

Understanding the Brazilian success in  
reducing child labour:  
empirical evidence and policy lessons

*Drawing policy lessons from the Brazilian experience*

June 2011

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As part of broader efforts toward durable solutions to child labour, the International Labour Organization (ILO), the United Nations Children's Fund (UNICEF), and the World Bank initiated the interagency Understanding Children's Work (UCW) Programme in December 2000. The Programme is guided by the Oslo Agenda for Action, which laid out the priorities for the international community in the fight against child labour. Through a variety of data collection, research, and assessment activities, the UCW Programme is broadly directed toward improving understanding of child labour, its causes and effects, how it can be measured, and effective policies for addressing it. For further information, see the Programme website at [www.ucw-project.org](http://www.ucw-project.org).

This paper is part of the research carried out within UCW (Understanding Children's Work), a joint ILO, World Bank and UNICEF project. The views expressed here are those of the authors' and should not be attributed to the ILO, the World Bank, UNICEF or any of these agencies' member countries.

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## **ABSTRACT**

Brazil has witnessed dramatic progress towards eliminating child labour and achieving universal basic school enrolment in the last two decades. Indeed, in the period from 1992 to 2009, economic activity among 7-15 year-olds fell by more than half, from 18 percent to less than seven percent, while school attendance rose from 85 percent to 97 percent. What were the factors underlying this success? Was it driven primarily by policy? And, if so, which policies were most influential? Or, alternatively, was the progress more a product of demographic trends, or of broader changes in the Brazilian macro-economy and labour market?

The current report takes up these questions using data from the multi-year Pesquisa Nacional por Amostra de Domicilios (PNAD) survey programme. It looks in detail at trends in child labour and schooling over the 1992-2008 period, and analyses the reasons behind these trends, in an attempt to draw concrete policy lessons from the Brazilian experience applicable in countries lagging behind in terms of child labour elimination efforts.

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## 1. INTRODUCTION

1. Brazil has witnessed dramatic progress towards eliminating child labour and achieving universal basic school enrolment in the last two decades. Indeed, in the period from 1992 to 2008, economic activity among 7-15 year-olds fell by more than half, from 18 percent to seven percent, while school attendance rose from 85 percent to 97 percent. What were the factors underlying this success? Was it driven primarily by policy? And, if so, which policies were most influential? Or, alternatively, was the progress more a product of demographic trends, or of broader changes in the Brazilian macro-economy and labour market?
2. The current report takes up these questions using data from the multi-year *Pesquisa Nacional por Amostra de Domicilios* (PNAD) survey programme. It looks in detail at trends in child labour and schooling over the 1992-2008 period, and analyses the reasons behind these trends, in an attempt to draw concrete policy lessons from the Brazilian experience applicable in countries lagging behind in terms of child labour elimination efforts.
3. The empirical evidence presented in the report corroborates other research pointing to the central role of policy in the decline in child labour and in the increase in school attendance over the 1992-2008 period. The report shows that the decline in child labour in Brazil did not happen by itself – only a small proportion can be explained by changes in the population structure unrelated to policy – while much of the decline can be traced to active efforts across a range of policy areas.
4. The remainder of the report is organised as follows. The next section outlines the national response to child labour, on the levels of both legislation and policy. Section 3 reviews the existing literature on child labour in Brazil and the factors underlying it. Section 4 presents descriptive data on the extent and characteristics of children's economic activity, including the sectors where child workers are concentrated, the intensity of work and its hazardousness. Section 5 analyses the trends in children's work and school attendance over the 1992-2008 period. Section 6 looks at major determinants of the changes in child labour incidence and school attendance, based on an economic model of household behaviour. Section 7 concludes.

## 2. RESPONDING TO CHILD LABOUR: NATIONAL AND STATE-LEVEL POLICIES AND PROGRAMMES

5. Since the mid-1990s, access to basic educational opportunities in Brazil has improved sharply. Moreover, Brazil has made significant progress towards the elimination of child labour. The policies implemented over this period fostered educational opportunities through a well-balanced use of three complementary pillars: improvement in the availability and quality of school system, conditional income transfers to families aimed at giving them effective conditions and incentives to maintain their children's attendance in school, and a number of national and local policies and programmes implemented to eliminate child labour.

6. Given the large number of national policies and programmes in place, this section will not be exhaustive and consider only the main ones. Section 2.1 briefly discusses Fundef/Fundeb and Fundescola, which aims at improving the education supply by establishing minimum public education standards and levelling the disparities among various regions in the country. Section 2.2 then turns to the demand side policies in the area of education and discusses the evolution of the conditional cash transfer programmes in Brazil, such as the Bolsa Escola, subsequently incorporated into the Bolsa Familia scheme. Section 2.3 reviews major policies and programmes related to the elimination of child labour.

### 2.1 National Education Strategy

7. The federal government has given its highest priority to improving access and quality in education. It has initiated a number of reforms including: (a) the amendment of the constitution to guarantee a minimum spending level on primary education everywhere in the country; (b) the support for a law that sets the standards redefining the roles and responsibilities of each government level; (c) implementing a programme to directly transfer funds to the schools, in an effort to increase school autonomy and effectiveness; and (d) the development of information and of a communication programme about education quality and performance through a national assessment system and an annual school census; and (e) the development and dissemination of new and national curriculum parameters. These reforms are designed to decentralize the funding of education system, diminish regional and local disparities, and increase coordination among the various systems (for a more detailed discussion see World Bank, 2002).

8. **Increased resources for education.** The new Brazilian constitution, ratified in 1988, stated that all states, municipalities and the Federal Government had to spend a fixed share of their tax and transfer revenues in their public education system. This share was equal to 25% for states and



municipalities and to 18% for the federal government. With this new legislation, the amount of resources allocated to education increased, but so did the heterogeneity of public schools, since richer states with a small share of students in their system were spending a higher amount per pupil than were poor municipalities with a large share of students. Furthermore, there was no mechanism to guarantee that education resources were effectively being spent on the educational system itself and not on other activities that could be remotely linked to education (Menezes-Filho and Pazello, 2007).

**9. Defining roles and responsibilities.** The highly decentralised system of educational provision in Brazil suffered from overlapping and imprecise responsibilities among levels of government, and large spending and quality differentials across regions and providers. The approval of the National Education Law (LDB) in 1996 clarified the roles and responsibilities of the state and municipal governments with respect to educational provision. The law also established minimum quality standards (including curriculum and teacher qualifications standards), and further decentralises service provision to sub-national governments. More specifically, the National Institute for Educational Research and Studies was made responsible for the creation and production of educational statistics and student assessment. State and municipal governments were assigned joint responsibility in the provision of primary education (Grades 1-8).<sup>1</sup> Municipal governments were also put in charge of pre-school education and state governments for secondary education (Grades 9-11).

**10. Reducing the disparities in education finance.** Fundef (*Fundo de Manutenção e Desenvolvimento do Ensino Fundamental e de Valorização do Magistério*), a fund for financing sub-national spending on primary and lower-secondary education was created in 1996, and subsequently implemented in 1997-98. The introduction of Fundef aimed at changing the structure of funding in fundamental education. Through Fundef, a national floor was set on a per student basis for government spending on primary (1<sup>st</sup> to 4<sup>th</sup> grades) and lower-secondary education (5<sup>th</sup> to 8<sup>th</sup> grades) at all levels of government. The Federal Government is required to top up spending in those states and municipalities that cannot afford the national spending floor by redistributing resources among them depending on the size of each. Fundef also established a floor of 60% on the percentage of public spending in teachers' wages out of total resources. The implementation of Fundef contributed significantly to the rapid increase in enrolment rates in primary and lower-secondary education, particularly in small municipalities, which rely more heavily on transfers from higher

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<sup>1</sup> Brazil's basic education system is divided into: *educação infantil*, offered in crèches (for 0-3 year-olds) and in pre-schools (for children aged 4-6); an eight-year elementary school cycle called *ensino fundamental* (for 7-14 year olds), which is commonly divided into two stages (grades 1-4 and 5-8); and a three-year secondary cycle, *ensino médio* (grades 9-11 for 15-17 year olds).

levels of government as a source of revenue (de Mello and Hoppe, 2005). Moreover, the rise in teachers' relative wages across municipalities brought about by Fundef (Barros, Mendonça, and Blanco, 2001) is found to have a positive impact on the proficiency of public school pupils (Menezes-Filho and Pazello, 2007). Fundef was expanded to upper-secondary and pre-school education from 2007, through the creation of Fundeb (*Fundo de Manutenção e Desenvolvimento da Educação Básica e de Valorização dos Profissionais da Educação*). Fundeb is an important step to reduce access bottlenecks at the upper-secondary level and remove constraints on child care for working mothers and pre-school education, making labour force participation easier for prime-age females (OECD, 2006; Neri and Buchman, 2007).

**11. School improvement.** Fundescola (*Fundo de Fortalecimento da Escola*) is a federal programme that has been useful for municipalities beyond the transfer of federal resources. Fundescola is a programme of school improvement that started in 1998 and is currently in its third phase (see Table 1). It aims to improve primary education in the poorest regions of the country – the North, Northeast, and Center-West regions. Fundescola has set minimum operational standards that all schools have to meet, strengthened local empowerment and planning through the school development plan and greater community participation, promoted institutional development in state and municipal secretariats (Secretariats of Education) and introduced special learning programmes such as *Escola Ativa* and accelerated classes.

**12. Improving quality through assessment and standards.** Two other strategies for improving education quality and equity are the enhancement of the education indicator system and the development of National Curriculum Parameters. The indicator system includes the SAEB (National Basic Education Evaluation System), the annual school census system, and comprehensive programmes to disseminate educational results. The development and publication of the National Curriculum Parameters serve as a complement to these efforts by establishing learning standards for every grade level, facilitating the design of the SAEB instruments. These standards were published and distributed to all primary school teachers (World Bank, 2002). The Quality Basic Education Development Index (IDEB), created in 2007, represents a pioneering initiative to bring together in one display two concepts that are equally important for the quality of education: school flows and average performance evaluations. The indicator is computed from data on school approval, obtained in the school census, and average performance in the SAEB.

**13.** Institutional developments related to Fundeb and Fundescola have been complemented by an array of policies to address additional demand issues. The Bolsa Escola/Bolsa Família programmes are among the most important governmental efforts to stimulate educational demand through direct subsidization of attendance. These programmes are now a relevant part of a

larger social assistance strategy in Brazil to promote the demand for social programmes in a socio-political climate of improved access and transparency.

Table 1. Fundescola program phasing

<b>Fundescola I (June 1998)</b>	<p>It developed and piloted the first set of school-based tools, including especially the "school development plan" for improving the effectiveness of school strategic management, and Escola Ativa for improving the quality of instruction and learning in rural, multi-grade schools.</p> <p>This project inaugurated the school "minimum operational standards" model for improving school system equity.</p> <p>It disseminated information on these initiatives to state and municipal schools and secretariats throughout the North and Center-West regions.</p> <p>It launched the "priority attention zone" approach, in which neighbouring municipalities, grouped in microregions, collaborate with one another, with their state governments, and with the Ministry of Education on improving schooling in their jurisdictions.</p>
<b>Fundescola II (December 1999)</b>	<p>The first secretariat-based tool was developed and tested.</p> <p>A comprehensive school improvement strategy was also introduced with this Project.</p> <p>It broadened the testing of these school improvement tools, including the new ones, and added an additional region into the project (the Northeast).</p> <p>It continued to support Fundescola I schools in order to promote the sustainability of the earlier interventions.</p> <p>Awareness of the need to improve school effectiveness and the availability of the new tools was promoted by means of seminars, workshops, research studies, and especially through the demonstration effect associated with the testing of the school improvement strategy in thousands of schools</p>
<b>Fundescola III</b>	<p>It provides additional assistance to schools that had begun to introduce Fundescola's schooling improvement reforms to consolidate these reforms under the responsibility and support of their Secretariats of Education.</p> <p>It helps hundreds of local governments expand these reforms into thousands of additional schools.</p> <p>It develops and uses a new set of teaching/learning models, in addition to Escola Ativa and Gestar, for diverse types of schools and population groups.</p> <p>It builds the capacity of local governments to support continuous improvement in schooling quality, and through incentives and partnerships, promotes the financial, administrative, and managerial permanence of these reforms.</p>

Source: World Bank, 2002

## 2.2 Social protection strategy: conditional cash transfer programmes

14. Concerns about redistribution are reflected in Brazil's Constitution, which places great emphasis on poverty reduction and the creation of a more just and equitable society. The Constitution established a legal foundation of social assistance as guaranteed "rights" for the needy - and also an obligation of the state to provide health and education services, among others. In this framework, conditional cash transfer (CCT) programmes serve as a social policy instrument that seeks to integrate these rights to education, health and social assistance. CCT programmes help reduce short-term poverty through cash transfers, while giving households

the incentives to invest in the human capital of their children and thereby reduce poverty in the long-run.

15. Brazil was the first country to pioneer the instrument of CCTs in Latin America. Several Brazilian states and municipalities began to experiment with new forms of social assistance in the mid-1990s. In 1995, two programmes (Bolsa Escola and the Guaranteed Minimum Family Income Programme) were initiated in the Distrito Federal (Brasilia) and in the Campinas Municipality. Over the same period, and with design similar to the Bolsa Escola programmes, another major Federal Programme (*Programa de Erradicação do Trabalho Infantil - PETI*) has been instituted (see below for further details). These programmes became a model that spread rapidly to many municipalities and states.

16. By 2001, cash transfers programmes with education conditionalities were in force in more than 100 municipalities and provided support to approximately 200,000 families. All of these programmes had three key features in common: they were targeted to the poor through means testing; they paid cash to families (usually to women) in exchange for counterpart actions (see Table 2). Most programmes also included minimum residency requirements (five years) in the municipality or state, out of fear that the lack of a national programme would attract poor migrants to their jurisdictions (Lindert et al. 2007).

17. In 2001, the Bolsa Escola programme was scaled up to the national level, building on earlier municipal-level programme initiatives. Bolsa Escola Federal provided female heads of poor households a monthly stipend conditional on their children's regular school attendance. Many aspects of programme implementation were delegated to municipal governments, including the identification and selection of programme beneficiaries, the monitoring and enforcement of conditionalities, and the management of local accountability mechanisms. Under the Bolsa Escola programme, poor families, with per capita income less than R\$90 (US\$43) or half the minimum wage at that time, received R\$15 (US\$7) per month per child up to a maximum of three children, conditional on school attendance of at least 85 percent. By late 2003, Bolsa Escola had been implemented in almost all of Brazil's 5,561 municipalities, covering over 8.6 million school aged children from 5 million families (De Janvry et al., 2005).

18. In 2001, the federal government also initiated Bolsa Alimentação (2001), a CCT programme for pregnant and lactating women. Programme conditionalities consisted of complying with a minimum schedule of pre-natal and post-natal care visits, monitoring the growth of children, and keeping their vaccinations up to date, as well as participation in nutritional education seminars. In 2002, the federal government introduced the unconditional cash transfer, Auxílio Gás (Cooking Gas Subsidy), intended to support the support of gas for domestic consumption as existing cooking gas subsidies were phased out. In 2003, Cartão Alimentação (Food Card), a

general cash transfer for food consumption to the extremely poor population, was launched.

19. In 2003, the newly-elected government of Brazil decided to develop an integrated approach to replace and consolidate the existing array of income transfer programmes. Bolsa Escola, Bolsa Alimentação together with other subsidies (Auxílio Gás and Cartão Alimentação) were consolidated into a single cash transfer programme, Bolsa Família, which became the basis of Brazil's reformed social protection system. The rationale for integration was to promote efficiency in the use of public resources, improve the system for identifying the target population, avoid duplication of services, foster better coordination, and expand coverage (Lindert et al. 2007). Bolsa Família is managed by the Ministry of Social Development and Hunger Eradication (MDS), in coordination with the Ministries of Health and Education, the state-owned bank Caixa Econômica Federal, the states, municipalities and social partners at the local level.

20. The Bolsa Família programme targets “moderately poor” and “extremely poor” families with pregnant, lactating woman and/or children from up to 15 years old and adolescents from 16 to 17 years old. The income ceilings for eligibility to the Bolsa Família programme are set at a fixed monthly per capita income of R\$140 (US\$75) for moderately poor families and R\$70 (US\$38) for extremely poor families.

21. Targeting of the Bolsa Família programme is based on a combination of geographic and household criteria (per capita income). Geographic targeting is applied at both federal and municipal levels. First, the federal government allocates quotas to municipalities according to estimates of poverty for the municipal level. These municipal level quotas are established by applying eligibility criteria to household survey and census data. Second, within municipalities, poverty maps, vulnerability and other indices of living standards are used to identify and target geographic concentrations of the poor. This geographic targeting mechanisms aims at increasing the likelihood that interviewed and registered families are poor.

22. In addition to geographic targeting mechanisms, the principal instrument for determining eligibility is the registry of low income families called the *Cadastro Unico*. Families meeting the eligibility criteria present themselves to the local authorities, accredited and trained by the MDS, to be registered into the central database of the Cadastro Unico. Municipalities are responsible for collecting data and registering families into the Cadastro Unico. In the interviews with these local authorities, applicants self-declare their household income<sup>2</sup> and municipalities are required to conduct ex-post

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<sup>2</sup> Data collected during these interviews include (a) identification numbers; (b) household characteristics; (c) dwelling identification (address) and characteristics (tenure, type, total number of rooms, construction materials, water source and purification, type of lighting, sanitation, garbage collection); (d) incomes and expenses (rent, housing loans, food, water, electricity, transport, medicines, gas, and other expenditures); and (e) a variety of other information (land holdings, membership in social organizations, hired labor, and agricultural losses).

random home visits to at least 10 percent of the beneficiaries to validate the information. After the municipality documents the relevant information, it registers the family and enters the information into the Cadastro Unico.

23. While municipalities are responsible of data collection and beneficiary registry, operation and maintenance of the database are centralized at federal level. The MDS has the responsibility for determining family eligibility. Beneficiary selection is carried out automatically by the Cadastro Unico, which compares self-reported income to the official eligibility thresholds, prioritizing families and assigning benefits according to income and family composition. The MDS runs additional consistency checks to verify information and finalise the beneficiary list. An important variable is the municipality level quotas. Municipalities are allowed to register as many families as necessary in the Cadastro Unico. However, the MDS maintains municipal quotas for the Bolsa Familia programme benefits which arise from a detailed poverty map of Brazil.<sup>3</sup>

24. If the MDS accepts a family into the programme, the payments by the Caixa Economica Federal are transacted through the national banking system. Around 32,000 pay points altogether are run independently or in cooperation with banks. An electronic card is given to the family to enable the access to the monthly payment at a pay point. While the assistance unit is defined as the family as a whole, payments are made to the woman in each family as the legally responsible beneficiary.

25. The Bolsa Familia programme provides two types of benefits. The transfer amount depends on income levels and household composition. Bolsa Familia provides a base benefit to all families in extreme poverty, regardless of their demographic composition (moderately poor families do not receive this base benefit). Both extreme poor and moderately poor families receive a variable benefit according to the number of children in the family and whether the mother is pregnant or breast-feeding. With this benefits menu, the extremely poor families receive a fix amount (R\$68) and a variable cash transfer depending on the family composition. For these families, the variable cash transfer of R\$22 per children from 0 to 6 years of age and teenagers until 15 years old, up to three and R\$33 per adolescents from 16 to 17 years old with the condition that they attend school, up to two. The total transfer for the extremely poor families ranges from R\$68 to R\$200 (US\$37-109). Moderately poor families receive the variable cash transfer ranging from R\$22 to R\$132(US\$12-72).

26. When the Bolsa Familia was created, it adopted the menu of conditionalities from Bolsa Escola (for education conditionalities) and Bolsa Alimentação (for health conditionalities). The families enrolled in the Bolsa Familia programme are required to fulfil three conditions: attendance for prenatal and postnatal monitoring, ensuring access to nutrition and

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<sup>3</sup> This process differs from that used by Bolsa Escola. Under Bolsa Escola, the municipalities were in charge of determining eligibility and selecting beneficiaries.

vaccination monitoring for their children from 0 to 7 years old and ensuring school attendance levels of at least of 85 percent for children aged 6 to 15 years and of at least 75 percent for teenagers from 16 to 17 years old. A relevant feature of the program is its focus on the family unit, rather than on the individual or on the community. By 2009, Bolsa Familia had reached 12.4 million families, almost 50 million people, corresponding to a quarter of Brazil's population at an annual cost of over USD 5 billion (0.4 percent of the GDP). Further description of Bolsa Familia programme can be found in ILO (2009) and Lindert et al. (2007).

27. A major challenge to be addressed through Bolsa Escola/Bolsa Familia programmes is the elimination of child labour. The earlier Programme for the Eradication of Child Labour (PETI) was merged into the new conditional cash transfer scheme in order to optimize the efficiency. A range of complementary socio-educational measures have also been implemented in cooperation with other institutions.



Table 2. Evolution of Brazilian Conditional Cash Transfer Programmes

Programme and Agency	Eligibility Criteria	Monthly benefits	Conditionalities	Number of Beneficiaries
<b>Early Municipal Programmes (by 2001 there were over 100 municipal programmes)</b>				
<b>Renda Mínima</b> Campinas Municipality 1995-Present	Max. income R\$140 per month (or max. R\$35 per capita). Resident in Campinas at least 2 years prior to programme creation.	Monthly benefit equals difference between total family income and the sum of family members multiplied by the value of R\$35.	Children under 6 must receive medical care and undergo nutritional monitoring. Children between 7 and 14 must attend school. One of the parents must attend a monthly group meeting with social workers and psychologists to discuss their problems, how to use the program transfers (though there are no conditions on how they are spent) and receive family planning guidance.	2 500 families in 2001
<b>Bolsa Escola</b> Federal District 1995-1998	Max per capita family income of ½ minimum wage, R\$50. Resident in DF at least 5 years prior to program's creation.	1 minimum wage per family per month, R\$100.	School aged children (age 7 to 14) must have 90% school attendance minimum.	25 680 families in 1998
<b>Pre-Bolsa Família Federal Programmes (2001-03)</b>				
<b>Bolsa Escola Federal (BE)</b>  Ministry of Education 2001-2003	Per capita family income below R\$90 (US\$43)	R\$15-45 (US\$7-21)	School aged children (age 6 to 15) must have 85% school attendance minimum.	15.2 million beneficiaries in 2003
<b>Bolsa Alimentação (BA)</b>				
Ministry of Health 2001-2003	Per capita family income below R\$90 (US\$43)	R\$15-45 (US\$7-21)	Family must access basic health care, pre and post-natal care, vaccination, nutritional and growth monitoring of children age 0 to 7 years.	1.5 million beneficiaries in 2003.
<b>Auxílio Gas (AG)</b>				
Ministry of Mines & Energy 2002-2003	Per capita family income below ½ minimum wage, or R\$90 and (1) be registered in the Cadastro Único; or (2) be a beneficiary of BE or BA	R\$7.50 per family	None	28.7 million beneficiaries in 2003.
<b>Programa Cartão Alimentação (PCA)</b>				
(former) Ministry of Food Security February-December 2003	Per capita family income below ½ minimum wage, or R\$90.	R\$50 per family	Benefits to be spent on food	1.4 million beneficiaries in 2003.



