimate published in *Global child labour trends 2000 to 2004*, to obtain the new estimate of child labour status in 2008.

The indirect estimate may be expressed in mathematical terms as follows. In step 1, for a given child labour status (CLS) and sex and age category (j, k), the estimate of change between 2004 and 2008 was calculated by

$$\Delta_{jk\ 2004\text{-}2008} = \Sigma_{i\in m}\ w(y_{ijk2008} - y_{ijk2004})$$

where the summation Σ is over all countries i in the set m of matched sample countries in the given region, w is the weight of country i for sex and age group j,k relative to its region total calculated along the lines described in the preceding section, and

$y_{ijk2004}$ = incidence of the child labour status in country i in 2004
$y_{ijk2008}$ = corresponding incidence rate in 2008

In step 2, the estimate of change was added to the 2004 estimate for the region to obtain the indirect estimate for 2008,

$$y_{jk2008} = y_{jk2004} + \Delta_{jk\ 2004\text{-}2008}$$

where y_{jk2004} = incidence of the child labour status in the given region in 2004.

Indirect estimation has the advantage of producing, in principle, more precise results. This is because the matched sample property of the underlying data minimizes the sample variability of the resulting estimate. However, there is also the drawback of being based on a reduced number of sample countries. To counter this drawback, a composite estimate of the direct and indirect estimation was used as the final estimate of child labour status as described in the next section.

– *Composite estimation*

Composite estimation is a method of estimation that attempts to maximize the advantages and minimize the drawbacks of the direct and indirect estimates.* In the present context, it consisted of taking a weighted average of the direct and indirect estimates, with weights calculated such that they minimize the variance of the final composite estimate on the assumption that the full sample and the matched sample represent both random samples of countries in their regions.

Mathematically, the composite estimation is expressed as follows,

$$y_{jk2008}^{composite} = (1\text{-}\omega)\ y_{jk2008}^{direct} + \omega\ y_{jk2008}^{indirect}$$

where the weight ω is given by

$$\omega = (\delta Q/2) / (1+\delta Q\text{-}Q)$$

* Breau, P., Ernst, L.R. "Alternative Estimators to the Current Composite Estimator," *Proceedings of the Section on Survey Research Methods, American Statistical Association*, 1983, pp. 397-402.

where δ is the overlap of the matched sample with the full sample expressed in percentage of number of children 5-17 years old, and ϱ is the correlation between the matched values of child labour status in 2004 and 2008.

Thus, if the correlation between the 2004 and 2008 values is perfect, then ϱ =1 and ω = 0.5. In this case, the composite estimate is simply the arithmetic average of the direct and indirect estimates.

In the other extreme case, if the correlation between the 2004 and 2008 values is zero, then ϱ = 0 and ω = 0, which means that the indirect estimate has no role and the composite estimate is just equal to the direct estimate.

In general, the correlation between the 2004 and 2008 values is a fraction between 0 and 1 and the optimal mixture of direct and indirect estimates depends on this fraction and the percentage overlap of the full and matched samples. The following table gives the values of these parameters (ϱ and δ) calculated for the different regions on the basis of which the values of ω are derived from the formula above:

Table 17: Parameters for composite estimation by region

Region	ϱ	δ	ω	1-ω
Asia and the Pacific	0.968697	0.407004	0.463222	0.536778
Latin America and the Caribbean	0.896585	0.748561	0.433243	0.566757
Sub-Saharan Africa	-0.677791	0.217783	-0.048233	1.048233
Other regions	0.898379	0.174035	0.303037	0.696963
Total	**0.299145**	**0.343854**	**0.063992**	**0.936008**

Except for Sub-Saharan Africa, the correlations ϱ between the 2004 and 2008 values of the matched sample countries are high, very close to 1 (about 0.97 for Asia and the Pacific, 0.90 for Latin America and the Caribbean and Other regions). The negative correlation for Sub-Saharan Africa should be investigated further. It means that countries with relatively higher child labour in 2004 tend to have relatively lower child labour in 2008 and vice versa.

The overlap δ between the matched sample and the full sample is highest in Latin America and the Caribbean (essentially because Brazil is in the matched sample), followed by Asia and the Pacific (because India is in, but China is not) and Sub-Saharan Africa (Nigeria is out).