<b>Programme to Eradicate Child Labour (PETI)</b>				
Ministry of Social Development, MDS  1996- present (cash transfer part of PETI merged into BFP as of January 2006)	Families with children and adolescents between the ages of 7 and 15 years old involved the worst forms of child labour.	R\$25-40 per family plus a transfer of R\$10-20 per child to schools for afterschool activities. For 15-year olds at extreme risk, transfer of R\$65 per month and transfer for school activities R\$220 per year.	Minimum attendance of children and adolescents in school and other activities of 75%. Families must participate in social education and income generating activities, and must ensure that their children are not involved in child labour.	3.3 million beneficiaries in 2002.
<b>Bolsa Familia Programme (2003-present) (BFP)</b>				
Ministry of Social Development October 20, 2003- present	Per capita family income below R\$140 (US\$77)	R\$68-200 for extremely poor families R\$22-132 for moderately poor families	Family must access basic health care, pre and post-natal care, vaccination, nutritional and growth monitoring of children age 0 to 7 years. School aged children (age 6 to 15) must have 85% school attendance minimum and adolescents (age 16 to 17) must have 75% of school attendance minimum.	50 million beneficiaries (12.4 million families) as of 2009

Source: Lindert et al., 2007 and ILO, 2009.

### 2.3 Policy and programmatic responses to child labour

28. Brazilian Government's efforts to eliminate child labour are coordinated around the following actions: reinforcing regulations and legislation to eliminate child labour, supporting institutions and activities related to child labour eradication, providing scholarships to working children and adolescents, providing social services to working children and adolescents, conducting child labour focused inspections, conducting public awareness campaigns, updating the Map of Areas with Child Labour.

29. **Legal framework for combating child labour.** Brazil ratified Convention No. 138, the Minimum Age Convention, in 2001 and Convention No. 182, the Worst Forms of Child Labour Convention in 2000. In 2004, Brazil has ratified the Optional Protocol to the CRC on the sale of children, child prostitution and child pornography, the Optional Protocol to the CRC on the involvement of children in armed conflict, United Nations Convention against Transnational Organized Crime (CTOC), Human Trafficking Protocol, supplementing the CTOC and Smuggling of Migrants Protocol, supplementing the CTOC.

30. Brazil has also implemented a series of legal reforms to help bring national laws into full compliance with the conventions. The 1988 Brazilian Federal Constitution (*Constituição Federal*) and the 1990 Statute on Children and Adolescents<sup>1</sup> (*Estatuto da Criança e do Adolescente*) provide the legal framework that defines and implements children's rights policy in Brazil. According to the national legislation, the minimum age for general employment in Brazil is 16 years.<sup>2</sup> This minimum age was raised from 14 years after an amendment in 1998. The minimum age for apprenticeships is 14 years. Minors who work as apprentices are required to attend school through the primary cycle and to provide proof of parental permission to work. The law prohibits employees less than 18 years from working in unhealthy, dangerous, painful, or arduous conditions; at night; or in settings where their physical, moral, or social well-being is adversely affected.<sup>3</sup>

31. The Ministry of Labour and Employment (MTE) is responsible for inspecting work sites for child labour violations, while its regional offices gather data from the inspections to develop plans to combat child labour. Most inspections result from complaints to labour inspectors by workers, NGOs, teachers, the media, and other sources. While inspections mostly take place in the formal sector, most children work in farms and private homes. The MTE reported that from January to November 2008, inspectors

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<sup>1</sup>Law Nº 8,069 of 1990.

<sup>2</sup>Article 7 (paragraph XXXIII) of the Federal Constitution of 1988, as amended by Constitutional Amendment No. 20 of 15 December 1998. Employment of children under 16 is also prohibited under the terms of section 403 of the Consolidated Labour Act, as amended by Act No. 10.097/2000, and section 60 of the Statute of the Child and Adolescent, Act No. 8.069 of 13 July 1990, as amended by Amendment No. 20 of 1998.

<sup>3</sup> Article 7 (paragraph XXXIII), of the Federal Constitution and section 403 of the Consolidated Labour Act, as amended by Act No. 10.097 of 19 December 2000.

found over 5,000 children under 16 working illegally, an approximately 35 percent decrease when compared with 2007 (US Department of State, 2009).

**32. National policy framework.** The MTE set up the National Council for the Eradication of Child Labour<sup>4</sup> (CONAETI) and the Ministry of Justice set up the National Council for Children's and Young Persons' Rights (CONANDA)<sup>5</sup>. CONAETI is in charge of proposing mechanisms to ensure the implementation and enforcement of Convention No. 138 and Convention No. 138. CONAETI also was in charge of promoting the National Plan for the Eradication of Child Labour. Additionally, CONANDA's role includes: preparation of general principles of national policy on the protection of children's and young persons' rights; overseeing the implementation of the national policy on the protection of children and young people; assessing state and municipal policies and the performance of the state and municipal councils for children's and young persons' rights; supporting educational campaigns on promotion of children's and young persons' rights; and managing the National Fund for Children's and Young Persons' Rights.

**33.** The MTE set up the National Forum for the Elimination of Child Labour (FNPETI) set up in 1994 with the support of ILO and UNICEF. FNPETI is a non-governmental institution that aims to i) discuss public policies and matters relating to preventing and combating child labour in Brazil; ii) coordinate the activities of its members (i.e. governmental organization as well as representatives of workers and employers, and NGOs) and iii) achieve an integrated policy for protecting children and adolescents. It sets forth the priorities for the prevention and elimination of the worst forms of child labour.

**34.** The MTE periodically publishes the Map of Areas with Child Labour. With the support of the ILO, MTE has designed a new format and methodology for the map and has developed the Child Labour Information System (SITI). SITI is an online monitoring tool, used by the labour inspectors to inform on the inspection actions and the child labour identified cases. Moreover, a subcommittee of CONAETI composed of members from the Federal Government, worker and employer organizations, and civil society, has revised the country's list of the worst forms of child labour, as stipulated by ILO Convention No. 182 on the Worst Forms of Child Labour. As a consequence of this, President Lula signed, in June 2008, Decree no.6481/08 establishing the new Brazilian list of hazardous occupations, which adapts the legal framework by the ILO Convention 182. This act should be considered one of the greatest child

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<sup>4</sup> CONAETI is set up under Order No. 365 of 12 September 2002 and reformed under Order No. 952 of 8 July 2003.

<sup>5</sup> CONANDA was set up by Decree No. 8.242 of 12 October 1992. The competencies of CONANDA were established by Decree No. 5.089 of 20 May 2004.

labour legal advances on the Brazilian legislation, since the ratification of ILO Conventions 138 and 182.

35. The Government of Brazil, in coordination with ILO-IPEC, implemented a Time-bound Programme to eliminate the worst forms of child labour in domestic service, prostitution, hazardous work in agriculture, and other informal sector activities. The project, ended in September 2008, withdrawn over 5,000 children from exploitive labour and prevent an additional 2,000 from becoming involved in such activities. Another Time-bound Programme, implemented in coordination with the Government of Brazil, ended in 2007. The programme worked to eliminate the worst forms of child labour in both illicit drug cultivation and the commercial sexual exploitation of children, by providing basic quality education in areas of north-eastern Brazil. The project targeted 10,000 children for withdrawal and prevention from exploitive labour.

36. The Government of Brazil and the other governments of MERCOSUL for food consumption are conducting the "Niño Sur" ("Southern Child") initiative to defend the rights of children and adolescents in the region. This initiative includes unified public campaigns against commercial sexual exploitation, trafficking and child labour; mutual technical assistance in adjusting the legal framework to international standards on those issues; and the exchange of best practices related to victim protection and assistance.

37. The National Plan to Fight Sexual Violence against Children and Adolescents provides the policy framework for the government programmes to combat the commercial sexual exploitation of children and adolescents. A number of government agencies are carrying out initiatives to assist victims and raise awareness. One of the main programmes to assist child victims of commercial sexual exploitation is the Social Assistance Specialized Reference Centers Program (CREAS). These municipal Reference Centers provide psychological assistance and insertion into social benefits programs for children and their families. CREAS centres have been established in 1,300 municipalities. The Secretariat of Human Rights established a telephone hotline in every State to report sexual exploitation. The Government operates a national trafficking database designed to document and analyze trafficking-related statistics more effectively (United States Department of Labour, 2008).

38. The Ministry of Justice continued the second phase of a programme managed by the UNODC that will design the National Plan to Combat Trafficking in Persons, raise awareness on the issue, and expand the country's database on trafficking victims and perpetrators. UNODC aims to expand project implementation to all Brazilian States, and it has established centres in the principal national airports with personnel trained to receive possible trafficking victims.

39. The centrepiece of the Brazilian Government's strategy for reducing the worst forms of child labour is the federal Programme for the eradication of the worst forms of child labour (PETI). PETI, launched in 1996, is designed to withdraw children between 7 and 15 years of age from dangerous, heavy, unhealthy or degrading forms of labour. The programme explicitly states as a condition that "all children who are less than 16 years old must be withdrawn from any form of child labour" (ILO, 2008). The programme began as a pilot experience implemented in the coal production areas of the State of Mato Grosso do Sul, assisting children who worked in the coal kilns and in the harvest of mate tea leaves, covering 14 municipalities. In 1997, it was implemented in the sugar cane plantations of Pernambuco and the sisal region of Bahia. Assistance in the States of Amazonas and Goiás was also initiated. In 1998, it was extended to the citrus region of Sergipe, to mining areas in Rondônia and sugar cane areas on the coast of Rio de Janeiro (Brazilian Court of Audit, 2003). In 1999, the programme had managed to reach over 140,000 children. By February 2008, the programme was extended to various activities in over 3,300 municipalities (61% of total municipalities of Brazil) and it provides assistance to almost 900,000 children (Castelo Magalhães, 2008). This programme targeted children in the worst forms of child labour by providing a combination of conditional cash transfers to poor households and after-school activities. The transfer is targeted at households with per capita income lower than half the minimum wage, and is conditional on children stopping to work, having a school attendance record of at least 85 percent and participating in a range of after-school activities. The main purpose of after-school activities is to increase the time children and adolescents spend in school, promoting a second shift focusing on culture, play, art and sport activities complementing regular education. The activities are carried out in the municipal school units or other appropriate locations. The extended school day is meant to prevent children from working, and to provide remedial education and training for future work. Parents are also encouraged to participate in complementary programmes, such as PRONAGER (Generation of Employment and Income in Poor Areas Programme), in order to improve household income and thus reduce in the long term household dependence on income from child labour.

### 3. CHILD LABOUR IN BRAZIL: A REVIEW OF EXISTING ANALYSES

#### 3.1 Determinants and consequences of child labour

40. A relatively large literature has analysed or discussed the determinants of child labour in Brazil. This section briefly describes this literature. While we do not pretend to be exhaustive, we have tried to reflect the main contributions in this area. We largely concentrate on studies in English.

41. We start by focusing on the relationship between child labour and household income poverty in the first section. The studies discussed below show that, even if relevant, poverty alone cannot explain the evolution of child labour in Brazil. Section 3.1.2 then present results relative to the role of local labour market conditions on children's work and schooling behaviour. As it has been increasingly recognized household vulnerability plays a relevant role, besides poverty and labour market conditions. Section 3.1.3 briefly presents the results about the impact of shocks on children's labour supply. This is followed by a discussion of other household and children's characteristics such as children's gender and birth order, household composition and parents' education. Section 3.1.5 looks at the consequences of child labour with a special focus on its impact on education and on adults' labour market outcomes. The last section reviews the limited number of studies aimed to explain the declining incidence of child labour in Brazil over the 1990s. Section 3.2 focused specifically on the effect of the policies and programs described above.

##### 3.1.1 *Child labour and household income poverty*

42. There is a large and growing body of empirical evidence that addresses the potential link between household income (and wealth) and child labour. A negative relationship between family income and child labour in an empirical regularity found in several studies of child labour Brazil (Spindel, 1985; Fausto and Cervini, 1991; Rizzini, Rizzini and de Holanda, 1998). Essentially, these studies emphasize that child labour is most frequently a result of household poverty that forces parents to send their children to the labour market. However, as most of these studies rely on cross-sectional data, their results should only be considered suggestive.

43. Using the social security reform as a source of exogenous variation in household income, Carvalho Filho (2008) identifies the causal effect of changes in household income separately from the effect of differences in unobserved variables that may be correlated with both income and child labour. The Brazilian social security reform of 1991 reduced the minimum eligibility age for rural old-age benefits for men from 65 to 60, increased the minimum benefit paid to rural old-age beneficiaries from 50 percent to 100 percent of the minimum wage, extended old-age benefits to female rural workers who were not heads of households (thereby extending the

benefits to the elderly wives of rural workers previously uncovered), and reduced the age at which women are qualified for benefits from 65 to 55. Since this reform provides a source of exogenous variation in benefits that is not correlated with households' demand for human capital investments or the opportunity cost of child work, it can be used to identify the effect of exogenous income transfers on children's outcomes. The study finds evidence to support the relationship between household income and labour participation and school enrolment of rural children aged 10 to 14. Estimates based on data from four rounds of PNAD surveys (in 1989, 1990, 1992 and 1993) indicate that the gap between actual and full school enrolment is reduced by 20 percent for girls living in beneficiary households (Table 3). Girls' labour participation rates are reduced with increased benefit income, but only when benefits are received by a female elderly. Effects on boys' time allocation are smaller.

Table 3. Actual and Counterfactual Values for Treated Group, after the social security reform in Brazil

	Boys			Girls		
	Actual	Counterfactual	Effect of the Reform	Actual	Counterfactual	Effect of the Reform
Enrolled in school	0.709 (0.0110)	0.676 (0.0155)	0.0324 (0.0179)	0.790 [0.0093]	0.739 [0.0163]	0.0506 [0.0188]
Worked in reference week	0.504 (0.0126)	0.547 (0.0161)	-0.0436 (0.0188)	0.240 [0.0105]	0.249 [0.0133]	-0.0089 [0.0141]
Worked in reference week for pay	0.100 (0.0080)	0.107 (0.0125)	-0.0074 (0.0144)	0.055 [0.0062]	0.070 [0.0101]	-0.0148 [0.0113]

Notes: The treated group consists of all children aged 10-14 with at least one elderly affected by the reform in their household (for which not all excluded variables are equal to zero). Reduced form regression estimates are used to construct the actual and counterfactual values of the outcome variables. The actual values are the average predicted values from the reduced form regressions. The counterfactual is constructed by subtracting the effect of the excluded variables from the fitted values of the same regression. The "effect of the reform" is the difference in the average for the actual and counterfactual outcomes. Bootstrapped standard errors are in brackets.

Source: Carvalho Filho (2008).

44. Despite the above findings, there is also evidence suggesting that the highest rates of child labour are not in cities with the highest poverty rates but instead in higher income cities (Levison, 1991). For instance, Barros, Mendonça, and Velazco (1996) show that children's employment tends to be smaller in the poorer metropolitan areas in the Northeast of Brazil and larger in the richer areas in the South. Despite the fact that the proportion of poor is more than 40 percentage points higher in Recife than in Curitiba, for example, children's employment is four percentage points lower in Recife. In an earlier study, Barros, Mendonça, and Velazco (1994) note



also that the years with the highest poverty rates in Brazil are not necessarily the years with the highest rates of child labour. These findings suggest that the child labour problem is more severe in regions with better work opportunities.

### 3.1.2 *Child labour and labour market conditions*

45. Improved labour market conditions have, in theory, two different effects on children's schooling and work behaviour (for a theoretical model, see Cigno and Rosati, 2005; Kruger, Soares and Berthelon, 2007). On the one hand, to the extent that better labour market conditions generate higher earnings for adults and leisure and/or schooling are normal goods, children's labour market participation might fall (income effect). On the other hand, better labour market conditions, both in terms of higher real wages (or higher returns to family economic activities) and/or employment opportunities might lead to an increase in returns to work and might induce households to send children to work (substitution effect). The relative size of these effects is likely to depend on the characteristics of the household and of the child. For example, the level of household income is likely to influence the relative size of income and substitution effects. Similarly, child productivity, returns to investment in their human capital and parental preferences over their children's time use are likely to be differentiated by age and gender.

46. A relevant body of empirical evidence exists on the effect of local labour market conditions on young children's labour supply and school enrolment in Brazil. For example, Parikh and Sadoulet (2005) present cross-section evidence based on data from the 1992 PNAD survey suggesting that children from areas with high average adult employment rates are more likely to work than children from areas with low average adult employment rates.

47. In a similar vein, using PNAD survey data for the period 1981 to 2002, Manacorda and Rosati (2009) assess the impact of local labour demand (proxied by male adult employment in the area of residence) on work and schooling decisions of children aged 10-15. They find that child work tends to be "on average" procyclical, while school enrolment is essentially unaffected by local labour market conditions. As local labour demand conditions improve, children are more likely to combine work and school and are less likely to be inactive. Children respond to improvement in their labour market prospects by increasing their supply of labour to the market in a fashion similar to adults. Their results indicate, however, substantial heterogeneity across age groups. Although no substantial heterogeneity across different age groups is apparent among rural boys, it is largely older boys who respond positively to increased labour demand in urban areas. The reverse is true for younger children (ages 10-11) with siblings: for them a stronger labour demand leads to a fall in labour market



participation. Younger children are likely to be treated differently from older ones, who in turn behave similarly to adults. It appears that parents want to protect their young children from child work and do so if offered the opportunity, by shifting the burden of work from younger to older children when local labour market conditions allow them to do so.

48. Similar effects are observed in the coffee growing areas in Brazil. Based on data from PNAD surveys from 1992 to 1999, Kruger (2007) uses variations in the value of coffee production to proxy changes in local economic conditions. She concludes that child labour increases during periods of temporary increases in local economic activity driven by positive coffee production shocks. Again, the impact of labour market conditions on child labour is differentiated by household income levels. Children of low and middle income households are more likely to be employed and less likely to be in school as a result of higher economic activity, while children of high-income families are not affected from the same economic shock.

49. Other studies analyse separately the impact of increases in children's market wages on their labour supply. Using data from 1995 PNAD survey, an earlier study by Kassouf (1998) indicates that the higher the child's estimated wage, the less likely the child would be in school. Moreover, the higher the child's estimated wage, the more likely that the child would be employed. Similar results are found in the study of Barros et al. (2001) that focuses on 11-to-25-year-old individuals living in urban areas of the Northeast and Southeast regions. Data from 1996-97 PPV and 1996 PNAD surveys allow them to compute an individual expected wage. Results from the PNAD survey data suggest that opportunity costs to households of sending their children to school rather than to work (or "attractiveness of labour markets") are closely related to lower levels of schooling. In their study covering the urban areas of 25 Brazilian states over 12 years, Duryea and Arends-Kuenning (2003) find that employment rates for 14-16 years tend to be pro-cyclical and are greater during times when the wage for unskilled labour (defined as average wage of men with less than four years of schooling) is high than when the wage for unskilled labour is low. To summarise, these findings from various studies clearly imply that child labour is responsive not only to household income level but also to the opportunities available in the labour market.

### 3.1.3 *Child labour and shocks*

50. The theoretical literature on child labour (Baland and Robinson, 2000; Cigno and Rosati, 2005) highlights income shocks and borrowing constraints as a source of inefficiency in the allocation of resources within the family. Children from poor households with little access to credit markets are less likely to be in full time school attendance and are more likely to work when hit by economic shocks. Households in these instances

appear to use child labour as a form of risk coping mechanism, helping to buffer a transitory income shock.

51. Several empirical studies examine the effect of negative shocks to household income on children's work participation and school attendance in Brazil. The question of whether economic shocks have an adverse impact on children's time allocation decisions is especially pertinent now, at times of a real and financial crisis that are likely to produce large and possibly lasting worldwide adverse impact (Fallon and Lucas, 2002; Ferreira and Schady, 2008; Koseleci and Rosati, 2009). The current economic and financial crisis can potentially reverse the positive trends observed in Brazil and deepen even further the problem in some regions of the country, like in the Northeast, where the phenomenon of child labour has been particularly resilient. In what follows, we briefly discuss available evidence on the effects of transitory income shocks on children's schooling and involvement in child labour in Brazil.

52. Taking advantage of a longitudinal employment survey (*Pesquisa Mensal de Emprego* – Monthly Employment Survey) from six metropolitan areas of Brazil for the period 1982 to 1999, Neri *et al.* (2005) assess the effects of adverse shocks to household head's occupational status (measured by earning losses) on children's labour participation and drop-out probabilities. Their empirical model allows the impact of transitory economic shocks to differ by household income status. Logistic estimates show that following a loss of earnings by the household head, children's probability of drop-out and labour market entry increases in poorer households. Children's time allocation in higher-income households remains, however, largely unaffected by such a shock.

53. A different estimation strategy using the same dataset is used by Duryea, Lam and Levison (2007) that incorporate a wider range of household characteristics. Probit regression results suggest that an unemployment shock to the male head of household occurring during the school year has substantial negative effects on children. These shocks increase the probability that children enter the labour force and that they drop out of school, and decrease the probability that they advance in school. Shocks occurring after the end of the school year do not have significant effects on the observed outcomes, suggesting that unobserved household heterogeneity that may cause spurious correlations between shocks and negative child outcome is controlled for. In the same vein, previous research using the same data by Duryea (1998) finds that children are less likely to advance to the next grade if their father becomes unemployed during the school year.

#### 3.1.4 *Child labour and household characteristics*

54. Empirical studies have emphasized the role of individual and household characteristics in conjunction with family income and labour market

conditions in explain children's time use decisions. There is an extensive literature on gender issues in human capital investments and outcomes in Brazil (among others, see Barros, Fox and Mendonca, 1997; Gustaffson-Wright and Pyne, 2002). Gender bias in child labour and schooling might be related to the gender of the parent who controls the distribution of child resources, social norms, and differences in the returns to schooling and child labour. Most theoretical work in the literature on child labour has assumed a unitary family model (Basu, 1999; Emerson and Souza, 2006). However, according to the intra-household allocation model, fathers and mothers affect the education investment and the child labour participation of their sons and daughters differently because of differences in parental preferences or differences in how additional schooling affects sons' and daughters' acquisition of human capital. Indeed, the results from Emerson and Souza (2007) suggest that fathers' characteristics generally have a greater impact on decisions concerning sons while mothers' characteristics generally have a greater impact on decisions concerning daughters.