The resulting weights of the indirect and direct estimates, ω and (1-ω), respectively, are just below 0.5 for Asia and the Pacific and Latin America and the Caribbean, with slightly higher weight on the direct estimate in both regions. In the case of Other Regions, the composite estimate gives about one-third of the weight on the indirect estimate and two-thirds on the direct estimate.

In the case of Sub-Saharan Africa, with negative weight w=-0.04, the values were set to ω = 0 and (1-ω) = 1, as the weights should in principle fall between 0 and 1. Thus, for Sub-Saharan Africa, the composite estimate is equal to the direct estimate.

4.4 Evaluation of the results

– *Standard errors 2008*

When a sample, rather than the entire population, is used to measure population values in a study, the resulting estimates differ from the true population values that they represent. This difference, or sampling error, occurs by chance and its variability may be measured by the standard error of the estimate if the sample were drawn based on known probabilities of selection.

On this basis, the standard errors of the global and regional estimates for 2008 were calculated to assess the sampling variability. The calculation assumes that the datasets used for estimating the child labour categories have themselves negligible variability relative to the variability due to differences that would occur had the sample included different countries than the ones used here. The calculation also assumes that the countries covered in the study form a random sample of the countries in the world. Although both of these assumptions are not fully satisfied, the results may still be indicative of the margin of error of the estimates that can be attributed to the selection variability of the countries in the sample.

The results are shown in Table 18 below. It can be observed that the standard errors of the estimates for Latin America and the Caribbean region are the lowest, both in absolute and relative terms. This is due to the fact that the coverage of countries in this region was very high (92%) and therefore little room existed for sampling variability among the non-covered countries[22].

The largest standard error in relative terms is for the estimate of "Other Regions" because of the heterogeneity of the region and its limited sample coverage (10%).

The relative standard error for the global estimate of children in employment is 2.0%, and slightly higher for child labour, 2.3%. Standard errors for hazardous work by children and other child labour statuses have been calculated and are available upon request.

Table 18: Standard errors of estimates (2008)

	Children in employment ('000)			Child labour ('000)		
	Estimate	Standard error	Relative error	Estimate	Standard error	Relative error
World	**305,669**	**6,167**	**2.0%**	**215,269**	**4,884**	**2.3%**
Asia and the Pacific	174,460	5,834	3.3%	113,607	4,521	4.0%
Latin America and the Caribbean	18,851	234	1.2%	14,125	210	1.5%
Sub-Saharan Africa	84,229	2,038	2.4%	65,064	1,847	2.8%
Other regions	28,129	1,489	5.3%	22,473	1,359	6.0%

Note: The relative standard errors are for the direct estimates of children in employment and child labour. Their values therefore represent conservative estimates of the actual standard error of the corresponding composite estimates.

The values of the standard error can be used to construct approximate confidence intervals of the estimates. Thus, for the global estimate of child labour, one may establish that in a sense the true number lies around 215,269,000 plus or minus 4,884,000, with 67% percent probability which corresponds to a deviation of one standard error. This means that if the process of selecting sample countries were possible and it had been repeated many times, the resulting estimates would be 67% of the times between 210,385,000 and 220,153,000. Similar calculations may be done to obtain confidence intervals with 95% probability, corresponding roughly to a deviation of two standard errors.

– *Raw data versus adjusted estimates 2008*

To evaluate the overall effect of the estimation methodology, the estimated incidence rates of child labour were compared with the corresponding rates calculated on the basis of the raw data with no adjustments for differences in reference dates, missing variables and survey methodologies and no extrapolation to regional and global totals. The results are shown in Table 19 below.

The results indicate that the percentage point difference between the raw and estimated rates of child labour is smallest for Latin America and the Caribbean

[22] The sample size is a major factor which influences the value of a standard error, whereby the larger the sample size, the more precise (accurate) the estimate and the standard error.