55. Equally interesting is the relation between siblings' – i.e., within family - time allocation and children's characteristics (Edmonds, 2006). For example, in a study of urban Brazil, Levison (1991) indicates that child employment increases with the number of children in the family, especially when younger and pre-school-aged children are present. She argues that this may be due to children substituting for the mother in the labour force, or in childcare, or both. She hypothesizes that "parents of many children may be diversifying investments in children such that some specialize in home production, some work in labour force, and others focus on their education" (Levison 1991, p. 202). Emerson and Souza (2008) also point to significant birth order effects when families are forced by poverty and/or capital constraints to send some or all of their children to work in the labour market. Empirical analyses from PNAD 1998 survey data show that male and female first-born children are less likely to attend school than their later born siblings and male last-born children are less likely to work as child labourers than their earlier born siblings.

### 3.1.5 *Consequences of child labour*


56. The literature seems to support the view that in general child labour impedes the acquisition of education and human capital in Brazil (Psacharopoulos and Arriagada, 1989; French, 2002; Gunnarsson, Orazem and Sánchez, 2005; Sedlacek, Duryea, Ilahi and Sasaki, 2005). A recent study of Bezerra, Kassouf, and Arends-Kuenning (2009) uses school achievement test data from the 2003 Sistema Nacional de Avaliação da Educação Básica to analyse the impact of child labour on school achievement. They attempt to control for the endogeneity of child labour by instrumenting the latter with the average wage for unskilled male labour in the state. Their estimates indicate better test results in mathematics and

Portuguese for students who only study and do not work. Differences in work conditions affect also school performance. Those students who work in a family enterprise have higher test scores than those who work outside the family enterprise. Nevertheless, it is important to mention that their instrumental variables might be correlated to other unobservable determinants of child labour, and thus not necessarily satisfying the exclusion restriction.

57. One exception is the study of Cardoso and Verner (2007) that finds no evidence of such a relation between children's schooling and work behaviour. Using the World Bank Fortaleza Survey collected in 2003 in three neighbourhoods (Autran Nunes, Edson Queiroz and Pirambú) of Fortaleza in the Northeast region, they show that working does not necessarily have a detrimental effect on school attendance, dropping out of school leading most often to inactivity. They attribute this to the lack of work opportunities for children in this region.

58. A number of studies have shown that the overall harmful effects of child labour might extend well beyond the childhood years in Brazil. Using a Cox proportional hazard model to take into account censored observations, Emerson and Souza (2003) find strong evidence of intergenerational persistence in child labour among Brazilian families. Children are more likely to work the younger their parents were when they entered the labour force and the lower the educational attainment of their parents (Table 4).

Table 4. Child labour persistence: Cox Proportional Hazard Model on number of years



Independent Variables	Hazard Ratio	SE
<b>Child labourer father</b>	<b>1.636</b>	<b>0.105</b>
<b>Child labourer mother</b>	<b>1.827</b>	<b>0.097</b>
Father's schooling (years)	0.966	0.008
Mother's schooling (years)	0.942	0.008

Notes: Regressions control for children's characteristics (gender, place of residence), grandfather's and grandmother's schooling, mother's and father's characteristics (labour market status, age) and family structure.

White's heteroskedastic consistent errors are used in all regression

Source: Emerson and Souza, 2003

59. Similarly, a recent study by Emerson and Souza (2007) analyses the lifetime earnings implications of child labour. Estimations of an earnings model on data from 1996 PNAD data shows that people who start work at a younger age end up with lower earnings as adults. Their results are in line with earlier studies on the impact of early labour force participation on

subsequent education and health outcomes from Ilahi, Orazem and Sedlacek (2000), Kassouf, Mckee and Mossialos (2001) and Giuffrisa, Iunes and Savedoff (2005). Girls are found to be more adversely affected by early labour force entry than boys; with the gender difference increasing the earlier a child begins to work (Gustaffson-Wright and Pyne, 2002).

### 3.1.6 *Understanding child labour trends in Brazil*

60. As highlighted in an earlier World Bank report (2001b), household level data of both urban and rural Brazil shows a declining trend in the incidence of child labour aged 10 to 14 since the mid 1990s. Despite this clear evidence, there is still no consensus on the determinants of this decline. Brazil experienced a sustained economic growth rate during the 1990s after the stagnation of the 1980s. Therefore, increases in family income might have increased children's schooling and decreased child labour. Moreover, many changes in educational policy were implemented during the 1990s which might also increase school quality. Furthermore several social protection policies (like Bolsa Escola/Familia programmes) have been promoted since mid 1990s. In what follows, we briefly review the conclusions of some studies aiming to explain child labour and school attendance trends in Brazil.

61. Ferro and Kassouf (2005b) aim to analyse whether the legislation restricting the employment of child labour contributed to the decline in the percentage of working children aged 14 and 15 years. In 1998 the child labour legislation restricted the employment to minors under 16 instead of 14. Probit estimates based on pooled cross-sectional PNAD data from 1995 to 2003 show a statistically significant effect of the change in legislation on child labour for both boys and girls in both urban and rural areas. The legislative change contributed to a decrease in the fraction of teenagers working in the labour market, although it did not eliminate child labour.

62. A recent study by Santos and Souza (2007) investigates the causes of improved education indicators and child labour outcomes by using Brazil's monthly longitudinal employment survey (*Pesquisa Mensal de Emprego – Monthly Employment Survey*) from 1984 to 2001. Specifically, they test the role of changes in family background (increase in parents' schooling), changes of child labour market and changes in educational indicators (as measured by the average schooling of public school teachers). Multinomial logit estimations and decompositions techniques suggest that changes in child employment and school attendance over the 1990s are largely explained by changes in observable characteristics rather than changes in unobservable characteristics. Moreover, the phenomenon seems to be more associated to changes in educational variables (such as the increase in the level of schooling of public school teachers) and changes in the family background (increase in parental schooling). These results suggest that

educational policies that try to combat school drop-out have played an important role.

63. Using data from the 1980, 1991 and 2000 population censuses, Manacorda and Rosati (2009) investigate the role of changes in the industry mix in explaining the declining trend of children's work across Brazilian states. The authors show that Brazilian children appear to enjoy a comparative advantage in specific productions, implying that differences in industrial mix have the potential to explain part of the differential variation in the incidence of child labour across states. If children are concentrated in low productivity industries with obsolete production technologies, changes in the industry mix driven by technological change or shifts in consumers' preferences can be a major force behind the fall in child labour. They find that changes in the industry mix are able to account for a significant share of the differential trends in child employment across Brazilian states. As child intensive industries decline, child labour falls, suggesting that household do not fully readjust their children's labour supply through endogenous occupational choices. Moreover, the results of the study indicate that within industry differences in employment are the most important factor in explaining the large decline in child labour. These differences might arise from changes in the supply of child labour induced by changes in living standards and policy interventions. In this context, governmental efforts to increase school attendance and eliminate child labour through school promotion programmes might have played some role in explaining the observed fall in child labour.

64. Results from the above mentioned studies show that educational policies and the adoption of local and federal policies aimed specifically at promoting school attendance and curbing child labour might have a relevant impact on children's time allocation decisions. Next section reviews the main conclusions of these studies investigating the role of CCTs on children's schooling and work behaviour in Brazil.

### 3.2 Impact of conditional cash transfer programmes

65. This section presents the main conclusions of some of the CCT programmes' evaluations that have been conducted in Brazil. Section 3.2.1 discusses the main conclusions of studies assessing the impact of the Bolsa Escola/Familia programme while Section 3.2.2 makes use of evaluations of the other CCT program, PETI, which has the specific objective of reducing child labour.

#### 3.2.1 *Impact of Bolsa Escola/Familia programmes*

66. Bolsa Escola was first conceived in the Federal District of Brasilia and gradually extended to other cities (e.g. Recife), before being scaled up to



the national level (see section 2.2). A large number of evaluations have estimated the impact of the programmes on a range of outcomes. The findings are broadly positive. World Bank (2009) shows that although the impacts of Bolsa Escola on the headpoverty and the poverty gap are modest, the programme reduces substantially the squared poverty gap. Similarly, Paes de Barros, Foguel and Ulyssea (2006) suggest that there is a strong link between the introduction of Bolsa Familia and the fall in inequality in Brazil.

67. There are several studies conducted to analyse the impact of these earlier programmes on children's school attendance and labour market participation. The available evidence points to improved educational outcomes though the evidence of an impact on child labour remains inconclusive. For instance, Abramovay et al. (1998) find that dropout rates are 7 percentage points lower for beneficiary children than for non-beneficiary children in the Federal District of Brasilia. An earlier evaluation by the World Bank (2001b) provides also preliminary evidence from the Bolsa Escola programme in the Federal District of Brasilia using household data from the 1996 PNAD survey. A simple comparison of beneficiaries and non-beneficiaries indicates that i) school attendance is higher and dropout rates are lower for beneficiaries, ii) children in beneficiary household exhibit a higher promotion rate and iii) a larger proportion of beneficiary children enter the school system at the right age compared to non-beneficiary children. Despite these improvements in education outcomes, there is little evidence of a reduction in child labour. In a similar vein, Aguiar and Araújo (2002) show that dropout rates are lower among beneficiaries in 1996 compared to non-beneficiaries in the city of Recife but Lavinas, Barbosa and Tourinho (2001) find no significant impact on the programme on child labour. However, it is worth mentioning that these earlier studies have two limitations. First, they ignore pre-program differences in child labour between beneficiaries and non-beneficiaries. Second, some of them are conducted in the capital city, a relatively wealthy area that is not representative of the entire country.

68. A recent *ex-ante* study simulates the impact of nationwide Bolsa Escola/Familia programme on children's school enrolment and labour participation. Bourguignon et al. (2003) analyse Brazilian household survey data collected in 1999 to run a multinomial logit estimate of household behaviour that is then used to simulate the future impact of the Bolsa Escola programme. They estimate that about 40 percent of 10 to 15 year-olds currently not enrolled in school would receive enough incentive from the programme to enrol (Table 5). Among them, more than one-third would enrol in school remaining employed outside the household. The other two-thirds would not work anymore outside the household. The program would reduce the proportion of 10 to 15 year-olds outside school from 6.0 percent to 3.7 percent. Among poor households the impact is even more pronounced. Their simulation suggests that the programme would increase

the school enrolment rate among the poor by about 5.2 percentage points. Yet the authors caution that the results heavily depend on technical assumptions and thus they attempt only “to obtain orders of magnitude for the likely effects of transfer programs of the Bolsa Escola type.”

Table 5. Simulated effects of Bolsa Escola on Schooling and Work Status of Children aged 10-15 (percent)

Actual status	Simulated status			
	Not attending school	Attending school and working	Attending school and not working	Total
<b>All households</b>				
Not attending school	60.7	14.0	25.3	6.0
Attending school and working	---	97.8	2.2	16.9
Attending school and not working	---	---	100.0	77.1
Total	3.7	17.3	79.0	100.0
<b>Poor households</b>				
Not attending school	41.3	21.7		
Attending school and working	---	98.9	1.1	23.1
Attending school and not working	---	---	100.0	68.1
Total	3.7	24.7	71.6	100.0

Source: Bourguignon, Ferreira and Leite, 2003.

69. Cardoso and Souza (2004) use data from the 2000 population census to evaluate the impact of the Bolsa Escola programme. Propensity score estimates indicate that children in households that received cash transfers are 3-4 percentage points more likely to attend school than are matched children in the control group. The impact of the programme is stronger during the first years of the primary education and fades out along the education cycle. The study does not find any significant effect of conditional cash transfers on child labour. Hence, increased attendance appears to correspond with a shift from work only to school in combination with work. Nevertheless, the set of covariates used in this study to construct the propensity score is small, and it is not clear why “comparable” households received transfers in some cases but not in others. Moreover, the authors are not able to disentangle transfers made by Bolsa Escola from other income transfer programmes (World Bank, 2009). Similar results suggesting that Bolsa Escola does not have an impact on children’s employment are also found in the study of Ferro and Kassouf (2005a) that uses data from the 2001 PNAD.



70. There are also a number of complementary analyzing the efficiency of Bolsa Escola's. Souza (2006) extends Cardoso and Souza's (2004) earlier study and finds a significant positive impact of the programme on school progression and on the extra years of schooling. These results raise the question of the programme's efficiency as most of school age children (even those from poor households) attend school regardless of the transfer. Impacts of the transfers seem to vary across ages and years of schooling completed. These results suggest calibrating the rules according to age and grade might help to improve the efficiency of the programme.

71. Based on a survey of 260 municipalities in four states of the Northeast region, de Janvry, Finan and Sadoulet (2008) attempt to identify programme efficiency at the municipal level to establish the municipal correlates that matter for school performance. Based on a double-difference method, their analysis shows that Bolsa Escola Federal has a strong overall impact on beneficiary school attendance, reducing drop-out rates by 8 percentage points. However this study goes beyond the impact evaluation of the programme. It points out that a number of municipal features and programme implementation practices are strongly related to differences in levels of impact of the programme on drop-out rates. Bolsa Escola is decentralized at the municipal level, with local authorities in charge of beneficiary identification and program implementation. There seems to be considerable heterogeneity in the quality of implementation across local governments (de Janvry et al., 2005). The findings of de Janvry, Finan and Sadoulet (2008) indicate that a more transparent beneficiary identification and selection process is associated with higher impact and that expected electoral rewards for incumbent mayors are associated with larger impacts. Stricter enforcement of the conditionality is also associated with a higher level of impact on the drop-out rate.

72. Most of the above-mentioned studies on Bolsa Escola tend to suggest that conditional cash transfer programmes in Brazil are less effective at reducing child labour than they are at increasing schooling. These ex-post evaluations, however, use data from the 2000 population census and the 2001 PNAD survey, which coincides with the widespread implementation of Bolsa Escola. Hence, there is a need for new research to analyse the impact of the program after several years have passed. Another caveat is that in the 2001 PNAD survey, individuals are asked whether they were "signed-up" or "beneficiaries of" a conditional cash transfer program. Thus, studies using 2001 PNAD data may have considered as "treated" households who were not actually receiving the benefit, although admittedly this variable might help estimate and intent-to-treat effect.

73. Ferro, Kassouf and Levison (2007) and Ferro and Nicollela (2007) use data from the 2003 PNAD survey to measure the impact of Bolsa Escola on children's labour force participation. This survey contains two specific questions on CCT programme participation: one for whether families were signed-up for any of the existing programmes at the time of the survey, and

another for whether they were already receiving the programme transfer. This information allows these studies to create a treatment group (those receiving the benefits) and a control group (those enrolled but still not receiving the benefits). Both studies argue that beneficiaries may be compared with eligible signed-up families who are not yet getting the benefits (i.e. these individuals have the same propensity to participate and are eligible). Unlike earlier studies, their probit regressions and propensity score matching methods show that Bolsa Escola reduces the probability of work for children aged 6-15 in both urban and rural areas. As for number of hours worked, the results from Heckman two-step estimations indicate a negative effect of the programme, though not significant.

74. Studies analysed in this section show that while Bolsa Escola might have had a positive impact on school attendance, its effect on child labour remains to be determined. The common explanation given in the studies is that the programme does not offer enough monetary incentives to deter children's participation in the labour market. These cash transfer programmes need to be complemented with measures that include an after-school component. Further elimination of child labour depends on more specific programmes targeted at particular groups and economic sector. The next section presents evidence on the impact of such a programme, namely PETI, on child labour incidence in Brazil.

### 3.2.2 *Impact of PETI programme*

75. The objective of the PETI programme is to eradicate the worst forms of child labour by providing cash grants to families with children of school-going age (7 to 15) and by requiring that children attend school and after-school activities. The program evaluation assesses this objective by looking into indicators such as child participation in the labour force, number of hours worked and employment in risky activities. PETI was first implemented only in a few municipalities in the state of Pernambuco, and later expanded to other states including Bahia and Sergipe. The evaluation was planned after the program started and it was not possible to randomly allocate municipalities into treatment and control groups. Instead, the treatment group was composed of three participating municipalities in separate states, and the comparison group of three similar municipalities not in the program (Rawlings and Rubio, 2005).

76. Comparing data on children from PETI municipalities and children in a matched set of control municipalities, Yap et al (2001) show that as a result of participating in programme, the probability of working fell between 4-7 percentage points in Pernambuco, close to 13 percentage points in Sergipe and nearly 26 percentage points in Bahia which has the highest child labour force participation rate. Moreover, PETI also decreased the probability of children working in hazardous activities. Nonetheless the program was less successful in reducing the probability of working 10 hours or more. PETI

appears to succeed better with part-time child workers than with those who work longer hours. Another interesting result is that even though the after-school program was available to all households in PETI municipalities, only children in households that received the cash transfer spent significantly more time in school. This suggests that demand incentives may have a relevant role in accelerating behavioural changes.

77. World Bank (2001b) offers a positive preliminary evaluation of PETI. The qualitative assessments demonstrate that the program has been successful in achieving its objectives of reducing rates of child labour. Pianto and Soares (2003) use the PNAD survey and find that PETI reduced child labour and increased schooling between 1997 and 1999. They use two different methodologies: they measure the change from a baseline level in municipalities where PETI was introduced and they also match municipalities to form a comparison group. They find that PETI has a significant role in reducing child labour. This estimated impact is robust to a difference in difference analysis.

## 4. CHILDREN'S INVOLVEMENT IN EMPLOYMENT AND SCHOOLING

78. This section uses micro data to examine children's time use patterns in Brazil, focusing in particular on the extent of children's involvement in employment and schooling. The analysis in this section is based on data from the 2008 Brazilian National Household Survey (PNAD) designed to study a variety of socio-economic characteristics. The survey contains a rich array of information on children's work activities and schooling, together with information on a number of individual and household characteristics.

79. PNAD is run annually (with the exception of 1994 and 2000) and is representative of the entire Brazil, with the exception of the rural North between 1992 and 2003. Consistently throughout the period, the survey collect detailed individual and household socio economic characteristics as well as information on work and education.

80. Labour market data are available for individuals aged 5 and above. The data include information on involvement in employment and hours of work in the week preceding the survey. Employment refers to both paid and unpaid (family or non family) work but excludes household chores. Data on labour earnings are only available for paid workers, a minority of working children especially in rural areas.

81. . Labour market data are available for individuals aged 5 and older with the exception of 1996 and 1997 (when these data only refer to individuals aged 10 or more). We use data for previous surveys in the next section.

### 4.1 Involvement in employment

82. Children's involvement in employment<sup>6</sup> is not uncommon in Brazil. Almost seven percent of children aged 7-15 years, some 2.1 million children in absolute terms, were in employment in 2008. At the same time, school attendance was high – 97 percent of children from the 7-15 years age group attended school in 2008.

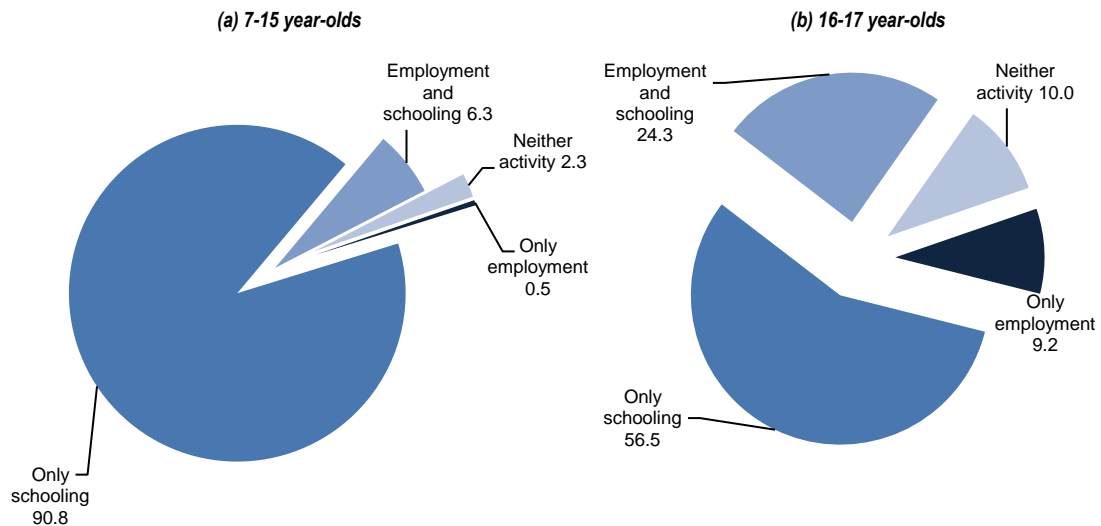
83. Brazil appears to have recently achieved remarkable success in reducing the numbers of children in employment. The incidence of child work (children's in employment) fell from 18 per cent in 1992 to 7 per cent in 2009. This decline was mirrored by a large increase in the fraction of children attending school over the same period (from 85 to 97 percent). Children's employment and schooling trends are discussed in more detail in Section 5.

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<sup>6</sup> Children in employment is a broad concept covering all market production and certain types of non-market production (principally the production of goods for own use). It includes forms of work in both the formal and informal sectors, as well as forms of work both inside and outside family settings.

84. Figure 1 and Table 6 disaggregate the child population into four non-overlapping activity groups – children only in employment, children only attending school, children combining school and employment and children doing neither. This disaggregation shows that six percent of all 7-15 year-olds children work and attend school at the same time, while only a small share is in employment exclusively. A further 91 percent of all children aged 7-15 attends school exclusively, while the remaining two percent of 7-15 year-olds are “inactive”, i.e., not involved in either employment or in schooling. Activity patterns differ somewhat for older children aged 16 to 17: a greater share work and attend school at the same time and a smaller share is in school exclusively or is inactive. Overall school involvement, however, remains high among 16-17 year-olds (Table 7).

Figure 1. Distribution of children by activity category, 7-15 years and 16-17 years age groups



Source: UCW calculations based on Brazilian PNAD 2008 data.

Table 6. Child activity status, 7-15 years age group, 2008 reference period

Activity status	Sex		Residence		Total
	Male	Female	Urban	Rural	
Only employment	0.8	0.3	0.5	1.0	0.5
Only schooling	88.7	93.0	93.3	80.4	90.8
Employment and schooling	8.3	4.3	4.0	15.9	6.3
Neither activity	2.2	2.4	2.2	2.7	2.3
<b>Total in employment<sup>(a)</sup></b>	<b>9.1</b>	<b>4.6</b>	<b>4.5</b>	<b>16.9</b>	<b>6.8</b>
<b>Total in school<sup>(b)</sup></b>	<b>97.0</b>	<b>97.3</b>	<b>97.3</b>	<b>96.3</b>	<b>97.1</b>

Notes: (a) Refers to all children in employment, regardless of school status; (b) Refers to all children attending school, regardless of employment status.

Source: UCW calculations based on Brazilian National Household Survey (PNAD) 2008

Table 7. Child activity status, 16-17 years age group, 2007 reference period

Activity status	Sex		Residence		Total
	Male	Female	Urban	Rural	
Only employment	12.2	6.1	7.6	16.5	9.2
Only schooling	50.3	63.1	59.9	41.3	56.5
Employment and schooling	29.5	18.7	22.6	32.1	24.3
Neither activity	7.9	12.1	9.9	10.1	10.0
<b>Total in employment(a)</b>	<b>41.7</b>	<b>24.8</b>	<b>30.2</b>	<b>48.6</b>	<b>33.5</b>
<b>Total in school(b)</b>	<b>79.8</b>	<b>81.8</b>	<b>82.5</b>	<b>73.4</b>	<b>80.8</b>

Notes: (a) Refers to all children in employment, regardless of school status; (b) Refers to all children attending school, regardless of work status.

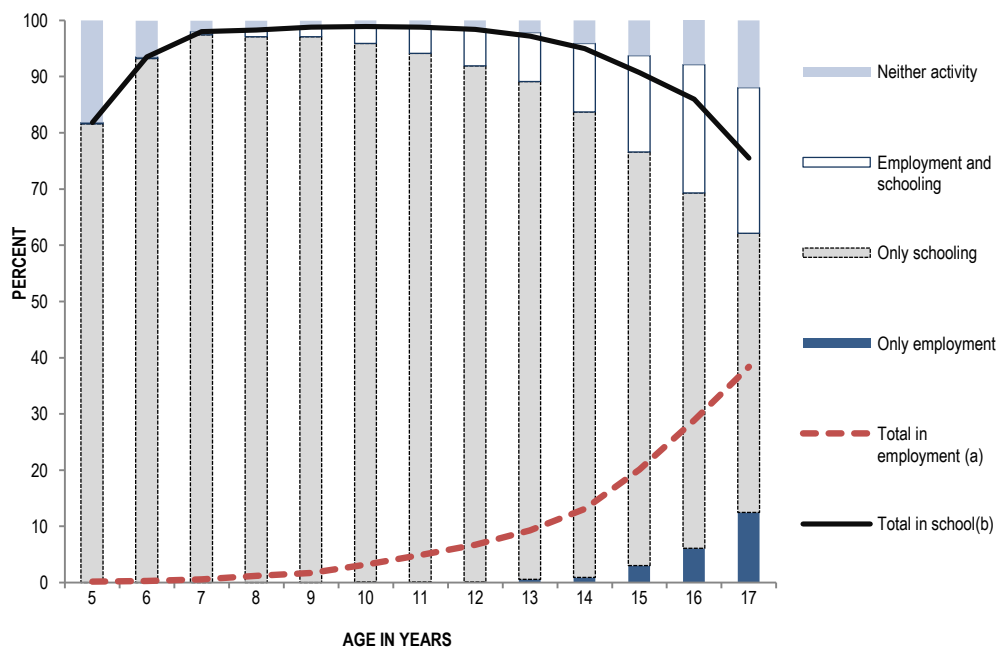
Source: UCW calculations based on Brazilian PNAD 2008 data

85. These aggregate estimates of children's activities mask pronounced differences by residence, region, age and sex:

86. **Gender.** Boys in the 7-15 years age group are more likely to be involved in employment than girls of the same age (9 versus 5 percent). Gender plays relatively a minor role in children's school attendance in Brazil: the share of boys and girls in school differs little. The difference is accounted for entirely by the subgroup of working children also attending school; there are no major differences by sex in the proportion of non-student working children. Larger sex differences in involvement in employment emerge among 16-17 year old children. Boys' involvement in employment in this age range rises to almost 42 percent, against 25 percent for girls in the same age group. It is worth recalling, however, that household chores, such as child care and housekeeping performed within one's own home, typically female intensive activities, are not considered here.

87. **Age.** Children's employment rises with age, not surprising in light of the fact that children's productivity also increases with age and with it the opportunity cost of keeping children in the classroom instead of the workplace (Figure 2). It is worth underscoring that numbers of young working children are nonetheless far from negligible. Around 5 percent of 11 year-olds and over 9 percent of 12 year-olds are already in employment. These young child workers constitute a source of particular policy concern, as they are most vulnerable to workplace abuses, and most at risk of work-related ill-health or injury.

Figure 2. Child activity status, by child age, percent, 2008 reference year



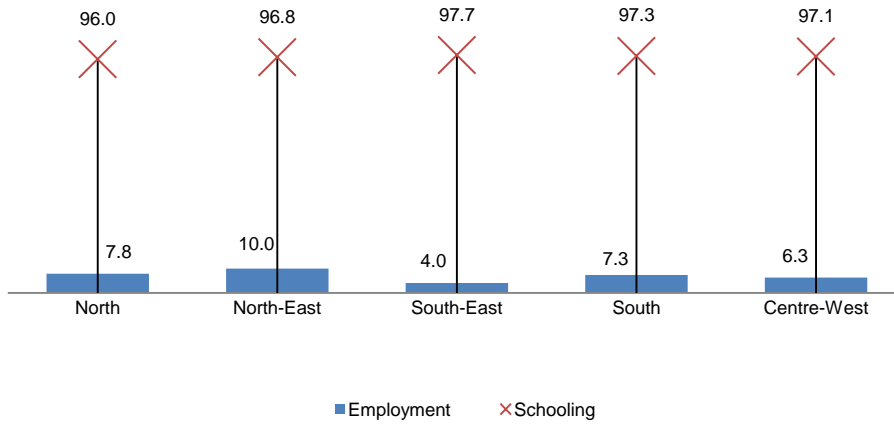
Notes: (a) Refers to all children in economic activity, regardless of school status; (b) Refers to all children attending school, regardless of work status

Source: UCW calculations based on Brazilian National Household Survey (PNAD) 2008

**88. Residence.** Children's involvement in employment is overwhelmingly a rural phenomenon. Children living in cities and towns are considerably less likely than their rural counterparts to engage in employment. Children's rates of school attendance differ little between rural and urban areas, but urban children are much more likely to attend school exclusive of employment (93 percent versus 80 percent).

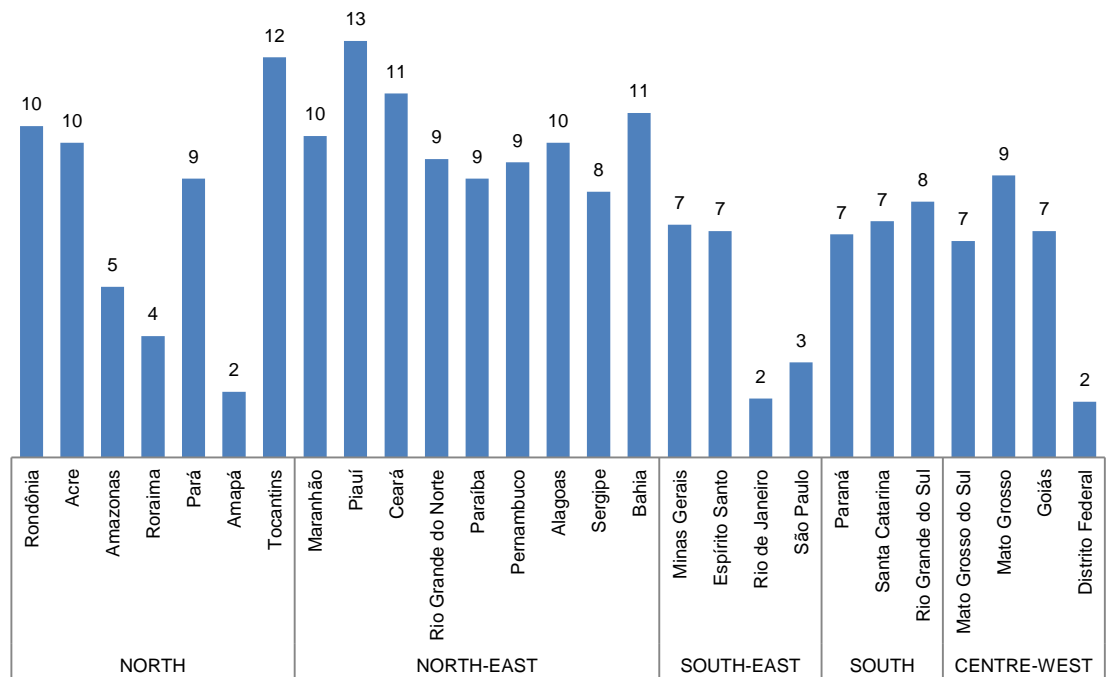
**89. Region.** Sub-national data from the PNAD 2008 point to large regional differences in children's in employment, underscoring the need for the geographic targeting of child labour elimination efforts (Figure 3 and Figure 4). The rate of child involvement in employment exceeds 10 percent in the states of Northeast (Piauí and Ceará) and exceeds seven percent in the states of North (Rondônia and Acre) and in the states of South (Rio Grande do Sul). Less than five percent of children are found in employment, by contrast, in some states of South-East (Rio de Janeiro and São Paulo). There is less geographic variation in school attendance; at least some 96 percent of 7-15 year-olds attend school in all regions (Figure 3).

Figure 3. Children's involvement in employment and schooling, by region, 7-15 year-olds, percent



Source: UCW calculations based on Brazilian National Household Survey (PNAD) 2008.

Figure 4. Children's involvement in employment, by state and region, 7-15 year olds, percent



Source: UCW calculations based on Brazilian National Household Survey (PNAD) 2008

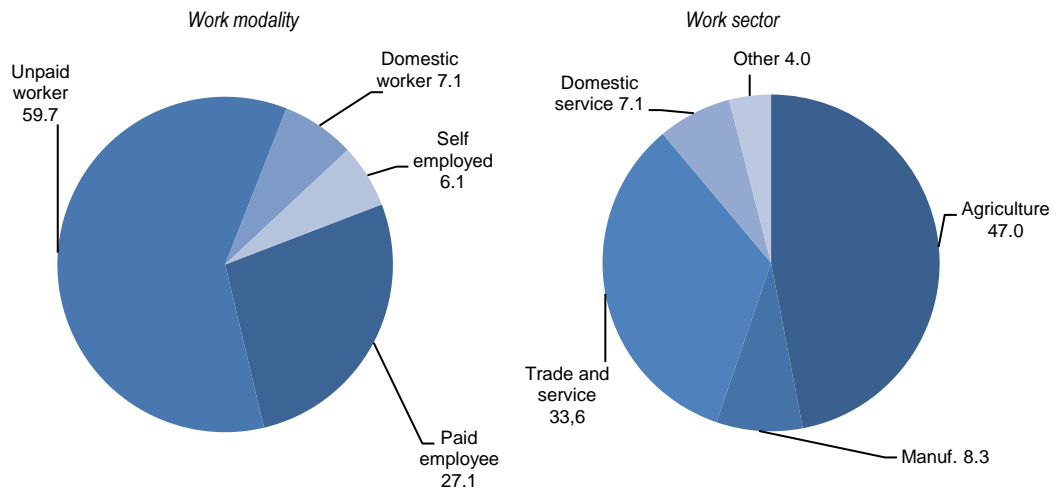


## 4.2 Types of work performed by children

90. This section examines available data concerning the characteristics of children's employment, and how these may differ by sex, age, residence and other characteristics. It looks in particular at two indicators - work sector and work modality – in an attempt to assess the degree to which there is specialisation among sub-groups in the occupations and jobs performed by children. This section also examines differences by sex in hours worked in employment. Hours worked are an important indicator of work intensity, and provide insight into the possible consequences of children's work.

91. Children's work is mainly concentrated in the agriculture sector (Figure 5). Indeed, 47 percent of employed 7-15 year-olds work in agriculture, against 34 percent in trade and services, less than 10 percent in manufacturing and seven percent in domestic services. There is some degree of job specialisation in accordance with children's sex (Table 8). Girls are much more likely than boys to be in employment in domestic service (20 percent versus one percent) and less likely than boys to work in agriculture (35 percent versus 53 percent). There are also significant differences in the nature of children's employment by place of residence (Table 8). Agricultural work, not surprisingly, predominates in rural areas (85 percent), while a large proportion of children in cities and towns also work in trade and services (58 percent).

Figure 5. Children's employment, by sector and modality, 7-15 years age group, percent



Source: UCW calculations based on Brazilian National Household Survey (PNAD) 2008

92. Non wage labour performed within the household is by far the most relevant form of children's employment. 70 percent of children work in a

family setting without wages. Of the remaining working children, 17 percent work for a wage while seven percent is self-employed and 6 percent works as domestic servants. Again, there are some differences in work modality by rural or urban residence (Table 8). Almost all children in employment in rural areas work for their families as unpaid labour. In all, 90 percent of children in employment work within the family, while less than 5 percent work as paid employees in the formal sector. Children living in cities, by contrast, are less likely to work for their families, and more likely to be involved in wage employment compared to their counterparts living in the countryside.

Table 8. Modality and sector of children's employment, 7-15 years age group, by sex and place of residence

Background characteristic	Modality					Sector					Total	
	Unpaid family worker	Paid employee	Self employed	Domestic worker	Total	Agric.	Manuf.	Trade and services	Domestic services	Other		
Sex	Male	62.3	30.9	6.1	0.7	100	52.7	7.9	33.0	0.7	5.6	100
	Female	54.3	19.3	6.2	20.2	100	35.1	9.0	34.9	20.2	0.8	100
Residence	Rural	34.8	44.1	9.8	11.3	100	12.4	10.9	58.4	11.4	7.0	100
	Urban	87.1	8.4	2.1	2.4	100	84.9	5.4	6.5	2.4	0.8	100
<b>Total</b>	<b>59.7</b>	<b>27.1</b>	<b>6.1</b>	<b>7.1</b>	<b>100</b>	<b>47.0</b>	<b>8.3</b>	<b>33.6</b>	<b>7.1</b>	<b>4.0</b>	<b>100</b>	

Source: UCW calculations based on Brazilian National Household Survey (PNAD) 2008

93. As shown in Table 9, children's employment in Brazil is typically very time-intensive. Working children aged 7-15 years perform an average of 21 hours of employment each week. Working hours are highest for non-students (35 hours), but the sub-group that combines employment and schooling nonetheless logs on average 19 hours of work each week, underscoring the additional constraint that work places on children's time for study. Work intensity increases with age, from 14 hours for the 7-11 years age range to 22 hours for the 12-15 years age range. Boys aged 7-15 years tend to work slightly longer hours than girls (21 hours per week versus 20 hours per week). Urban children aged 7-15 tend to work longer hours than their rural counterparts (23 hours per week versus 18 hours per week). Work in manufacturing and service sector appears more time intensive than agricultural work. Paid employment and domestic work appear more time intensive than self-employment or family work.

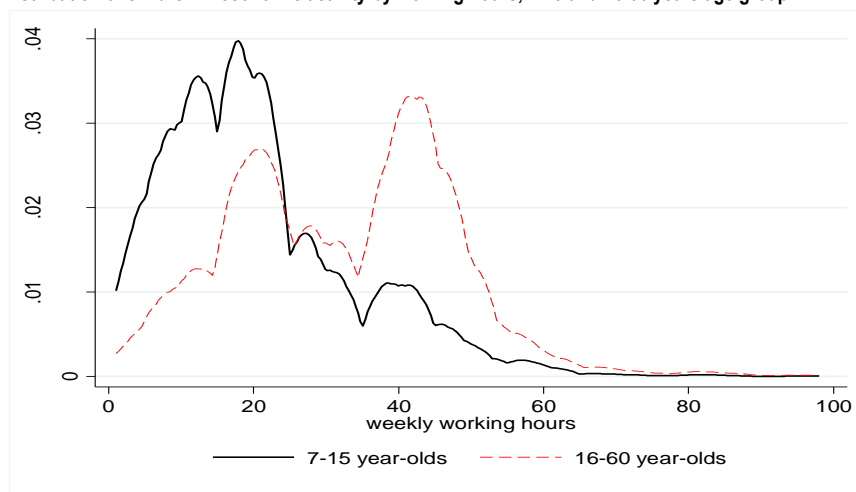
Table 9. Average weekly working hours by school attendance, age group, sex, residence area, industry and modality

Sector and modality		7-11 years			12-15 years			7-15 years		
		Total	Non-student working children	Student working children	Total	Non-student working children	Student working children	Total	Non-student working children	Student working children
<b>Total</b>		<b>14.0</b>	<b>25.5</b>	<b>13.6</b>	<b>22.1</b>	<b>35.4</b>	<b>20.7</b>	<b>20.5</b>	<b>34.8</b>	<b>19.3</b>
Sex	Male	14.8	25.4	14.5	22.5	36.4	21.0	21.1	35.6	19.7
	Female	12.1	27.1	11.9	21.1	32.6	20.1	19.5	32.5	18.6
Residence	Urban	14.3	36.7	13.5	23.9	36.0	22.5	22.7	36.0	21.3
	Rural	13.8	15.9	13.8	19.6	34.2	18.5	18.1	32.5	17.2
Sector	Agriculture	13.5	14.5	13.5	18.9	33.5	17.7	17.4	31.9	16.5
	Manufacturing	15.3	34.7	13.7	24.3	37.9	22.7	22.9	37.5	21.2
	Trade and services	13.9	36.1	13.7	23.5	35.4	22.4	22.3	35.4	21.2
	Domestic services	18.9	-	18.9	27.4	35.8	26.0	27.1	35.8	25.7
	Other	24.1	42.6	11.7	25.9	38.9	22.8	25.8	39.3	22.4
Modality	Unpaid family	18.9	38.6	16.7	28.2	39.5	26.2	27.8	39.5	25.8
	Paid employee	13.6	17.2	13.5	17.9	29.7	17.3	16.7	28.2	16.3
	Domestic worker	18.9	-	18.9	27.4	35.8	26.0	27.1	35.8	25.7
	Self-employed	12.1	40.0	10.3	19.1	29.7	17.6	18.1	30.5	16.6

Source: UCW calculations based on Brazilian National Household Survey (PNAD)

94. Figure 6 shows that working children log on average fewer hours of work each week than their adult counterparts. Working children are clustered around 20 hours per week, while working adults are clustered in the range around 40 hours per week. Note however the relatively large fraction (nine percent) of working children in the “tail” of the distribution, these children have exceptionally long working hours, i.e., 40 or more hours per week. They are among the worst off working children, as their work responsibilities completely preclude their rights to schooling, study, leisure and adequate rest. Their prolonged exposure to workplace risks also undoubtedly increases their susceptibility to work-related illnesses and injuries, although data shortcomings make it difficult to offer conclusive evidence. It is also worth recalling that these figures do not account for time spent in household chores that is not included in the data used in this report.

Figure 6. Distribution of children in economic activity by working hours, 7-15 and 16-60 years age group

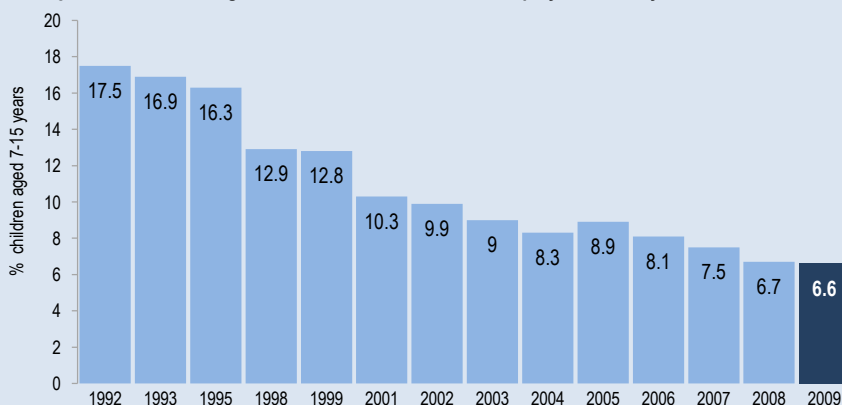


Source: UCW calculations based on Brazilian National Household Survey (PNAD) 2008

Panel 1. An update to 2009

New data for 2009 became available during the preparation of the report. In this panel we present a brief update on the basis of these new data. The 2009 data, which coincide with the peak of the global financial crisis, indicate a slowing but *not* a reversal of progress in reducing children’s involvement in employment (Figure A). At the same time, children’s school attendance actually increased slightly in 2009, to 97.3 percent. Taken together, these figures suggest that the Government has been largely successful in protecting children from the worst effects of the financial crisis.

Figure A. Changes in children’s involvement in employment, 7-15 year-olds, 1992-2009



Source: UCW calculations based on Brazilian PNAD Surveys 1992 to 2009

The profile and nature of children’s employment in the 2009 reference year differed little from previous years. Boys were much more likely to be involved in work than girls, and rural children were much more likely to work in employment than their peers living in cities and towns. Agricultural work predominated in rural areas, while the services sector was the largest employer of children in cities and towns. Children logged an average of about 21 hours per week in employment; the minority of children that worked without also attending school put in much longer hours, over 33 hours per week.

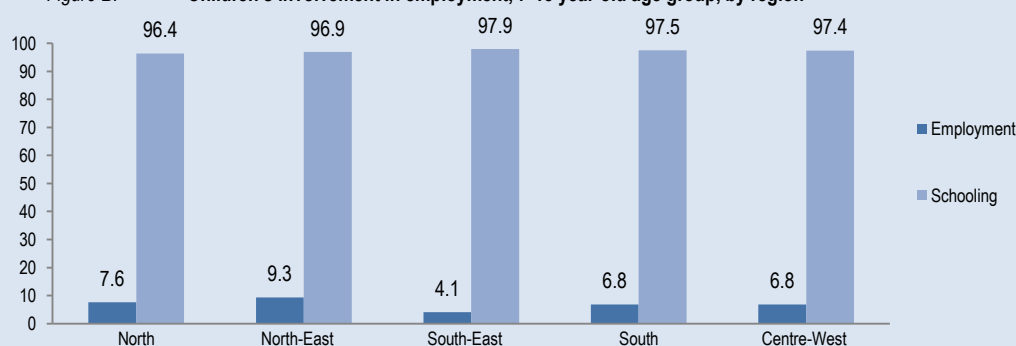
Table A. Child activity status by sex and residence, 7-15 age group

Background characteristics		Mutually exclusive activity categories				Total in employment(a)	Total in school(b)
		Only employment	Only schooling	Employment and schooling	Neither activity		
Sex	Male	0.8	89.1	8.0	2.2	8.8	97.1
	Female	0.3	93.6	4.1	2.0	4.4	97.7
Residence	Urban	0.4	93.4	4.2	2.0	4.6	97.6
	Rural	1.1	82.3	14.2	2.4	15.3	96.5
<b>Total 7-15</b>		<b>0.5</b>	<b>91.2</b>	<b>6.1</b>	<b>2.1</b>	<b>6.6</b>	<b>97.3</b>

Notes: (a) Involvement in employment regardless of schooling status; (b) Involvement in schooling regardless of employment status

Source: UCW calculation based on Brazilian National Household Survey (PNAD) 2009

Figure B. Children's involvement in employment, 7-15 year-old age group, by region



Source: UCW calculation based on Brazilian National Household Survey (PNAD) 2009.