Table 19: Comparison of incidence rates: Raw versus estimated (2008)

Incidence rate (%)	Children in employment			Child labour		
	Estimated	Raw	Diff	Estimated	Raw	Diff
World	**19.3%**	**17.0%**	**2.3%**	**13.6%**	**11.3%**	**2.3%**
Asia and the Pacific	20.4%	14.2%	6.2%	13.3%	8.1%	5.2%
Latin America and the Caribbean	13.4%	13.0%	0.3%	10.0%	9.2%	0.9%
Sub-Saharan Africa	32.8%	34.9%	-2.2%	25.3%	27.5%	-2.1%
Other regions	8.4%	14.9%	-6.4%	6.7%	12.5%	-5.7%

Notes: Estimated incidence rates are the estimates shown in section 2 (Main findings).
The raw incidence rates are calculated on the basis of the raw data without adjustment for differences in reference date and survey methodology, and without extrapolation to region totals.

(0.9 percentage point) and largest for Asia and the Pacific (5.2 percentage point), and Other Regions (-5.7 percentage point).

The percentage point difference is also small for the world estimates reflecting the fact that many of country and regional differences cancel each other out when aggregating at the global level.

It should also be mentioned that similar results were obtained on percentage point differences between raw and estimated incidence rates of children in employment.

In summary, the evaluation of the results indicates:

- A certain degree of consistency in the global and regional estimates, in the sense that the order of magnitude of the incidence rates by sex, age group and region are essentially in line with expected values;
- The estimated trends of the incidence rates are mostly smooth, with reversals evident only among the 15-17 year olds in child labour / hazardous work as well as boys 5 to 17 years of age in child labour;
- The sampling variability of the estimates, as measured by the standard errors, are generally within acceptable levels, in most cases below 3% of the point estimate;
- The overall effect of adjustments for differences in reference dates, missing variables, survey methodologies and extrapolations to regional and global totals is not drastic, remaining at most within 6.4 percentage points of the underlying raw data.

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Annex 1

Datasets underlying the global child labour estimates 2004-2008

Asia and the Pacific – 6 national datasets		
Bangladesh*	2005-6	LFS
Cambodia*	2003-4	SES
India*	2005	NSSO
Mongolia*	2006	LFS
Thailand	2006	MICS
Vietnam	2006	VLSS
Latin America and the Caribbean-25 national datasets		
Argentina	2004-5	SIMPOC
Bolivia*	2005	ECH
Brazil*	2005,6,7	PNAD
Chile	2006	CASEN
Colombia*	2005	DHS
Costa Rica*	2004	EHPM
Dominican Republic	2005	LFS
Ecuador**	2004,6	SIEH, ENEMDUR
El Salvador**	2005,6,7	EHPM
Guatemala*	2004-5,6	ENEI, ENCOVI
Honduras**	2004,7	EPHPM
Mexico**	2004,7	ENIGH, ENOE
Nicaragua	2005	LSMS
Paraguay**	2004,5	EPH
Peru	2006	SIMPOC
Venezuela*	2006	EHPM
Sub-Saharan Africa-15 national datasets		
Benin	2008	SIMPOC
Burkina Faso	2006	SIMPOC
Cameroon*	2007	SIMPOC
Cote d'Ivoire	2008	SIMPOC
Ethiopia*	2005	LFS
Ghana*	2006	MICS
Kenya*	2006	LFS (KIHBS)
Madagascar*	2007	SIMPOC

Mali**	2005,7	SIMPOC, EPAM
Rwanda	2008	SIMPOC
Senegal*	2005	SIMPOC
Togo	2006	QUIBB
Uganda	2005-6	UNHS
Zambia	2005	LFS
Other regions - 14 national datasets		
Azerbaijan*	2005	SIMPOC
Bosnia-Herzegovina*	2006	MICS
Irak	2006	MICS
Jordan	2007	SIMPOC
Kyrgyzstan	2007	SIMPOC
Macedonia	2005	MICS
Montenegro	2006	MICS
Serbia	2005	MICS
Syria	2006	MICS
Tajikistan	2005	MICS
Turkey*	2006	SIMPOC
Ukraine	2005	MICS
Uzbekistan*	2006	MICS
Yemen*	2006	MICS

* Twenty one countries also appeared in the previous Global Child Labour Trends 2000 to 2004.
** Six other countries have multiple datasets in the current round of global estimation.