Table B. Sector and status in employment, by sex and residence, 7-15 age group

Characteristics		Sector				Modality			
		Agriculture	Manufact.	Services	Other	Unpaid	Self	Wage	Domestic
Sex	Male	51.2	7.1	36.6	5.1	60.1	6.5	32.5	0.9
	Female	29.3	9.8	60.5	0.4	46.4	8.6	19.5	25.5
Residence	Urban	11.9	11.9	70.2	5.9	32.8	11.5	42.7	13.1
	Rural	85.1	2.9	11.4	0.5	84.8	1.7	9.9	3.6
<b>Total 7-15</b>		<b>44.1</b>	<b>7.9</b>	<b>44.4</b>	<b>3.6</b>	<b>55.6</b>	<b>7.2</b>	<b>28.3</b>	<b>8.9</b>

Source: UCW calculation based on Brazilian National Household Survey (PNAD) 2009

Table C. Average weekly working hours, by sex and residence, 7-15 age group

Characteristics		Employment	Only employment	Employment and school
Sex	Male	21.2	35.1	19.8
	Female	20.5	29.2	19.8
Residence	Urban	22.4	35.6	21.0
	Rural	19.1	29.7	18.3
<b>Total 7-15</b>		<b>21.0</b>	<b>33.4</b>	<b>19.8</b>

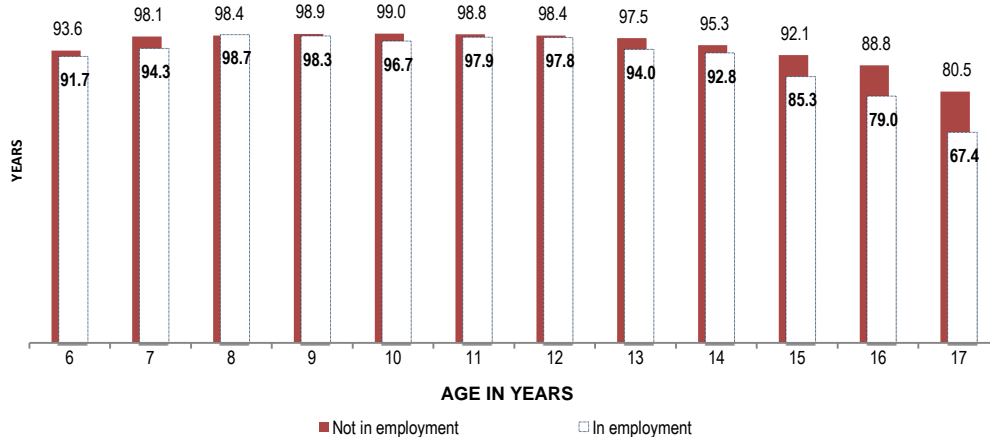
Source: UCW calculation based on Brazilian National Household Survey (PNAD) 2009.

### 4.3 Educational impact of children's employment

95. The degree to which employment interferes with children's schooling is one of the most relevant determinants of the long-term impact of early work experience. Reduced educational opportunities constitute one of the main links between child labour, on the one hand, and youth employment outcomes, on the other. Clearly, if the exigencies of employment mean that children are denied schooling altogether or to underperform in the classroom, then these children will not acquire the human capital necessary for more gainful employment upon entering adulthood. This section makes use of a set of standard education indicators to assess how employment affects children's ability to attend and benefit from schooling.

96. Empirical evidence suggests that employment interferes both with Brazilian children's ability to attend school and to perform effectively once there, underscoring the importance of child labour as a barrier to achieving Education for All in the country. A number of simple indicators of school participation and grade progression serve to illustrate this point. Starting with school attendance, age-specific attendance rates (ASAR)<sup>7</sup> show that working children lag behind that of their non-working counterparts at every age, with the largest differences at the beginning and at the end of the 6-17 years age spectrum (Figure 7).

Figure 7. School attendance rate, by age and involvement in employment, percent



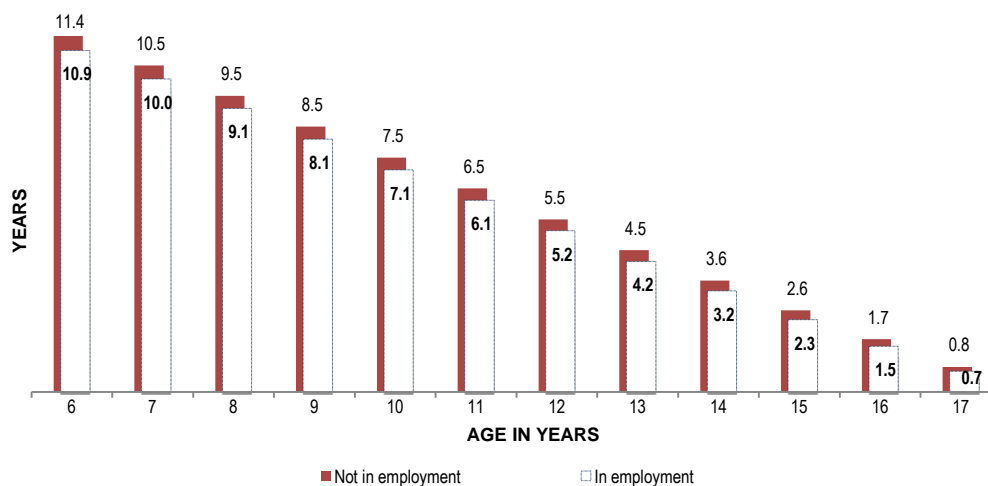
Source: UCW calculations based on Brazilian National Household Survey (PNAD) 2008

<sup>7</sup> ASAR of the population of age  $a$  in school year  $t$  is calculated as follows:  $ASAR_{at} = A_{at}/P_{at} * 100$ , where:  $A_{at}$  is attendance of the population of age  $a$  in school year  $t$ ;  $P_{at}$  is population of age  $a$  in school-year  $t$ .

97. School life expectancy (SLE) provides a measure of the total number of years of education that a child can expect to achieve in the future.<sup>8</sup> Relatively higher school life expectancy indicates greater probability of spending more years in education, although expected number of years do not necessarily coincide with the expected number of grades of education completed, because of grade repetition. This measure also serves to illustrate the reduced educational prospects associated with early involvement in work. Having to work reduces the number of years that a child can expect to remain in the schooling system (Figure 8). A student already at work at age 6 can expect to remain in school almost one year less than a non-working six year-old student, and working seven-, eight-, and nine-year old students fewer years than their same-aged non-working peers.

98. Obviously, one has to be cautious in interpreting these as causal affects of child labour as it is likely that poverty or other household and child-specific determinants affect both the probability of work and poor school performance.

Figure 8. School life expectancy, by involvement in employment



Source: UCW calculations based on Brazilian National Household Survey (PNAD) 2008

#### 4.4 Decisions concerning children's involvement in work and schooling

99. As most children (excluding those that live on their own) exercise little control over their time allocations, determining why children work requires investigating why parents choose to engage their children in work rather than sending them to school or leaving them idle at home. This section uses simple regression tools to identify key factors influencing household

<sup>8</sup> SLE at an age  $a$  in year  $t$  is calculated as follows  $SLE_{at} = \sum_{i=a}^n A_{it}/P_{it}$ , where:  $A_{it}$  is attendance of the population of age  $i$  ( $i=a, a+1, \dots, n$ ) in school year  $t$ ,  $n$  – the theoretical upper age-limit of schooling;  $P_{it}$  is population of age  $i$  in school-year  $t$ .

decisions to involve their children in work or school.<sup>9</sup> The results of the analysis are provided in Table 10; some of the key qualitative inferences from the analysis are presented below.

**100. Child age and sex.** The analysis shows that the probability of a child working increases with age. The available information is insufficient to provide a precise idea of the relative importance of the two probable reasons for this, i.e., the rising opportunity cost of schooling (i.e. the wage rate) as a child grows older, or the lack of access to schooling at the post-primary level. Parents' decisions concerning whether to involve their children in school or employment in Brazil appear strongly influenced by gender considerations. Holding constant household income, parents' education and other relevant factors, boys more likely to be in employment only or to combine employment and school than their female counterparts. On the other hand, girls are more likely to be at school full time than their male counterparts. It is worth noting, however, that these results do not extend to involvement in household chores, a variable not included in the analysis.

**101. Education of household head.** The effect of an increase in parents' education on the reduction of child labour is significant and positive. Holding income and other factors constant, children from households where the head has primary education are less likely to work full-time, and more likely to attend school full-time than children from households where the head is illiterate. Raising the education of the household head from basic to secondary education appears to have a similar impact on whether children work or attend school. It is worth reiterating that these results are obtained holding income constant, i.e., independent of any disguised income effect. More educated parents might have a better knowledge of the returns to education, and/or be in a position to help their children exploit the earning potential acquired through education.

**102. Household income.** The level of household income appears to play a relevant role in decisions concerning children's work and schooling. A higher income level leads to a decrease in the probability of a child working full-time and an increase in the likelihood of him or her attending school full-time. This results underscore that children's earnings or productivity play a relevant role in household survival strategies among low-income families, and point to the need for some form of compensatory income or earnings schemes as part of a broader effort for encouraging school attendance and discouraging children's work among poor households.

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<sup>9</sup> A bivariate probit model was used to jointly determine the correlated decisions on child schooling and work. A simple economic model of household behaviour is used to guide the empirical specification. For detailed information on the model, see Cigno, Rosati and Tzannatos, *Child Labour Handbook*, May 2002. The analysis carried out in this section is, obviously, conditional on the available information. Despite the extensiveness of the survey utilised, potentially relevant variables are missing. In particular, information on the relative price of child work is difficult to capture: indicators for returns to education work and household chores are not easily available (for a discussion of the role played by unobservables please see Deb and Rosati, *Determinants of Child Labour and School Attendance: The Role of Household Observables*, December 2002).



**103. Place of residence.** Children's living location is strongly correlated with their time use, highlighting the importance of targeted, area-specific approaches to reducing child labour and raising school attendance. Holding other factors constant, children living in cities and towns are more likely to be attending school full time, and less likely to be employed full-time, compared to their counterparts living in the countryside. The likelihood of school attendance and child labour also depends to a large extent on the region where they live. Again holding other factors constant, a child living in the North region, for example, faces a greater probability of working full time, and a lower probability of studying full-time, compared to a child living in the Northeast region. Other inter-regional differences in the likelihood of child labour and school attendance are similarly large. The level of income inequality within the state of residence (as measured by the Gini coefficient) has an influence on child time use. A higher level of inequality in income distribution appears to raise the share of children combining school with employment

**104. Access to water.** Access to water is correlated with school attendance and reduces participation of children to economic activity and the number of children neither attending school nor working. A better access to water increases the probability of children's schooling and decreases the probability of children's involvement in employment. Existing evidence (Guarcello et al. 2004) indicates that access to basic services (water in the case of our study) can modify the decision of the household concerning children's activities, although admittedly this variable might also pick up unobserved determinants of child labour (i.e. household wealth).

Table 10. Covariates of children's employment and schooling, marginal effects after bivariate probit estimations, 7 14 years-olds

Explanatory variables		Only employment		Only schooling		Employment and schooling		Neither activity	
		dy/dx	z	dy/dx	z	dy/dx	z	dy/dx	z
Child age, sex and race	Age	-0.0013	-5.6	0.0123	3.1	0.0265	8.3	-0.0376	-17.0
	Age^2	0.0001	7.8	-0.0014	-7.5	-0.0006	-4.0	0.0019	18.0
	Female	-0.0011	-9.3	0.0270	16.8	-0.0229	-18.6	-0.0029	-2.9
	White	-0.0012	-2.0	0.0198	1.6	-0.0011	-0.1	-0.0176	-2.9
	Black	-0.0006	-1.4	0.0080	0.7	0.0021	0.2	-0.0096	-2.3
	Yellow	-0.0006	-1.2	0.0083	0.5	0.0020	0.1	-0.0098	-1.9
	Mixed	-0.0010	-1.5	0.0173	1.3	0.0014	0.1	-0.0176	-2.3
Household characteristics	Household size	0.0000	0.8	-0.0004	-0.6	-0.0001	-0.3	0.0005	1.2
	Siblings 0-4	0.0003	4.3	-0.0055	-3.8	-0.0001	-0.1	0.0053	5.9
	Siblings 5-14	-0.0000	-0.3	-0.0005	-0.5	0.0022	2.9	-0.0017	-2.6
	Log.of household income p.c.*	-0.0004	-6.7	0.0079	7.5	-0.0023	-2.9	-0.0052	-7.7
	Pipe water	-0.0016	-6.4	0.0276	8.8	-0.0159	-7.0	-0.0101	-4.9
Education of household head	Primary	-0.0006	-5.1	0.0111	5.6	-0.0047	-3.2	-0.0059	-4.7
	Secondary	-0.0008	-7.1	0.0169	7.5	-0.0068	-3.8	-0.0093	-7.3
	Higher	-0.0014	-9.7	0.0328	15.2	-0.0173	-10.4	-0.0141	-10.9
Place of residence	Rural	0.0020	8.3	-0.0624	-19.1	0.0647	21.5	-0.0042	-3.5
	North-East	-0.0004	-3.6	0.0055	2.2	0.0036	1.9	-0.0087	-6.3
	South-East	-0.0007	-5.9	0.0155	6.7	-0.0097	-5.6	-0.0052	-3.6
	South	0.0002	1.1	-0.0066	-2.0	0.0086	3.1	-0.0022	-1.2
	Centre-West	-0.0004	-3.2	0.0088	3.1	-0.0048	-2.2	-0.0036	-2.1
	State Gini index	-0.0002	-0.1	0.0222	0.6	-0.0558	-2.1	0.0337	1.4

Reference categories are the following. Race: indigenous; head's education: no education; region: North

\*Note: Children's income is dropped from the household income.

Source: UCW calculations based on Brazilian National Household Survey (PNAD) 2007

## 5. TRENDS IN CHILDREN'S INVOLVEMENT IN WORK

### 5.1 Data

105. In this section we use data from the PNAD for the period 1992 to 2008 to characterise and analyse changes in child labour over time.

106. As said, PNAD surveys from 1992 to 2003 do not cover the rural areas of the six Northern states (Rondônia, Acre, Amazonas, Roraima, Pará, and Amapá). In order to provide consistent comparison of children's time use patterns, rural observations for those states from 2004 to 2008 are excluded from the analysis. Note that since rural observations for six Northern states are excluded from the trend analysis, the descriptive statistics for the year 2008 in this section are slightly different from those in the previous section.

107. We focus our analysis on individuals aged 7-15 and we drop the years 1996 and 1997 from the sample as work information for children younger than 10 is not available in these years. This gives an overall sample of around 68,000 children per year, i.e., almost 900,000 children over 13 waves and 16 years. About 80 percent of children reside in urban areas and twenty percent in rural areas.

### 5.2 Children's employment and school attendance: 1992- 2008

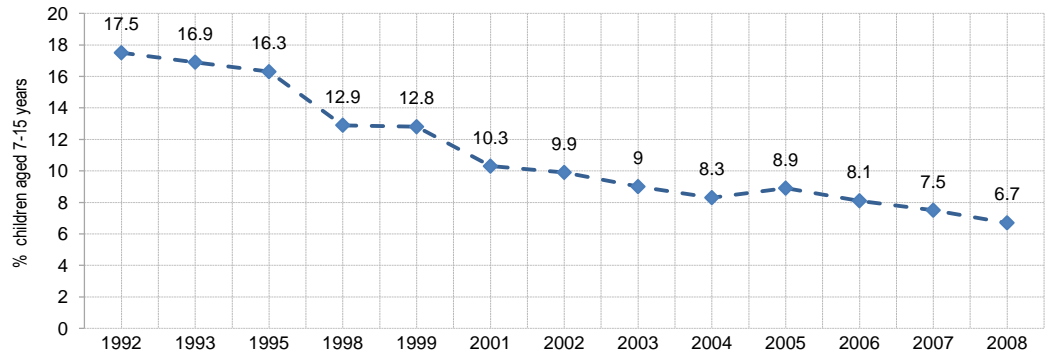
108. This section illustrates the changes in the level and composition (i.e., age, sex and residence) of the child population in employment in Brazil in the last 16 years (from 1992 to 2008). A comparison of the results of the PNAD from 1992 to 2008 indicates an overall decline in children's employment among 7-15 year olds of almost 10 percentage points, from 18 percent (Figure 9) to 7 percent. During the same period and for the same age group, school attendance rises from 85 per cent to 97 per cent. The progress in the reduction of children's employment has been rather steady, with the exception of one period of slight reversals (2004-2005). A closer look at the changes over the period considered shows that the reversal was almost entirely due to an increase in the number of children working and attending school. The proportion of children in employment but not in school, the group whose development prospects are most compromised, falls steadily over the 1999-2005, by more than half.

109. In order to keep the presentation simple, we only show data for the initial, middle and final year of our sample. This does not change in any substantial way the conclusions and we make reference to the whole sample where necessary.

110. Figure 10 and 11 indicate that the decline in children's employment and the increase in their schooling extend to the entire 7-15 age range, but the fall in children's employment and the rise in the school attendance of 12-15 year-old have been particularly pronounced. Clearly the latter is

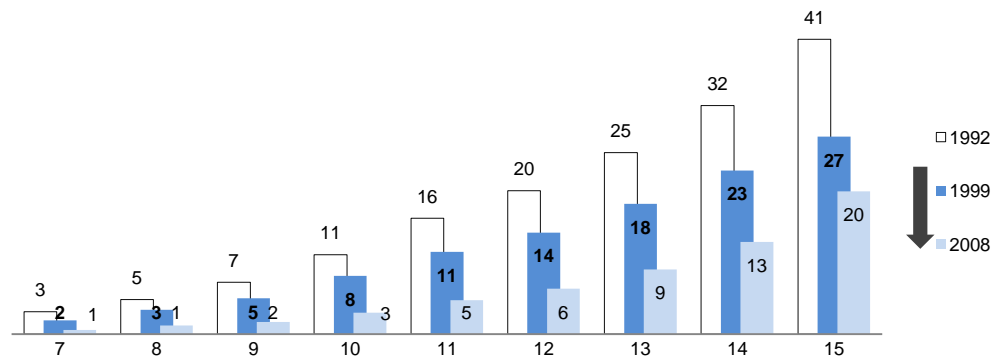
largely the result of older children starting from higher levels of child labour.

Figure 9. Changes in children's involvement in employment, 7-15 year-olds, 1992-2008



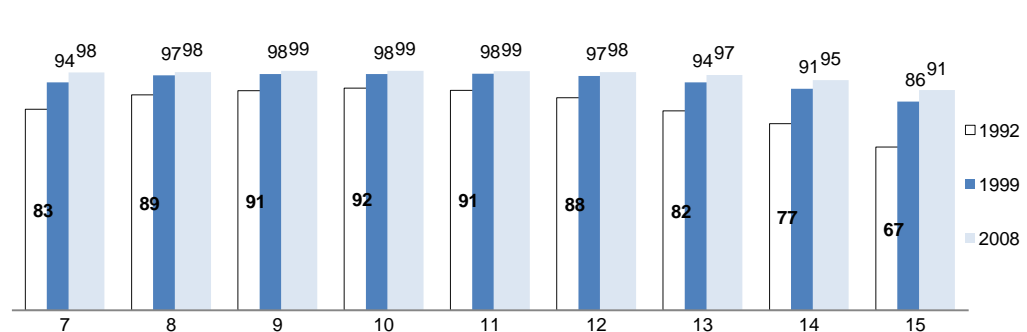
Source: UCW calculations based on Brazilian PNAD Surveys 1992 to 2008

Figure 10. Decline in age-specific rates of child involvement in employment, 1992, 1999 and 2008 reference periods



Source: UCW calculations based on Brazilian PNAD Surveys 1992, 2003 and 2008.

Figure 11. Rise in age-specific school attendance rates, 1992, 1999 and 2008 reference periods



Source: UCW calculations based on Brazilian PNAD Surveys, 1992, 1999, and 2008

111. Table 11 provides a more detailed look at changes over the 16-year period. It shows that the reduction in employment was very large for children working only. The share of children in employment without also attending school decreased over the 1992-2008 period, from 6.0 percent to only 0.5 percent. Currently child labour affects almost exclusively children who are also attending school. However, as discussed in the previous sections, the negative consequences of such combination of school and employment should not be underestimated. There was also been a large movement of children from “inactivity” to school over the 16-year period. Many of these ostensibly inactive children might have been involved in non-economic forms of work, and in particular household chores for their own families.

Table 11. Changes in child activity status. 7-15 years age group. by residence. 1992, 1999 and 2008 reference periods

Activity status	Sex						Residence						Total		
	Male			Female			Urban			Rural					
	1992	1999	2008	1992	1999	2008	1992	1999	2008	1992	1999	2008	1992	1999	2008
Only employment	7.9	2.2	0.8	4.1	1.1	0.3	3.4	1.0	0.5	13.9	3.6	0.9	6.0	1.6	0.5
Only schooling	68.4	79.7	89.0	78.2	87.4	93.2	81.1	89.3	93.3	48.8	65.1	80.4	73.2	83.5	91.0
Employment and schooling	15.1	14.6	8.0	7.8	7.6	4.2	7.6	6.2	4.0	23.5	26.8	16.0	11.5	11.1	6.1
Neither activity	8.7	3.5	2.2	10.0	4.0	2.4	7.9	3.5	2.2	13.9	4.6	2.6	9.3	3.7	2.3
<b>Total in employment<sup>(a)</sup></b>	<b>23.0</b>	<b>16.8</b>	<b>8.8</b>	<b>11.9</b>	<b>8.7</b>	<b>4.5</b>	<b>11.0</b>	<b>7.2</b>	<b>4.5</b>	<b>37.4</b>	<b>30.4</b>	<b>16.9</b>	<b>17.5</b>	<b>12.7</b>	<b>6.6</b>
<b>Total in school<sup>(b)</sup></b>	<b>83.5</b>	<b>94.3</b>	<b>97.0</b>	<b>86.0</b>	<b>95.0</b>	<b>97.4</b>	<b>88.7</b>	<b>95.5</b>	<b>97.3</b>	<b>72.3</b>	<b>91.9</b>	<b>96.4</b>	<b>84.7</b>	<b>94.6</b>	<b>97.1</b>

Notes: (a) Refers to all children in employment, regardless of school status; (b) Refers to all children attending school, regardless of employment status.

Source: UCW calculations based on Brazilian PNAD Surveys, 1992, 1999, and 2008

112. Figure 12 illustrates how the age distribution of children involved in employment has changed across the period considered. Not only has the level of involvement in employment declined substantially, but the minimum age of entry in the labour market has increased by almost 2 years. In 1992 participation rates were positive for children aged 8 years or more, while in 2008, the involvement of children in employment remains essentially negligible until the age of 10 years, and starts to increase thereafter. A similar pattern can be observed for school attendance rates. As Figure 13 illustrates, not only has the level of school attendance increased over the years, but children currently enter earlier and leave school substantially later than 16 years ago.

Figure 12. Children's employment, by age, by survey year

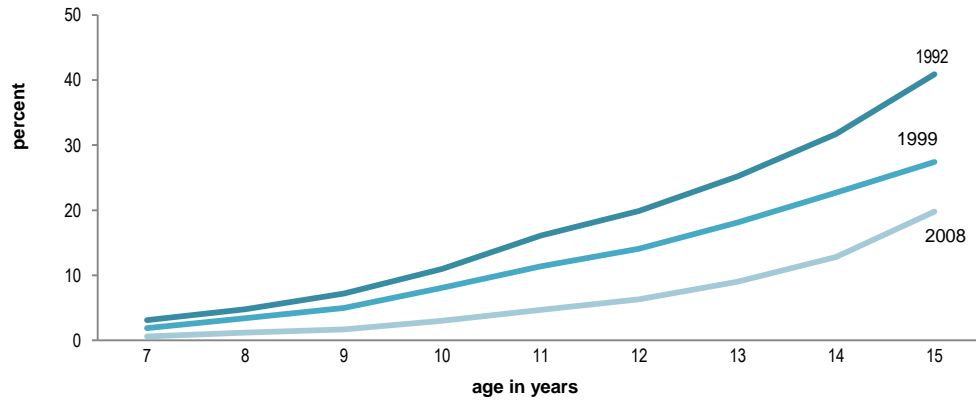
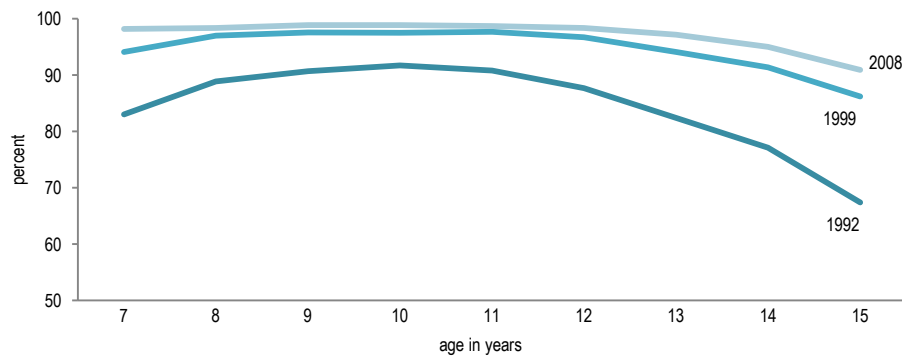


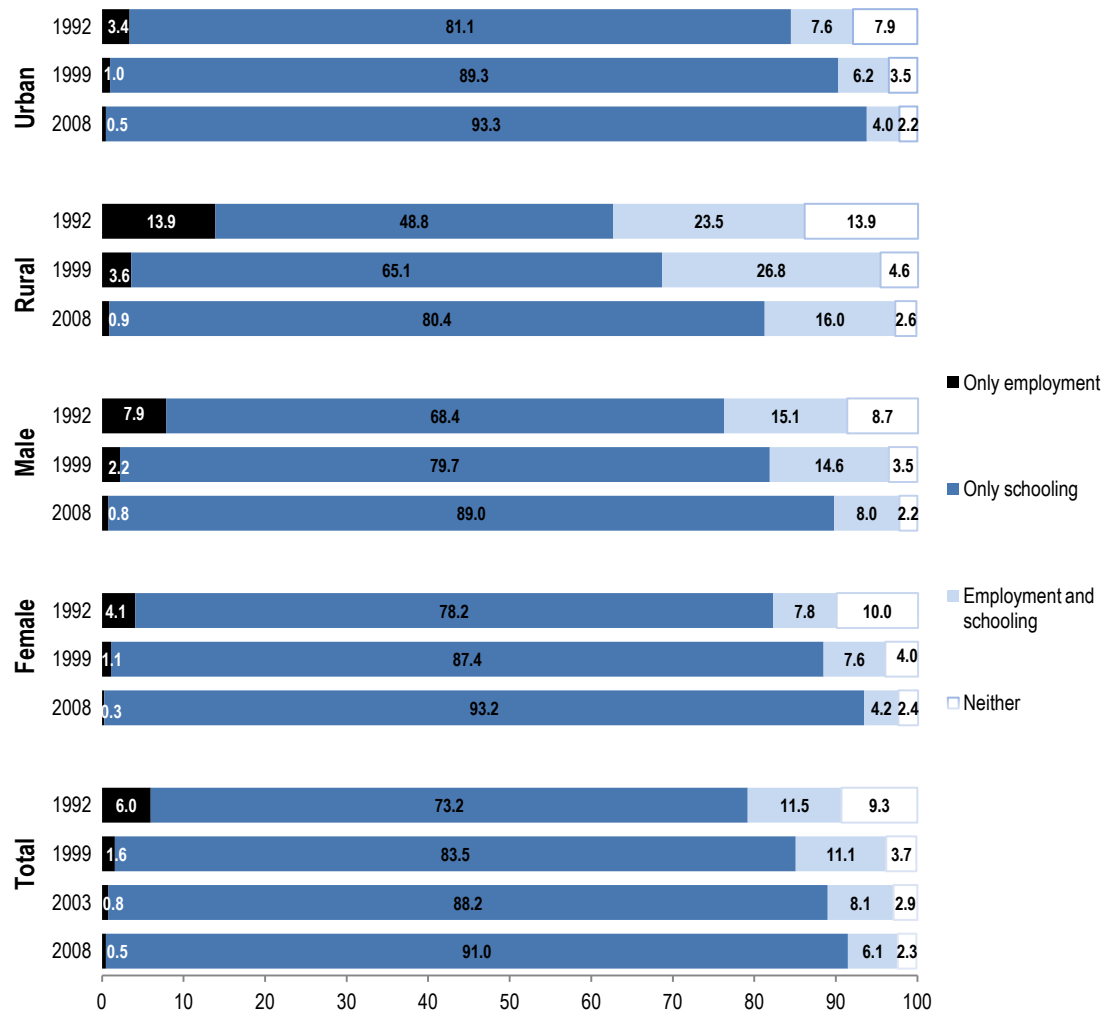
Figure 13. Children's school attendance, by age, by survey year



Source: UCW calculations based on Brazilian PNAD Surveys, 1992, 1999, and 2008

113. Figure 14 indicates that this progress over the 16-year period in terms of both increasing schooling and reducing children's employment in Brazil was broad based. Progress extended to both male and female children, to children living in both rural and urban settings, and to children across all regions. The progress in rural areas has been especially large also in absolute terms. For all categories of children, the rise in school attendance involved not only children leaving (or not entering) employment to go to school, but also the group of children previously "inactive", whose share in the population falls with time.

Figure 14. Children's activity status, 7-15 years age group, by sex and residence



Source: UCW calculations based on Brazil PNAD Survey, 1992, 1999, 2003 and 2008

114. Gender, rural-urban and regional disparities in school attendance were reduced over this period. The overall increase in school attendance was greater for girls than boys. The gender gap in school attendance rates narrowed appreciably during the 1990s and, in 2008, girls' school attendance is found to slightly outpace that of boys. Similarly, over the last 16 years, rural-urban differences in school attendance have been substantially reduced. Changes over the 16 year period have left few urban children in Brazil in employment below the age of 15. However, in rural areas of Brazil, children's involvement in employment remains still high.

115. The reduction in the level of child labour for the 7–15 age group has been associated with a change in the structure of children's employment. (Table 12). The share of employment in agriculture fell considerably, especially in urban areas. This was coupled with an increase, in the fraction

employed in the trade and services sector, while the share of the manufacturing sector has remained almost unchanged. The movement away from agriculture and towards the trade and service sectors has been much larger for girls than for boys (Table 13).

Table 12. Sector of children's employment, by place of residence, by survey year, 7-15 year-olds

	URBAN			RURAL			TOTAL		
	1992	1999	2008	1992	1999	2008	1992	1999	2008
Agriculture	21.3	20.0	12.4	89.5	89.3	86.9	57.1	59.5	45.8
Manufacturing	14.2	12.3	10.9	3.8	2.6	3.5	8.7	6.8	7.6
Trade	28.2	35.7	35.1	2.0	3.3	3.6	14.4	17.3	21.0
Service	14.4	15.9	23.2	1.1	1.6	2.6	7.4	7.7	14.0
Domestic service	16.5	11.0	11.4	2.7	2.4	2.6	9.3	6.1	7.5
Construction	5.0	4.9	6.7	0.5	0.6	0.8	2.6	2.4	4.1
Other*	0.5	0.3	0.2	0.3	0.3	0.1	0.4	0.3	0.1
Total	100	100	100	100	100	100	100	100	100

\*Note: category other includes mining, electricity, gas and water

Source: UCW calculations based on Brazil PNAD Survey, 1992, 1999 and 2008

Table 13. Sector of child economic activity, by sex, by survey year, 7-15 year-olds

	MALE			FEMALE			TOTAL		
	1992	1999	2008	1992	1999	2008	1992	1999	2008
Agriculture	61.5	62.8	51.5	48.4	52.8	34.1	57.1	59.5	45.8
Manufacturing	9.0	7.0	7.3	8.2	6.3	8.2	8.7	6.8	7.6
Trade	15.6	17.3	19.8	12.2	17.2	23.4	14.4	17.3	21.0
Service	8.8	8.6	14.8	4.8	6.0	12.4	7.4	7.7	14.0
Domestic service	1.0	0.5	0.8	25.7	17.2	21.2	9.3	6.1	7.5
Construction	3.8	3.5	5.7	0.3	0.4	0.8	2.6	2.4	4.1
Other*	0.4	0.3	0.2	0.3	0.1	0.0	0.4	0.3	0.1
Total	100	100	100	100	100	100	100	100	100

\*Note: category other includes mining, electricity, gas and water

Source: UCW calculations based on Brazil PNAD Survey, 1992, 1999 and 2008

116. The reduction in children's employment and the increase in school attendance involved households at all income levels. However, the reduction was more intense for relatively poorer households that caught up with their richer counterpart in terms of children's time allocation. It is interesting to note that some convergence occurred over different periods for child work and school attendance. Figure 15 and Figure 16 that plot children's employment and school attendance rate by income deciles clearly illustrates this point. In the case of school attendance, convergence of the poorer household to the richer ones occurred mainly over the 90's, when most of the increase in school attendance took place in the



households belonging to the lower income deciles. The subsequent further increase of the last 9 years was more evenly spread across all income groups. Convergence in children's employment rates across households with different income levels occurred mainly in most recent years. Progress in human capital investment for the relatively poorer households appears to have happened in two different stages: first children were brought into school and later on removed from employment.

Figure 15. Children's employment, by household (with children 7-15 years old), income per capita quintile, by survey year

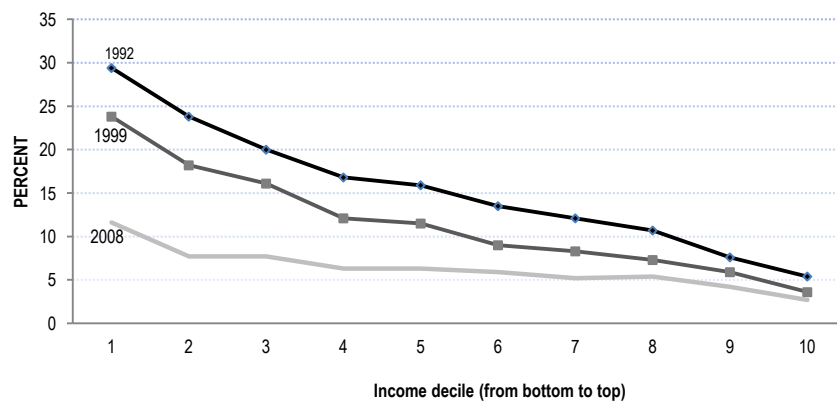
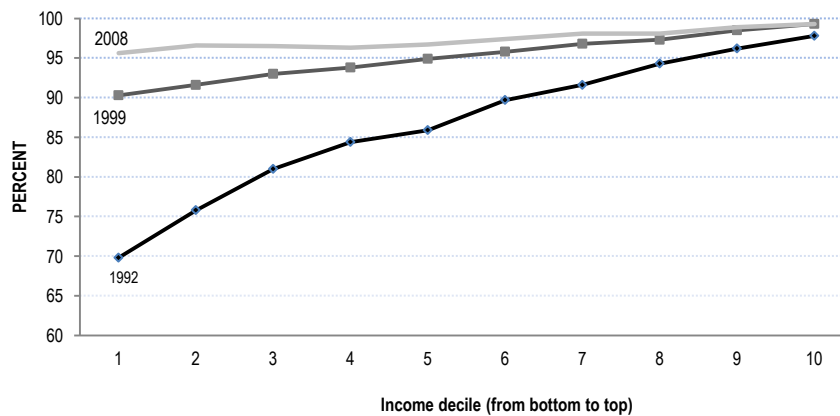


Figure 16. Children's school attendance, by household (with children 7-15 years old) income per capita quintile, by survey year



Source: UCW calculations based on Brazil PNAD Survey, 1992, 1999 and 2008

117. Brazil was characterized by substantial regional differences<sup>10</sup> at the beginning of the period considered, with North-East and South showing significantly higher participation rates and lower enrolment rates of children with respect to the rest of the country. By 2008, school attendance

<sup>10</sup> Note that six states from the Northern region do not include rural observations (see section 4.1).

has converged to similar level across Brazil, with the more backward states filling the gap relative to the rest of the country. While we observe also a non negligible convergence (see below) across states in terms of children's involvement in employment, differences across states are still present with the North-East and the South showing employment rates higher than the rest of the country.

Figure 17. Children's employment, by region, by survey year, 7-15 year-olds

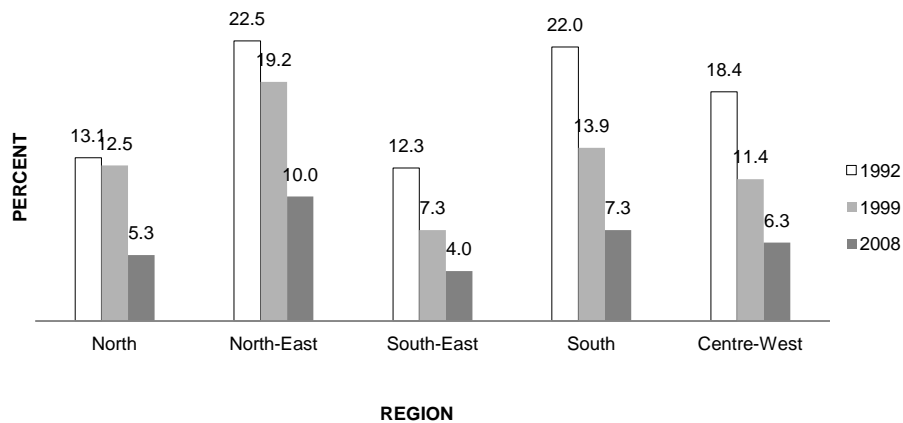
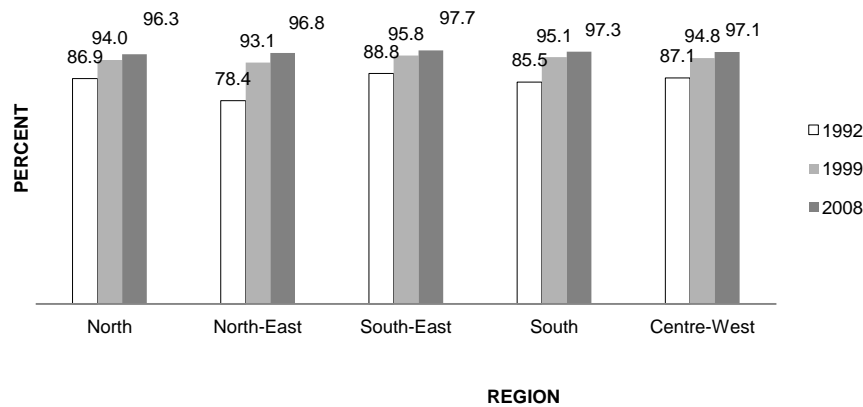


Figure 18. Children's school attendance, by region, by survey year, 7-15 year-olds

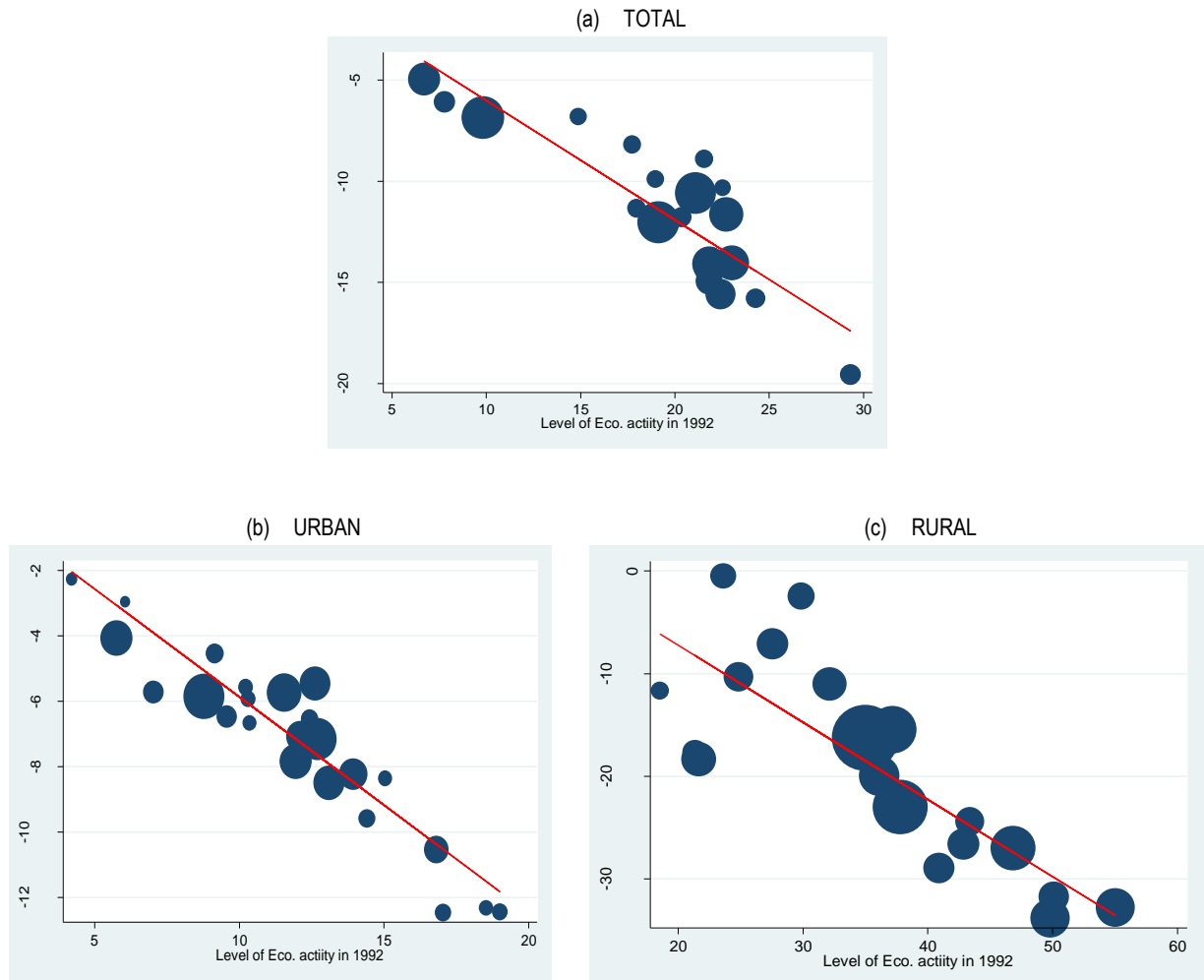


Source: UCW calculations based on Brazil PNAD Survey, 1992, 1999 and 2008

118. Figure 19 illustrates more clearly the extent to which the reduction of children's employment in Brazil has been also characterized by convergence across States. For each State, we plot (along the horizontal axis) the participation rate of 7 to 15 years old to employment in 1992 against the change (on the vertical axis) observed between 1992 and 2008 in the employment rate. If states with higher rates of child employment at the beginning of the period reduced child employment faster than the

others, we should observe a negative relationship between the initial level of child employment and the subsequent reduction. The figures clearly indicate that such process of convergence across States did occur. It was, however, more marked in urban than in rural areas.