CASEN	Encuesta de Caracterizacion Socioeconomica Nacional
DHS	Demographic and Health Survey
ECH	Encuesta de Hogares
EHPM	Encuesta de Hogares Por Muestreo
ENEI	Encuesta Nacional de Empleo e Ingresos
ENEMDUR	Encuesta Nacional de Empleo y Desempleo Urbana y Rural
ENIGH	Encuesta Nacional de Ingresos y Gastos de los Hogares
ENOE	Encuesta Nacional de Ocupacion y Empleo
EPAM	Enquête Permanente emploi Auprès des Ménages
EPH	Encuesta Permanente de Hogares
EPHPM	Encuesta Permanente de Hogares de Propósitos Múltiples
KIHBS	Kenya Integrated Household Budget Survey
LFS	Labour Force Survey
LSMS	Living Standards Measurement Study
MICS	Multiple Indicator Cluster Survey
NSSO	National Sample Survey Organisation
PNAD	Pesquisa Nacional por Amostra de Domicilios
QUIBB	Questionnaire des Indicateurs de Base du Bien-être
SES	Household Socioeconomic Survey
SIEH	Sistema Integrado de Encuestas de Hogares
SIMPOC	Statistical Information and Monitoring Programme on Child labour
UNHS	Uganda National Household Survey
VLSS	Vietnam Household Living Standard Survey

Latin American and the Caribbean Estimates 2004: Evaluation and retrospective adjustment

Annex 2

– *Evaluation*

In the 2006 round of global and regional estimates, the number of children in employment (5-14 years old) in Latin America and the Caribbean in 2004 was estimated to be 5,700,000 corresponding to an incidence rate of 5.1 per cent. Compared with the results of the 2000 round, the 2004 estimate represented a drop of almost 11.0 percentage points in the incidence of children in employment in Latin America and the Caribbean between 2000 and 2004. This result requires scrutiny in light of the data that have become available since 2004.

The following table makes two comparisons: the first line compares the 2004 estimated incidence rate with the corresponding 2008 direct estimate based on the full sample of Latin America and Caribbean countries; the second line compares the raw incidence rates for 2004 and 2008 based on the raw estimates from the sample countries without any adjustment for differences in reference periods, missing variables, survey methodologies, and for missing countries.

The table clearly shows that except for the adjusted incidence rate for 2004 (5.14 per cent), the other incidence rates are all about equal, around 8 per cent. This suggests that the 2004 incidence rate may have been underestimated.

Children in employment (5-14 years old) in Latin America and the Caribbean

Type of estimate	Incidence rate 2004	Incidence rate 2008	Percentage point difference
Adjusted estimate	5.14%	8.57%	3.43
Raw estimate	8.08%	8.15%	0.07

To examine this issue in more detail, the underlying data used for the 2004 estimate are reproduced below:

Data used for 2004 estimate of children in employment (5-14 years) in Latin America and the Caribbean

Country	2000 Round	2004 Round	Percentage point difference
Matched sample			
Bolivia	76.4% (1999)	23.6% (2000)	-52.8
Brazil	22.8% (1996)	5.8% (2003)	-17.0
Colombia	8.8% (1998)	10.2% (2001)	1.4
Costa Rica	9.8% (1998)	3.4% (2002)	-6.4
El Salvador	22.4% (1999)	7.2% (2001)	-15.2
Other sample			
Belize		6.3% (2001)	
Guatemala		16.1% (2000)	
Venezuela		4.8% (2000)	

Note: The values in parentheses are the reference years of the surveys.

The table indicates that the 2004 estimate was based on eight sample countries, five in common with the 2000 round (matched sample) and three new countries not appearing in the 2000 round (other sample). In order to avoid any methodological influence and possible impact of extreme values, an analysis was carried out on just these numbers alone using a robust procedure based on their median values.

The median value of the incidence rates for children in employment based on the matched sample is 7.2 per cent and based on the full sample, 6.8 per cent. The values are close to each other but about 2 percentage points higher than the 5.14 per cent incidence rate estimated for the region as a whole in 2004.