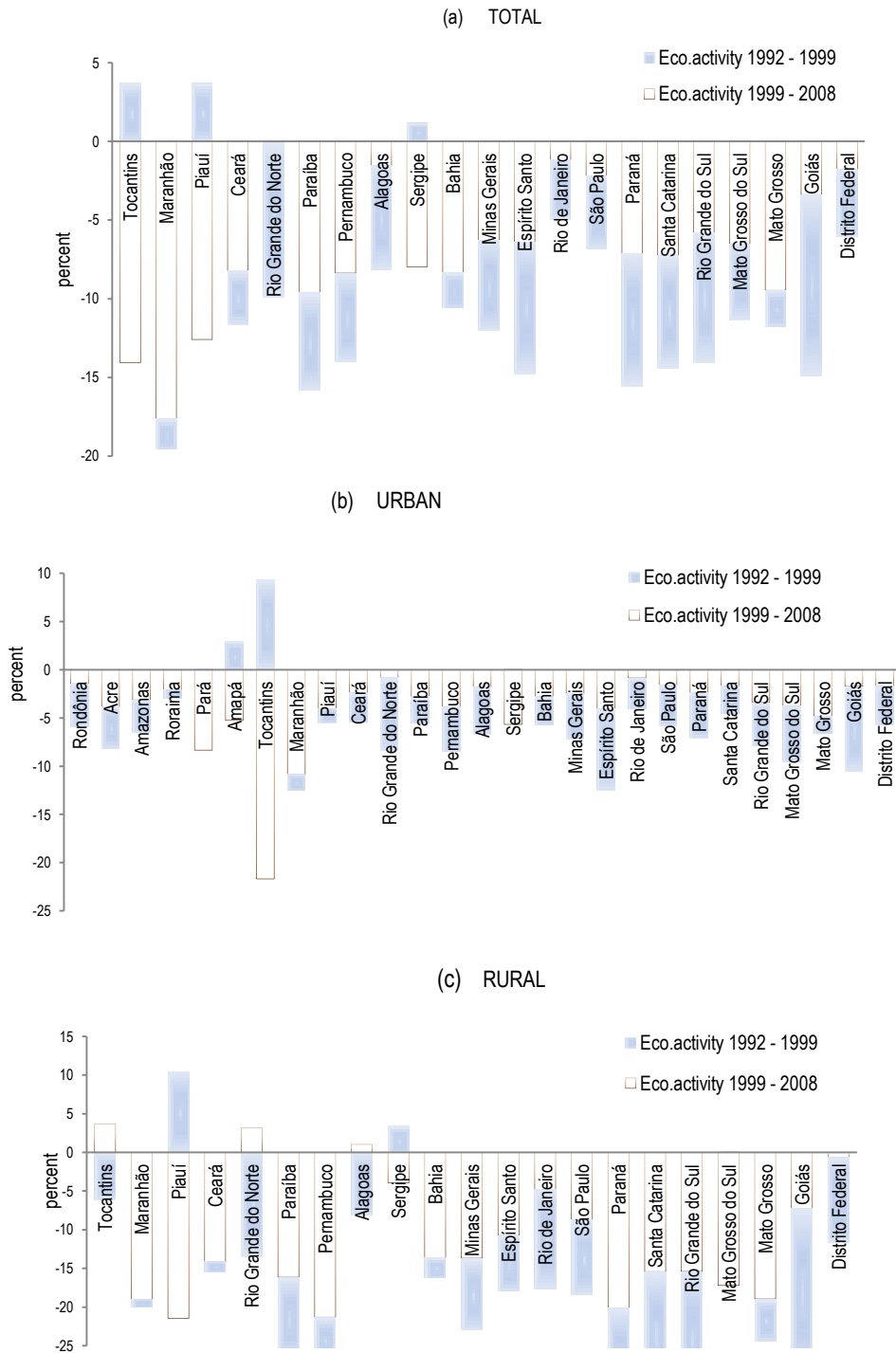
Figure 19. Change in children's employment (7-15 year-olds) during period 1992-2008, by State\*



\*States with larger sample size of 7-15 year-olds are represented by larger spots  
Source: UCW calculations based on Brazil PNAD Survey, 1992, 1999 and 2008

119. The reduction in children's employment did not happen over the same period across the different States. As Figure 20 shows, there are a subset of early mover States where the largest part of the reduction took place in the 90's (e.g. Sao Paulo, Rio, etc.). In several others, the main changes occurred mainly during more recent years.

Figure 20. Change in Children's employment (7-15 year-olds) during periods 1992-1999 and 1999-2008, by State\*



Source: UCW calculations based on Brazil PNAD Survey, 1992, 1999 and 2008

## 6. WHY CHILDREN'S WORK HAS DECLINED: ECONOMETRIC EVIDENCE

120. The previous section has illustrated the recent trend in children's employment and schooling in Brazil. We have seen how children's work has fallen and schooling has risen considerably in Brazil since (at least) the mid-1990s. During the period covered by this study, several strategic interventions in the area of child labour have been implemented at both the federal and state level, while at the same time large programs aimed at increasing school attendance have been put in place (See Section 2). Partly but not exclusively because of such policies and programs, the country social and economic characteristics have also substantially changed: living standards have improved, poverty has fallen, access to basic services has expanded, while new generations of parents have become increasingly more educated (see Table 14).

121. In the rest of this section we attempt to assess the impact on child work of such trends in the economic and of social conditions of the country and some of the government targeted programmes. In particular we focus on changes in the supply of education, changes in living standards and changes in the state of the local labour market.

122. For this purpose we complement data from the PNAD surveys with information on the number of school and teachers by state and year separately for urban and rural areas. These data come from the yearly School Censuses,<sup>11</sup> and refer to regular (i.e. excluding adult and special) basic education (*Educação Básica*). These cover grades 1 to 11, i.e. primary (*Ensino Fundamental*, grades 1 to 8) and middle school (*Ensino Médio*, grades 9-11). We use these data to construct a pupil-teacher ratio by area and time.

123. The evolution of children's employment and school attendance, together with a number of relevant individual, household and community characteristics, is tabulated for 1992 and 2008 for children aged 7-15 years and for the household to which they belong. The data are presented separately for the whole sample and for rural and urban areas (Table 14, Table 15, and Table 16). All data are weighted by sampling weights. Consistently with the evidence in the previous sections, the data show an increase in school attendance on the order of 12 percentage points in 16 years (from 85 percent to 97 percent). This growth is especially large in rural areas, where the increase is of 24 percentage points (compared to 9 percentage points in urban areas). Over the same period, the share of children in employment halves, going from 17 percent in 1992 to 7 percent in 2008. Again, the largest fall (more than 20 percentage points) is observed in rural areas. The probability of combining employment with school is relatively high but declining (going from 11 percent in 1992 to 6

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<sup>11</sup> Data come from the *Sinopses Estatísticas da Educação Básica* for various years. These are available at <http://www.inep.gov.br/basica/censo/Escolar/Sinopse/sinopse.asp>.

percent in 2008), while the proportion of children in employment only (i.e. not in combination with school) is relatively low (6.0 percent in 1992) and also declining (0.5 percent in 2008).

124. There are no appreciable differences across years in children's sex ratio, which appears balanced. In line with the fall in fertility that typically accompanies development, household size falls (from 6 to 5). The ethnic composition of households with children changes slightly with a reduction of the fraction of whites and an increase in that of mixed race. The share of children with access to basic services, such as access to piped water, increases from 71 percent to 90 percent. The level of education of the head of household increases over the period of analysis. The proportion of households headed by individuals with no education decreases from 28 percent to 16 percent, while that of households headed by individuals with secondary and higher education rises (respectively from 9 percent to 15 percent and from 13 percent to 26 percent).

125. As characteristics that are typically associated with children's employment become less frequent in the population as time goes on, one would expect children's work to fall. For example, if children of more educated parents are less likely to be involved in work, a secular increase in parental education should - everything else being equal - lead to a fall in children's work. In the next section we provide a formal procedure to assess the contribution of changes in such observable characteristics to the fall in children's work.

126. Other than potentially due to varying composition of the population, observed changes in children's time use in Brazil can be due directly to policy interventions and to macroeconomic trends. Living standards have improved substantially in Brazil: real per capita income has increased by about 30 percent over the 16 years of analysis while income inequality has declined steadily. The share of children belonging to extreme poor households (i.e., earning less than 1.25 USD per day) has declined from 24 percent to 9 percent in the period considered, while that of children belonging to moderately poor households (i.e., earning between 1.25 USD and 2 USD per day) declined from 15 percent to 11 percent.<sup>12</sup> The Gini coefficient, one of the most used inequality measures, declined from 0.57 in 1992 to 0.54 in 2008 (Table 14). As mentioned, improvements in the quality of schooling are likely to increase the incentives for school enrolment and possibly decrease the incentives for children's work. In addition, as also discussed above, the government of Brazil actively has pursued policies aimed at increasing school attendance and reducing children's work. Between 1992 and 2006, the last year when these data are available, the pupil teacher ratio falls by 10 percent (from 21.6 to 19.6 children per teacher) despite a remarkable rise in enrolment. The table

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<sup>12</sup> Following The World Bank recent estimates of poverty, we use the international poverty lines of \$ 1.25 per day per for "extreme" poverty and of \$2.00 for moderate poverty at 2005 Purchasing Power Parity (PPP). For more details see Himanshu (2009).

finally presents information on the adult (ages 25-55) local open unemployment rate as derived from the PNAD that in the rest we take as a measure of local labour demand. The unemployment rate is slightly higher (at 5.1 percent) in 2008 compared to 1992 (4.6 percent).

127. In the next sub-section we start by presenting an initial analysis of the role of changes in children's and their households' characteristics in explaining trends in child work. These characteristics, defined above, change slowly over time and are less likely to be influenced by direct policy action. Nonetheless, they are potentially relevant in explaining the trend in children's work and other dimensions of children's activities. We employ a simple reweighting approach that allows us to build a counterfactual intensity of children's work in 1992 assuming that the distribution of household and children characteristics is the one that prevailed in 2008. In this way can determine what fraction of the observed changes in child work between 1992 and 2008 can be attributed to changes in individual characteristics.

128. In the subsequent section we complement this initial descriptive analysis with a regression approach that exploits the variation over time and states districts to identify the impact of changes in living standards, local labour market conditions and other policy variables on children's work and school attendance.

Table 14. Children's time use and characteristics: Brazil, 1992, 2006 and 2008, children aged 7-15 years old

	1992	2006	2008
School attendance	84.7	96.9	97.1
Child Work	17.5	8.1	6.6
Work exclusively	6.0	0.8	0.5
Study exclusively	73.2	89.6	91.0
School and work	11.5	7.3	6.1
Idleness	9.3	2.3	2.3
Percent in Agriculture	57.1	51.2	45.8
Percent in Manufacturing	8.7	8.0	7.6
Percent in Service & Trade	21.9	31.6	35.0
Percent in Domestic Service	9.3	6.6	7.5
Percent in Construction, Mining, Electr, Gas & Water	3.0	2.7	4.2
Age	10.9	11.0	11.1
Female	0.49	0.49	0.49
Race=			
Indigenous	0.1	0.2	0.3
White	49.3	45.1	43.7
Black	4.9	6.1	5.6
Yellow	0.3	0.4	0.4
Mixed	45.5	48.3	50.1
HH size	5.9	5.0	4.9
Number of 0-4 year-olds in the household	0.5	0.3	0.3
Number of 5-14 year-olds in the household	2.4	1.9	1.8
P.c. Income* (2005 Rp.)	235	308	323
Piped water	0.71	0.88	0.90
Household head education =			
No education	27.9	17.0	16.0
Primary	50.4	46.1	42.1
Secondary	8.6	13.7	15.4
Higher	13.2	23.2	26.5
Gini index	0.57	0.55	0.54
Adult unemployment rate	0.046	0.059	0.051
Pupil-teacher ratio	21.6	19.6	-
Poverty 1 (share of children with household income per capita <\$1.25 per day)	0.24	0.12	0.09
Poverty2 (share of children with household income per capita between \$1.25 and \$2 per day)	0.15	0.12	0.11
Observations	66,270	67,460	62,586

\*Note: Children's labour income is dropped from the household income.

The PNAD survey for the year 1992 does not include rural observations for 6 states from the North region. In order to provide consistent decomposition results, rural observations for those states were dropped for the year 2008.

Source: UCW calculations based on Brazil PNAD Survey, 1992, 2006 and 2008



Table 15. Children's time use and characteristics: Brazil, 1992, 2006 and 2008, children aged 7-15 years old, URBAN AREAS

	1992	2006	2008	
School attendance	88.7	97.2	97.3	
Child Work	11.0	5.2	4.5	
Work exclusively	3.4	0.6	0.5	
Study exclusively	81.1	92.6	93.3	
School and work	7.6	4.6	4.0	
Idleness	7.9	2.2	2.2	
Percent in Agriculture	21.3	17.5	12.4	
Percent in Manufacturing	14.2	11.8	10.9	
Percent in Service & Trade	42.6	55.7	58.4	
Percent in Domestic Service	16.5	10.4	11.4	
Percent in Construction, Mining, Electr, Gas & Water	5.4	4.6	7.0	
Age	11.0	11.0	11.1	
Female	0.50	1.49	0.49	
Race=				
	Indigenous	0.1	0.2	0.2
	White	52.5	46.9	45.1
	Black	4.8	6.4	5.8
	Yellow	0.3	0.4	0.5
	Mixed	42.2	46.1	48.5
HH size	5.6	4.9	4.7	
Number of 0-4 year-olds in the household	0.4	0.3	0.3	
Number of 5-14 year-olds in the household	2.3	1.8	1.8	
P.c. Income* (2005 Rp.)	278	344	359	
Piped water	0.84	0.95	0.96	
Household head education =				
	No education	20.4	12.5	12.3
	Primary	52.0	44.7	39.9
	Secondary	10.8	15.5	17.2
	Higher	16.8	27.3	30.6
Gini index	0.57	0.55	0.53	
Adult unemployment rate	0.057	0.067	0.058	
Pupil-teacher ratio	21.6	19.5	-	
Poverty 1 (share of children with household income per capita <\$1.25 per day)	0.17	0.08	0.07	
Poverty2 (share of children with household income per capita between \$1.25 and \$2 per day)	0.14	0.10	0.09	
Observations	52,060	56,646	52,633	

\*\*Note: Children's labour income is dropped from the household income.

The PNAD survey for the year 1992 does not include rural observations for 6 states from the North region. In order to provide consistent decomposition results, rural observations for those states were dropped for the years 2006 and 2008.

Source: UCW calculations based on Brazil PNAD Survey, 1992, 2006 and 2008

Table 16. Children's time use and characteristics: Brazil, 1992, 2006 and 2008, children aged 7-15 years old, RURAL AREAS

	1992	2006	2008
School attendance	72.3	95.1	96.4
Child Work	37.4	21.7	16.9
Work exclusively	13.9	1.8	0.9
Study exclusively	48.8	75.2	80.4
School and work	23.5	19.9	16.0
Idleness	13.9	3.1	2.6
Percent in Agriculture	89.5	88.3	86.9
Percent in Manufacturing	3.8	3.7	3.5
Percent in Service & Trade	3.2	5.0	6.2
Percent in Domestic Service	2.7	2.3	2.6
Percent in Construction, Mining, Electr, Gas & Water	0.8	0.7	0.8
Age	10.9	11.1	11.1
Female	0.48	0.49	0.49
Race=			
Indigenous	0.2	0.3	0.7
White	39.1	36.5	37.1
Black	5.2	4.7	4.8
Yellow	0.1	0.2	0.2
Mixed	55.5	58.3	57.2
HH size	6.6	5.6	5.4
Number of 0-4 year-olds in the household	0.6	0.4	0.4
Number of 5-14 year-olds in the household	2.8	2.2	2.1
P.c. Income* (2005 Rp.)	98	141	158
Piped water	0.32	0.56	0.62
Household head education =			
No education	51.0	38.1	33.5
Primary	45.2	52.5	52.0
Secondary	1.8	5.5	6.9
Higher	2.0	4.0	7.6
Gini index	0.58	0.56	0.55
Adult unemployment rate	0.011	0.021	0.020
Pupil-teacher ratio	21.7	20.1	-
Poverty 1 (share of children with household income per capita <\$1.25 per day)	0.46	0.28	0.22
Poverty2 (share of children with household income per capita between \$1.25 and \$2 per day)	0.18	0.20	0.21
Observations	14,210	10,814	9,953

\*Note: Children's labour income is dropped from the household income.

The PNAD survey for the year 1992 does not include rural observations for 6 states from the North region. In order to provide consistent decomposition results, rural observations for those states were dropped for the years 2006 and 2008.

Source: UCW calculations based on Brazil PNAD Survey, 1992, 2006 and 2008

## 6.1 Changes in observed characteristics: a decomposition analysis

129. In this section we start by illustrating how compositional changes in the population of households and individuals contribute to explain trends in children's time use over the 16 years of observation.

130. Ex-ante, it is difficult to predict the role of changing household and children's characteristics in explaining the trends in children's work and schooling. On the one hand, improvements in parental education, say, should imply a fall in children's work. Children of more educated parents are typically less likely to work. On the other hand, say, the observed fall in the proportion of white children might have acted to counteract this effect: if white children are less likely to be involved in work and more likely to attend school, everything else being equal, this should have led to an increase in children's work. Similarly, the modest rise in average children's age (from 11 to 11.1) should also predict a modest rise in child labour.

131. To ascertain the role of these opposing changes, we use a slightly modified version of the approach proposed by DiNardo et al. (1996). This is in turn a simple semi-parametric variation of the Oaxaca decomposition. We present the methodology in the technical appendix. As mentioned, following this approach we try to assess what the incidence of children's work would have been in 1992 if the distribution of characteristics had been the one observed in 2008. The difference between the actual distribution of children's work in 1992 and this "counterfactual" distribution provides an estimate of the actual difference in children's work between 1992 and 2008 that can be attributed to compositional changes. The residual variation, i.e. the difference between children's work incidence in 2008 and this counterfactual distribution provides an estimate of the variation in children's work that is due to both unobserved compositional changes and to the varying intensity of children's work among the groups defined based on observables. In words, if the fall in children's work is due - say - to increased living standards or simply to the fact that parents with any given level of education are less likely to send their children to work, this variation will be attributed to the residual term.

132. Tables 17 and 18 report, respectively, the actual and counterfactual level of children's work and school attendance in 1992 across the five regions that compose Brazil and for the country as a whole. Tables 19 and 20 provide separate information by State. We present separate counterfactuals in turn keeping fixed different individual and household attributes. Column 1 presents the actual 1992 data. Column 2 assumes fixed child characteristics, column 3 assumes fixed household characteristics, while column 4 assumes fixed residential location. Finally we compute a counterfactual distribution assuming all these characteristics are simultaneously fixed at their 2008 level (column 5).

133. Column 1 of Table 17 shows the actual level of children's work in 1992: this illustrates substantial heterogeneity in the incidence of children's

work across the different areas of Brazil. Table 19 shows in particular an incidence of children's work in 1992 that varies from as low as 6.1 percent in the State of Roraima to 29 percent in Maranhao.<sup>13</sup> Column 6 of Table 17 reports the incidence of children's work in 2008. This - as said - is on average 7 percent. One can observe a generalized fall in children's work across all regions.

134. Column 2 of Table 17 reports the counterfactual distribution of children's work in 1992 assuming that the demographic characteristics of children were the ones observed in 2008. In practice we control for children's age, sex and ethnicity. Column 2 shows that if the age, gender and ethnic distribution in 1992 had been the one that was later observed in 2008, children's work would have been slightly higher (18.3 percent as opposed to 17.4 percent). This is true across all areas. This should be no surprise since, as seen in Table 14, the proportion of non-white children increases over time, implying that, everything else being equal, children's work would have risen.

135. Column 3 looks at the role of household characteristics and controls for the following variables: household size, number of children aged 0-4 and 5-14 in the household and head of household education. Interestingly, we find quite a significant negative effect of household characteristics on the incidence of children's work. In practice, the increase in parental education among children in Brazil and to a lesser extent the reduction in family size observed between 1992 and 2008 generate a reduction of about 3.7 percentage points in the incidence of child work, as rural children are on average more likely to work than urban children (compare columns 1 and 3).

136. Column 4 reports changes in the distribution of children's work between 1992 and 2008 that can be attributed to changes in the residential location of households. Increased urbanization accounts for a reduction in child work of about 1.75 percentage points (compare columns 1 and 4).

137. In column 5, where we control simultaneously for all the covariates in columns 2 to 4, we find that the counterfactual distribution of children's work is 3.1 percentage points lower than the original one. A comparison of column 6, where the actual change in child work between 1992 and 2008 is reported, and column 7, where the change due to differences in observed characteristics is reported, shows that combined effect of all compositional effects - such as the varying socio-demographic characteristics of children and movements between rural and urban areas - explains about one third of the observed fall in child work.

138. Table 18 reproduces the same exercise for schooling, and Table 20 provides separate information by State. Again we find that changes in household characteristics and residential location explain a substantial

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<sup>13</sup> We ignore the Northern States due to the fact that information for these States only refers to urban areas.

fraction of the change in school enrolment between 1992 and 2008. Compositional changes account for around one fourth (3.2 percentage points) of the 12 percentage point increase in enrolment observed over the 16 years considered.

139. In sum, the characteristics of the population in Brazil have been changing relatively rapidly since the beginning of the 1990s, and we find evidence that these changes have played a substantial role in explaining the fall in children's work and the rise in schooling that we observe between 1992 and 2008. However, about two thirds of the observed change in children's work involvement cannot be explained by compositional changes in the population. We turn now to identify the role of additional micro and macro-level economic variables.

Table 17. Decomposing changes in child work between 1992 and 2008, children aged 7-15 years old

State	(1)	(2)	(3)	(4)	(5)	(6)	(6)-(1)	(5)-(1)
	1992					2008		
	Actual	Children's characteristics* in 2008	Households characteristics** in 2008	Residential location in 2008	All characteristics in 2008	Actual	Actual difference	Explained difference
North	13.1	13.8	11.4	12.6	11.1	5.3	-7.8	-2.0
North - East	22.5	23.2	18.4	20.2	18.2	10.0	-12.5	-4.3
South - East	12.3	13.0	9.8	11.5	10.2	4.0	-8.3	-2.1
South	22.0	22.9	17.9	19.0	17.7	7.3	-14.7	-4.3
Centre-West	18.4	19.4	15.9	16.9	16.4	6.3	-12.1	-2.0
<b>Total</b>	<b>17.5</b>	<b>18.3</b>	<b>13.8</b>	<b>15.8</b>	<b>14.4</b>	<b>6.7</b>	<b>-10.8</b>	<b>-3.1</b>

The table provides estimates of the role of compositional changes in explaining the change in child work incidence between 1992 and 2008.

\*Children's characteristics include sex, age and ethnicity of a child.

\*\*Household characteristics include education level of the household head, household size, number of siblings aged 0-4 and 5-14 years.

The PNAD survey for the year 1992 does not include rural observations for 6 states from the North region. In order to provide consistent decomposition results, rural observations for those states were dropped for the year 2008.

Table 18. Decomposing changes in school enrolment between 1992 and 2008, children aged 7-15 years old

	(1)	(2)	(3)	(4)	(5)	(6)	(6)-(1)	(5)-(1)
	1992					2008		
State	Actual	Children's characteristics* in 2008	Households characteristics ** in 2008	Residential location in 2008	All characteristics in 2008	Actual	Actual difference	Explained difference
North	86.9	86.4	89.7	87.4	89.7	96.3	9.4	2.8
North - East	78.4	77.9	82.7	79.8	83.0	96.8	18.4	4.6
South - East	88.8	88.1	91.8	89.4	91.5	97.7	8.9	2.7
South	85.5	84.7	88.8	86.4	88.7	97.3	11.8	3.2
Centre-West	87.1	86.4	89.2	88.1	88.9	97.1	10.0	1.8
<b>Total</b>	<b>84.7</b>	<b>83.9</b>	<b>88.7</b>	<b>85.7</b>	<b>87.9</b>	<b>97.2</b>	<b>12.5</b>	<b>3.2</b>

The table provides estimates of the role of compositional changes in explaining the change in school enrolment between 1992 and 2008.

\*Children's characteristics include sex, age and ethnicity of a child.

\*\*Household characteristics include education level of the household head, household size, number of siblings aged 0-4 and 5-14 years.

The PNAD survey for the year 1992 does not include rural observations for 6 states from the North region. In order to provide consistent decomposition results, rural observations for those states were dropped for the year 2008.