The median value of the drop in incidence rate was calculated from the last column of the table to be -2.4 percentage points per year, or -9.6 per cent over the four-year period 2000-2004. Applying this drop to the estimated incidence rate of children in employment in Latin America and the Caribbean in 2000, 16.1 per cent, gave for 2004 the incidence rate of 6.5% (=16.1-9.6 percentage points), again not far from the 2004 full sample median incidence rate (6.8 per cent), but still higher than the published estimate of 5.14 per cent.

This simple analysis suggests that embedded in the 2004 methodology were elements that tended to overestimate the drop and underestimate the incidence rates generated by extreme values. Since in the case of Latin America and the Caribbean, there were relatively many extreme values, two out of five in the matched sample (Bolivia and El Salvador), the methodology led to an abnormally low estimate of children in employment in that region.

– *Retrospective adjustment*

Because of this apparent underestimation, the 2004 incidence rate of children in employment in Latin America and the Caribbean has been re-estimated using the 2004 raw data and the 2000 and 2008 direct estimates.

Revised estimates of children in employment in Latin America and the Caribbean ('000)

	Children 5-14 years old	Children in employment	Incidence rate
2000	108,100	17,400	16.1%
2004 (original)	111,000	5,700	5.1%
2004 (revised)	111,000	11,047	10.0%
2008	110,566	10,002	9.0%

An initial revision was obtained by calculating a harmonic average of the 2000 and 2008 direct estimates of the incidence rate of children in employment:

$$11.8\% = \sqrt{16.1\%}x9.0\% /[\sqrt{16.1\%}x9.0\% + \sqrt{(1-16.1\%)}x(1-9.0\%)]$$

Then, this initial estimate was averaged with the weighted average of the raw incidence rates, 8.1 per cent, to obtain the final revised estimate of the 2004 incidence rate of children in employment:

$$10.0\% = (11.8\% + 8.1\%)/2$$

The revised final estimate indicates that the incidence of children in employment in Latin America and the Caribbean experienced a continuous decline during the period 2000 to 2008, dropping initially by 6.1 percentage point during 2000 to 2004, followed by a milder drop of 1.0 percentage point during 2004 to 2008. This result is consistent with the convex nature of the polynomial fitted to the raw data of countries with time series observations. The fitted polynomial gave the following relationship between the incidence of children in employment and time:

$$p = \alpha + \beta_1 (t-2000) + \beta_2 (t-2000)^2$$

where t indicates the variable "year", and the estimated parameters $\alpha = 0.1283$, $\beta_1 = -0.0346$ and $\beta_2 = 0.0038$, all statistically significant at 1%, 5% and 10% levels, respectively, with the overall R-square of 66%.

While the revised trends move in a direction that would be expected from education and secondary child labour data of the region, it has been noted that the results do not necessarily correlate to patterns in Gross Domestic Product (GDP per capita) and unemployment rates.

The revision of the 2004 estimates of children in employment in Latin America and the Caribbean affects the corresponding global estimate as well as the global estimates of related variables. Accordingly, Table 7 entitled "Children in economic activity, child labour, and hazardous work by sex and age group" published in the ILO *Global child labour trends 2000 to 2004* has been revised and the revision reproduced below:

Children in economic activity, child labour, and hazardous work (by sex and age group), 2004

Sex and age group	Economically active children (EAC) ('000s)	Child labour	Child labour as % of EAC	Children in hazardous work (CHW) ('000s)	CHW as % of EAC	CHW as % child labour
5-11	**110,655**	**110,655**	**100.0%**	**41,358**	**37.4%**	**37.4%**
Boys	54,587	54,587	100.0%	20,893	38.3%	38.3%
Girls	56,068	56,068	100.0%	20,465	36.5%	36.5%
12-14	**85,392**	**59,728**	**69.9%**	**35,111**	**41.1%**	**58.8%**
Boys	45,954	32,738	71.2%	21,271	46.3%	65.0%
Girls	39,438	26,991	68.4%	13,840	35.1%	51.3%
Total 5-14	**196,047**	**170,383**	**86.9%**	**76,470**	**39.0%**	**44.9%**
Boys	100,541	87,325	86.9%	42,164	41.9%	48.3%
Girls	95,506	83,059	87.0%	34,305	35.9%	41.3%
Total 15-17	**126,682**	**51,911**	**41.0%**	**51,911**	**41.0%**	**100.0%**
Boys	70,609	32,250	45.7%	32,250	45.7%	100.0%
Girls	56,073	19,661	35.1%	19,661	35.1%	100.0%
Total	**322,729**	**222,294**	**68.9%**	**128,381**	**39.8%**	**57.8%**
Boys	171,150	119,575	69.9%	74,414	43.5%	62.2%
Girls	151,579	102,720	67.8%	53,966	35.6%	52.5%

Revised Table 7 in Hagemann, F., et al., *Global child labour trends 2000 to 2004* (Geneva, ILO, 2006)

Measurement of hazardous unpaid household services: Preliminary estimates based on selected countries

Annex 3

Given that reliable data on unpaid household services by children are not widely available, the following preliminary estimates were based on data from only five national datasets: Ecuador (2006), Jordan (2007), Kyrgyzstan (2007), Mongolia (2006) and Madagascar (2007).

According to the Resolution adopted by the Eighteenth International Conference of Labour Statisticians, hazardous unpaid household services may be defined as those conducted under hazardous conditions. It includes unpaid household services performed by children in their own households (commonly called "household chores") for long hours, in an unhealthy environment, involving unsafe equipment or heavy loads, in dangerous locations, exposing the child to physical or other abuses. In this exercise, due to lack of information on other criteria, we only used the spending of '28 hours and more per week' as a threshold to define hazardous unpaid household services by children aged 5 to 14 years old.

Child labour and hazardous unpaid household services in five countries: Preliminary estimates, 5-14 years old

COUNTRY	Hazardous unpaid household services (1)	Child labour (2)	Child labour among children in hazardous unpaid household services (3)	Child labour among children NOT in hazardous unpaid household services (4)
BOTH SEXES				
Ecuador	8.2	11.4	21.5	10.5
Jordan	0.2	0.7	0.0	0.7
Kyrgyzstan	1.4	31.6	89.7	30.8
Mongolia	3.8	8.3	14.5	8.1
Madagascar	1.9	21.7	36.2	21.6
BOYS				
Ecuador	4.5	13.5	30.3	12.7
Jordan	0.0	1.2	0.0	1.2
Kyrgyzstan	1.1	32.3	97.1	31.5
Mongolia	3.3	9.4	17.1	9.1
Madagascar	1.2	23.5	36.2	23.6
GIRLS				
Ecuador	11.9	9.2	18.1	8.0
Jordan	0.3	0.3	0.0	0.3
Kyrgyzstan	1.7	30.8	84.1	29.8
Mongolia	4.4	7.2	12.4	7.0
Madagascar	2.7	19.8	36.2	19.5

The columns of the table are rates calculated as follows:

$$\text{Col (1)} = \frac{\textit{Children in hazardous unpaid household services}}{\textit{Children (5 – 14 years old)}}$$

$$\text{Col (2)} = \frac{\textit{Children in child labour}}{\textit{Children (5 – 14 years old)}}$$

$$\text{Col (3)} = \frac{\textit{Children in HUHS and child labour}}{\textit{Children in hazardous unpaid household services}}$$

$$\text{Col (4)} = \frac{\textit{Children in child labour but not in HUHS}}{\textit{Children in hazardous unpaid household services}}$$

HUHS= *Hazardous unpaid household services*

The results shown in the table above indicate that:

- The incidence rate of hazardous unpaid household services (column 1) is much lower than that of child labour as a whole (column 2).
- Girls 5-14 years of age have a higher incidence of hazardous unpaid household services than boys of the same age group.
- Child labour is significantly higher among children engaged in hazardous unpaid household services (column 3) than among others (column 4), except for Jordan. It seems therefore that hazardous unpaid household services and child labour are cumulative.

Because of the limited number of data points on unpaid household services used in this estimate, prudence is warranted in comparing these figures across countries. Accordingly, no attempt was made to extrapolate the results neither to regional nor to global levels. Moreover, as explained in section 3, some technical issues regarding thresholds and combined economic activities and unpaid household services need to be settled before full measurement of child labour on the basis of the general production boundary can be adequately carried out.

Selected key indicators on child labour (2000-2004-2008)

Annex 4

Global estimates of child labour (2008)

Sex and age	Total children ('000)	Children in employment ('000)	%	Child labour ('000)	%	Hazardous work ('000)	%
World	1,586,288	305,669	19.3	215,269	13.6	115,314	7.3
Boys	819,891	175,777	21.4	127,761	15.6	74,019	9.0
Girls	766,397	129,892	16.9	87,508	11.4	41,296	5.4
5-11 years	852,488	91,024	10.7	91,024	10.7	25,949	3.0
12-14 years	364,366	85,428	23.4	61,826	17.0	26,946	7.4
(5-14 years)	1,216,854	176,452	14.5	152,850	12.6	52,895	4.3
15-17 years	369,433	129,217	35.0	62,419	16.9	62,419	16.9

Regional estimates of child labour (2008), ages 5-17

Region	Total children ('000)	Children in employment ('000)	%	Child labour ('000)	%	Hazardous work ('000)	%
World	1,586,288	305,669	19.3	215,269	13.6	115,314	7.3
Asia and the Pacific	853,895	174,460	20.4	113,607	13.3	48,164	5.6
Latin America and the Caribbean	141,043	18,851	13.4	14,125	10.0	9,436	6.7
Sub-Saharan Africa	257,108	84,229	32.8	65,064	25.3	38,736	15.1
Other regions	334,242	28,129	8.4	22,473	6.7	18,978	5.7

Global trends of child labour (2000-2004-2008)

	Total children ('000)	Children in employment ('000)	%	Child labour ('000)	%	Hazardous work ('000)	%
World							
2000	1,531,400	351,900	23.0	245,500	16.0	170,500	11.1
2004	1,566,300	322,729	20.6	222,294	14.2	128,381	8.2
2008	1,586,288	305,669	19.3	215,269	13.6	115,314	7.3
Boys							
2000	786,500	184,200	23.4	132,200	16.8	95,700	12.2
2004	804,000	171,150	21.3	119,575	14.9	74,414	9.3
2008	819,891	175,777	21.4	127,761	15.6	74,019	9.0

	Total children ('000)	Children in employment ('000)	%	Child labour ('000)	%	Hazardous work ('000)	%
Girls							
2000	744,900	167,700	22.5	113,300	15.2	74,800	10.0
2004	762,300	151,579	19.9	102,720	13.5	53,966	7.1
2008	766,397	129,892	16.9	87,508	11.4	41,296	5.4
5-14 years							
2000	1,199,400	211,000	17.6	186,300	15.5	111,300	9.3
2004	1,206,500	196,047	16.2	170,383	14.1	76,470	6.3
2008	1,216,854	176,452	14.5	152,850	12.6	52,895	4.3
15-17 years							
2000	332,000	140,900	42.4	59,200	17.8	59,200	17.8
2004	359,800	126,682	35.2	51,911	14.4	51,911	14.4
2008	369,433	129,217	35.0	62,419	16.9	62,419	16.9

Regional trends of children in employment (5-14 years) 2000-2004-2008

	Children (5-14) ('000)	Children in employment ('000)	%	Child labour ('000)	%	Hazardous work ('000)	%
World							
2000	1,199,400	211,000	17.6	186,300	15.5	111,300	9.3
2004	1,206,500	196,047	16.2	170,383	14.1	76,470	6.3
2008	1,216,854	176,452	14.5	152,850	12.6	52,895	4.3
Asia and the Pacific							
2000	665,100	127,300	19.1	-	-	-	-
2004	650,000	122,300	18.8	-	-	-	-
2008	651,815	96,397	14.8	81,443	12.5	16,332	2.5
Latin America and the Caribbean							
2000	108,100	17,400	16.1	-	-	-	-
2004	111,000	11,047	10.0	-	-	-	-
2008	110,566	10,002	9.0	9,722	8.8	4,529	4.1
Sub-Saharan Africa							
2000	166,800	48,000	28.8	-	-	-	-
2004	186,800	49,300	26.4	-	-	-	-
2008	205,319	58,212	28.4	52,229	25.4	26,045	12.7
Other regions							
2000	269,300	18,300	6.8	-	-	-	-
2004	258,800	13,400	5.2	-	-	-	-
2008	249,154	10,700	4.3	9,456	3.8	5,989	2.4