Table 19. Decomposing changes in child work between 1992 and 2008, children aged 7-15 years old

		(1)	(2)	(3)	(4)	(5)	(6)	(6)-(1)	(5)-(1)
		1992					2008		
State		Actual	Children's characteristics* in 2008	Households characteristics** in 2008	Residential location in 2008	All characteristics in 2008	Actual	Actual difference	Explained difference
North	Rondônia	10.3	11.1	9.6	10.3	9.4	4.4	-5.9	-0.9
	Acre	13.1	14.2	12.5	13.1	13.9	4.9	-8.2	0.8
	Amazonas	9.6	9.9	8.4	9.6	8.4	3.1	-6.5	-1.2
	Roraima	6.1	6.6	5.9	6.1	5.4	3.1	-3.0	-0.7
	Pará	13.9	14.6	11.9	13.9	12.0	5.7	-8.2	-1.9
	Amapá	4.2	4.6	1.6	4.2	1.5	1.9	-2.3	-2.7
	Tocantins	22.5	23.3	21.9	21.5	21.7	12.2	-10.3	-0.8
North-East	Maranhão	29.3	30.1	25.0	27.5	24.3	9.8	-19.5	-5.0
	Piauí	21.5	22.5	18.2	19.5	18.3	12.7	-8.8	-3.2
	Ceará	22.7	23.7	18.7	20.3	18.8	11.1	-11.6	-3.9
	Rio Grande do Norte	19.0	20.0	14.8	18.0	14.9	9.1	-9.9	-4.1
	Paraíba	24.3	25.1	19.8	21.2	19.8	8.5	-15.8	-4.5
	Pernambuco	23.0	23.6	18.3	20.3	17.7	9.0	-14.0	-5.3
	Alagoas	17.7	18.6	13.9	16.0	13.7	9.6	-8.1	-4.0
	Sergipe	14.9	15.5	12.7	13.7	12.4	8.1	-6.8	-2.5
Bahia	21.1	21.8	17.5	18.8	16.9	10.5	-10.6	-4.2	
South-East	Minas Gerais	19.1	19.9	15.7	17.3	15.6	7.1	-12.0	-3.5
	Espírito Santo	21.7	22.8	18.3	20.4	18.6	6.9	-14.8	-3.1
	Rio de Janeiro	6.7	7.2	5.3	6.4	5.5	1.8	-4.9	-1.2
	São Paulo	9.8	10.4	8.5	9.5	8.5	2.9	-6.9	-1.3
South	Paraná	22.4	23.6	18.5	19.5	18.8	6.8	-15.6	-3.6
	Santa Catarina	21.6	22.5	16.5	18.2	16.1	7.2	-14.4	-5.5
	Rio Grande do Sul	21.8	22.3	18.0	19.0	17.5	7.8	-14.0	-4.3
Centre-West	Mato Grosso do Sul	18.0	19.7	15.3	16.9	16.4	6.6	-11.4	-1.6
	Mato Grosso	20.4	21.1	18.1	18.1	17.7	8.6	-11.8	-2.7
	Goiás	21.8	22.9	19.6	20.3	20.0	6.9	-14.9	-1.8
	Distrito Federal	7.8	8.3	6.3	7.5	6.6	1.7	-6.1	-1.2
<b>Total</b>	<b>17.5</b>	<b>18.3</b>	<b>13.8</b>	<b>15.8</b>	<b>14.4</b>	<b>6.7</b>	<b>-10.8</b>	<b>-3.1</b>	

The table provides estimates of the role of compositional changes in explaining the change in school enrolment between 1992 and 2008.

\*Children's characteristics include sex, age and ethnicity of a child.

\*\*Household characteristics include education level of the household head, household size, number of siblings aged 0-4 and 5-14 years.

The PNAD survey for the year 1992 does not include rural observations for 6 states from the North region. In order to provide consistent decomposition results, rural observations for those states were dropped for the year 2008.



Table 20. Decomposing changes in school enrolment between 1992 and 2008, children aged 7-15 years old

		(1)	(2)	(3)	(4)	(5)	(6)	(6)-(1)	(5)-(1)
		1992					2008		
State		Actual	Children's characteristics* in 2008	Households characteristics** in 2008	Residential location in 2008	All characteristics in 2008	Actual	Actual difference	Explained difference
North	Rondônia	89.6	89.2	92.1	89.6	92.6	95.5	5.9	3.0
	Acre	88.0	87.4	91.1	88.0	91.1	96.6	8.6	3.1
	Amazonas	88.7	88.0	90.9	88.7	90.2	96.5	7.8	1.5
	Roraima	92.0	91.6	93.8	92.0	94.3	97.8	5.8	2.3
	Pará	86.8	86.4	88.9	86.8	89.0	95.8	9.0	2.2
	Amapá	95.0	94.9	96.9	95.0	97.3	97.5	2.5	2.3
	Tocantins	78.6	78.1	83.4	79.8	83.1	97.5	18.9	4.5
North-East	Maranhão	76.4	76.0	79.5	77.8	80.0	97.6	21.2	3.6
	Piauí	75.0	74.6	79.9	76.4	81.1	97.4	22.4	6.1
	Ceará	79.2	78.6	83.0	80.7	82.9	96.7	17.5	3.7
	Rio Grande do Norte	79.2	78.2	83.7	80.3	82.9	96.1	16.9	3.7
	Paraíba	79.8	79.2	82.9	81.2	82.8	96.4	16.6	3.0
	Pernambuco	79.0	78.6	84.4	80.0	85.0	96.1	17.1	6.0
	Alagoas	69.4	68.6	78.1	72.2	78.3	94.9	25.5	8.9
	Sergipe	85.0	84.4	86.2	86.1	85.9	97.6	12.6	0.9
Bahia	79.8	79.5	83.9	81.3	84.6	97.3	17.5	4.8	
South-East	Minas Gerais	84.7	83.9	88.3	86.0	88.4	97.4	12.7	3.7
	Espírito Santo	85.5	84.9	88.8	87.1	89.0	97.4	11.9	3.5
	Rio de Janeiro	90.1	89.5	92.8	90.4	92.7	97.7	7.6	2.6
	São Paulo	90.9	90.3	93.2	91.1	92.8	97.8	6.9	1.9
South	Paraná	83.3	82.4	87.0	84.2	86.8	96.9	13.6	3.5
	Santa Catarina	85.9	85.0	88.9	87.0	88.9	96.8	10.9	3.0
	Rio Grande do Sul	87.7	87.0	90.4	88.5	90.5	98.0	10.3	2.8
Centre-West	Mato Grosso do Sul	85.3	84.0	87.2	86.5	86.2	97.7	12.4	0.9
	Mato Grosso	84.8	84.3	87.0	86.0	87.3	96.5	11.7	2.5
	Goiás	86.8	86.1	88.6	87.7	88.4	96.9	10.1	1.6
	Distrito Federal	93.3	92.9	94.7	93.3	94.7	98.0	4.7	1.4
<b>Total</b>		<b>84.7</b>	<b>83.9</b>	<b>88.7</b>	<b>85.7</b>	<b>87.9</b>	<b>97.2</b>	<b>12.5</b>	<b>3.2</b>

The table provides estimates of the role of compositional changes in explaining the change in school enrolment between 1992 and 2008.

\*Children's characteristics include sex, age and ethnicity of a child.

\*\*Household characteristics include education level of the household head, household size, number of siblings aged 0-4 and 5-14 years.

The PNAD survey for the year 1992 does not include rural observations for 6 states from the North region. In order to provide consistent decomposition results, rural observations for those states were dropped for the year 2008.

## 6.2 Impact of microeconomic and macroeconomic variables: a regression analysis

140. In this section we turn to consider the effects of changes in living standards, income distribution, school quality and labour market conditions on the trends in children's time use. The analysis is not exhaustive of all the factors that affect children's work and schooling since the set of factors we are able to consider here is limited by the available data.

141. In order to capture the effect of the variables of interest on children's activities, we carry out a regression analysis that exploits variation over time and across states for identification. Let  $y_{ist}$  be the outcome variable (children's work or schooling in different combinations) for child  $i$  in state  $s$  at time  $t$ .

142. In order to take into account the impact of changing living standards we consider two measures of household income poverty (excluding children's labour income, if any). *Poverty1* and *Poverty2* are dummy variables taking, respectively, the value of 1 if the household is in "extreme" or "moderate" poverty. We also introduce a variable measuring the share of households below the "extreme" poverty line by state and year, *Poor*, to proxy for any pro-poor growth. The Gini index of income inequality by year and State, *Gini*, controls for changes in the distribution of income over and above changes in the incidence of poverty. As a measure of the adult labour market stance we use the unemployment rate by State and year  $\underline{U}$ . Finally as a proxy for school quality we employ, *PTR*, the pupil teacher ratio.

143. In all specifications we also include individual and households control variables ( $X$ ) listed in Tables 14-16. We have seen that these variables explain a non-negligible share of the trends in children's work and school enrolment. If they are correlated with changes in living standards or other macroeconomic and policy variables, ignoring them will lead to biased regression estimates of the effects of interest. Moreover, by examining the coefficients associated with them we will also be able to assess the magnitude of their impact on child work.

144. We can then write our regression model as:

$$(5) \quad y_{ist} = \beta_1 + \beta_2 PTR_{st} + \beta_3 U_{st} + \beta_4 Poverty1_{ist} + \beta_5 Poverty2_{ist} + \beta_6 Poor_{st} + \\ + \beta_7 Gini_{st} + X_{ist}' \gamma + f_t + f_s + u_{its}$$

where  $u$  is an error term. Model (5) includes time fixed effects ( $f_t$ ) and State fixed effects ( $f_s$ ). State fixed effects capture permanent differences in the incidence of children's work and school enrolment across the 23 States of

Brazil, while time fixed effects capture generalized trends in school attendance and children's work that are common across states.

145. The model allows us estimate how much of any differential time-variation across states in children's work intensity can be attributed to any of the variables on the right hand side.

146. We report separate estimates for the probability that a child works and for the probability that a child attends school (Table 21). The estimates refer to the age group 7 to 15 and are carried out on the period 1992-2006 because, as said, data on the pupil teacher ratio are not available in the last two years of observation.

147. The top panel in Table 21 shows the effect of children's and household characteristics on the probability of working and on that of attending school. We have discussed the overall role of these variables in explaining the change in child work and school attendance in the previous section, we now briefly describe their individual impact.

148. Girls are less likely to work and more likely to be in school than boys (respectively -7 percentage point and +1 percentage point). Children in rural areas are more likely to be working and less likely to be attending school with respect to their urban counterparts. Even conditioning on other covariates - among which household poverty - there are pronounced differences across ethnic groups in time use, with indigenous children (the omitted group) displaying the highest probability of work and the lowest probability of school attendance (respectively 4 percentage points higher and 4 percentage points lower than white children).

149. Household characteristics also seem to matter. Larger household size is associated to a higher propensity to work, although point estimates are very small in magnitude. The second and third rows of the second panel report the effect of changes in the number of children aged 0-4 and 5-14. Because the regressions also include household size, essentially the coefficients on these variables pick up changes in the number of children at fixed number of adults. An additional child in the age group 0-4 only modestly increases the probability of working but it reduces the probability of attending school by 2 percentage points. This might be due to older siblings having to take care of their younger siblings and hence being unable to attend school, a mechanism that is more likely to affect girls. Parental education is a remarkably strong predictor of children's time use, even at fixed household income, with higher parental education being associated to a lower probability of work and a rise in school attendance. Children in households headed by university graduates display a 6 percentage points lower probability of work and a 7 percentage points higher probability of school compared to children in households headed by an adult with less than completed primary education.

150. Poverty seems to significantly affect children's time use: a child belonging to household in extreme poverty sees an increase of 2.3

percentage points in the probability of working and a decrease of 3.3 in that of attending school. Given the average level of work and school attendance over the period considered, this implies a fall of about 20 percent in the probability of working and an increase of about 5 percent in the probability of attending school. Belonging to a household “moderately” poor has a significant, but smaller impact on the probability of attending school and especially of working. Also, the average number of the extreme poor by state and area has an impact on children’s time allocation with the expected sign. This is likely to proxy for the overall level of economic development in that State, increasing decent work opportunities and the effect of poverty alleviation policies.

151. Rather interesting, access to piped water is a relevant predictor of children’s time use, being associated with a higher (5 percentage points) probability of school and a lower (- 5 percentage points) probability of work. As emphasized above, this large effect might be due to the genuine effect of water access, as water fetching is often a time consuming activity delegated to children or most likely the fact that this variable proxies for the household socio-economic status.

152. Local labour demand and the state of the economic cycle also affect children’s time use. The unemployment rate has a significant impact on school attendance: an increase of 1 point in the unemployment rate reduces school attendance by just less than 1 percentage point. However, it does not appear to have a significant impact on child work.

153. Increases in the pupil teacher ratio on children’s time use have very small effects and not always in line with their expected sign.

Table 21. Determinants of children's activity, 7-15 year-olds

Explanatory variables		Work		School	
		Coeff.	T	Coeff.	T
<i>Child age, sex and race</i>	Age	-0.0451	-34.0	0.1007	83.5
	Age^2	0.0035	55.0	-0.0051	-90.8
	Female	-0.0729	-103.2	0.0094	16.1
	White	-0.0397	-3.8	0.0399	4.3
	Black	-0.0537	-5.1	0.0205	2.2
	Yellow	-0.0447	-3.8	0.0510	5.1
	Mixed	-0.0452	-4.4	0.0318	3.4
<i>Household characteristics</i>	Household size	0.0015	4.9	0.0001	0.3
	Siblings 0-4	0.0016	2.3	-0.0248	-37.2
	Siblings 5-14	0.0066	13.4	-0.0002	-0.4
	Extreme poor	0.0229	17.6	-0.0332	-29.1
	Moderate poor	0.0039	3.3	-0.0192	-18.9
	Pipe water	-0.0480	-33.1	0.0522	39.8
<i>Education of household head</i>	Primary	-0.0201	-17.5	0.0404	40.1
	Secondary	-0.0390	-29.0	0.0576	51.6
	Higher	-0.0560	-45.2	0.0660	64.1
<i>Place of residence and year dummy</i>	Rural	0.1471	50.5	-0.0394	-17.5
	Year 1993	-0.0065	-3.3	0.0119	6.2
	Year 1995	-0.0027	-1.3	0.0261	13.6
	Year 1998	-0.0413	-19.5	0.0752	39.8
	Year 1999	-0.0387	-17.8	0.0932	50.0
	Year 2001	-0.0460	-23.1	0.1016	58.7
	Year 2002	-0.0437	-22.5	0.1040	61.9
	Year 2003	-0.0520	-25.8	0.1136	65.0
	Year 2004	-0.0498	-25.1	0.1043	59.1
	Year 2005	-0.0419	-19.8	0.1076	58.3
	Year 2006	-0.0426	-19.4	0.1036	53.7
<i>State indicators</i>	Gini index	-0.0037	-0.1	0.0872	4.0
	Adult unemployment rate	-0.0253	-0.7	-0.7990	-26.3
	Pupil-teacher ratio (fundamental + media school)	0.0031	9.1	0.0025	8.0
	Share of Extreme poor	0.0694	5.7	-0.0749	-7.2
	Const	0.2109	10.4	0.2610	14.7

Note: years 1996, 1997 are not included in the regression, since economic activity status is reported only for individuals aged 10 years and older. The years 2007 and 2008 are not included in the regression because of the lack of necessary information for the calculation of the pupil-teacher ratio.

Reference categories are the following. Race: indigenous; head's education: no education; year: 1992.

\*Note: Children's income is dropped from the household income.

Source: UCW calculations based on Brazil PNAD survey, 1992-2006

Table 22. Determinants of children's activity, 7-15 year-olds

Explanatory variables		Work only		School only		Work and school		Neither	
		Coeff.	T	Coeff.	T				
<i>Child age, sex and race</i>	Age	-0.03678	-53.81	0.109059	69.53	-0.00832	-6.7	-0.06396	-60.57
	Age^2	0.00206	61.31	-0.00652	-89.02	0.001421	24.02	0.003044	63.08
	Female	-0.01483	-43.54	0.067437	83.62	-0.05806	-87.2	0.005453	10.88
	White	-0.02391	-3.68	0.056011	4.95	-0.01581	-1.63	-0.01629	-2.18
	Black	-0.0219	-3.35	0.052557	4.6	-0.03181	-3.24	0.001146	0.15
	Yellow	-0.02964	-4.35	0.066373	5.12	-0.01506	-1.35	-0.02167	-2.65
	Mixed	-0.0236	-3.63	0.053671	4.74	-0.02157	-2.22	-0.00851	-1.14
<i>Household characteristics</i>	Household size	0.000278	1.77	-0.00109	-3.14	0.00119	4.24	-0.00038	-1.64
	Siblings 0-4	0.005349	13.89	-0.02107	-25.58	-0.00375	-5.79	0.019468	33.11
	Siblings 5-14	0.00031	1.19	-0.00649	-11.69	0.006276	13.6	-9.4E-05	-0.27
	Extreme poor	0.009466	13.69	-0.04657	-31.19	0.013431	10.98	0.023669	24.33
	Moderate poor	0.004767	7.98	-0.01828	-13.49	-0.00089	-0.81	0.014406	16.46
	Pipe water	-0.01954	-24.83	0.080753	48.03	-0.02853	-21.13	-0.03269	-28.91
<i>Education of household head</i>	Primary	-0.01575	-25.87	0.044622	34.01	-0.00432	-4.03	-0.02455	-28.59
	Secondary	-0.02001	-32.46	0.07657	49.08	-0.01898	-14.98	-0.03758	-38.57
	Higher	-0.02124	-36.14	0.100642	70.59	-0.0347	-29.9	-0.0447	-50.28
<i>Place of residence and year dummy</i>	Rural	0.035192	22.9	-0.15131	-48.16	0.111911	40.31	0.004203	2.32
	Year 1993	-0.00442	-3.58	0.013772	6.02	-0.00205	-1.15	-0.0073	-4.49
	Year 1995	-0.00808	-6.52	0.020502	8.71	0.005457	2.91	-0.01787	-11.03
	Year 1998	-0.0366	-30.55	0.079704	32.97	-0.00462	-2.35	-0.03848	-24.2
	Year 1999	-0.04339	-36.23	0.088241	36.07	0.004741	2.33	-0.04959	-31.83
	Year 2001	-0.045	-41.37	0.102345	45.21	-0.00093	-0.5	-0.05642	-38.65
	Year 2002	-0.04369	-41.27	0.103834	47	1.68E-05	0.01	-0.06016	-42.35
	Year 2003	-0.04877	-44.56	0.116632	50.95	-0.00317	-1.69	-0.06469	-43.69
	Year 2004	-0.04295	-38.99	0.11089	48.67	-0.00681	-3.69	-0.06113	-40.78
	Year 2005	-0.04245	-36.39	0.106788	44.28	0.000645	0.33	-0.06499	-41.66
	Year 2006	-0.03908	-32.15	0.10681	42.62	-0.00343	-1.68	-0.0643	-39.38
<i>State indicators</i>	Gini index	-0.04877	-3.74	0.039604	1.36	0.045163	1.85	0.352018	13.67
	Adult unemployment rate	0.446949	23.99	-0.32637	-7.71	-0.47259	-13.08	0.352018	13.67
	Pupil-teacher ratio (fundamental + media school)	-5.9E-05	-0.31	-0.00066	-1.69	0.003141	10.04	-0.00242	-9.04
	Share of Extreme poor	0.06857	9.47	-0.07558	-5.75	0.000754	0.07	0.006252	0.74
	Const	0.234566	21.07	0.286008	12.46	-0.0237	-1.24	0.50313	33.7

Note: years 1996, 1997 are not included in the regression, since economic activity status is reported only for individuals aged 10 years and older. The years 2007 and 2008 are not included in the regression because of the lack of necessary information for the calculation of the pupil-teacher ratio.

Reference categories are the following. Race: indigenus; head's education: no education; year: 1992.

\*Note: Children's income is dropped from the household income.

Source: UCW calculations based on Brazil PNAD survey, 1992-2006

### 6.3 Impact of Bolsa Escola and PETI: auxiliary regression analysis

154. As we have seen, changes in living standards appear to have a substantial impact on trends in children's activities. Active social protection policies might have contributed to reduce vulnerability and to raise such standards. In this section we integrate our previous analysis by including in the regressions variables that pick up the expansion of Bolsa Familia and PETI over time.

155. The available evidence based on impact evaluations of these programs has been already discussed in the previous sections. Because we have no direct information on household or child-level reciprocity or eligibility for either these programs in the PNAD, we try to identify their effect by using the take-up ratio of each of these programs in each year and state. For Bolsa Familia, we use the share of household with children aged 0 to 15 who benefit from the program. For PETI we use a similar measure: the ratio of children benefitting from the program to the total number of children in the relevant at-risk age group (7-15).

156. The estimates, however, are only suggestive as information on take up ratios is only available for the years 2004 to 2007 (recall that Bolsa Familia only started in 2003).<sup>14</sup>

157. We use PNAD data for the period 2004-2007 to estimate a model similar to that estimated in the previous section, where we additionally control for exposure to these two programs. Table 23 provides the estimated fraction of Bolsa Familia beneficiary household and PETI beneficiary children in each state in 2004 and 2007. One can see that while 24% of households benefitted from Bolsa Familia in 2004, i.e. one year after its inception, in 2007 this number was almost 40%, suggesting a gradual scaling up of the program. There is substantial heterogeneity in the levels of Bolsa Familia coverage. In particular one can see a rapid spread of the programme in the poorer areas in the North and Northeast regions. Although similar regional patterns can be observed for PETI, unsurprisingly, this programme was much less widespread than Bolsa Familia and its coverage remained roughly unchanged between 2004 and 2007. In both years, around 3% of children were benefitting from PETI, with higher coverage in the North, Northeast, and Center-West regions.

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<sup>14</sup> Unfortunately, we do not have comparable information on the spread of previous Bolsa Escola/Bolsa Familia programs. As said, these programs were highly decentralized, explaining why systematic data do not exist, and were extremely heterogeneous, explaining why a systematic analysis of their impact might be extremely daunting. Also, data on Bolsa Familia in 2008 are not available.

Table 23. Trends in Bolsa Familia and PETI coverage

State	Bolsa Familia		PETI		
	(1) 2004	(2) 2007	(3) 2004	(4) 2007	
<i>North</i>	Rondônia	0.20	0.36	0.05	0.06
	Acre	0.26	0.49	0.12	0.12
	Amazonas	0.20	0.38	0.02	0.02
	Roraima	0.23	0.45	0.13	0.14
	Pará	0.23	0.43	0.02	0.02
	Amapá	0.11	0.35	0.03	0.03
	Tocantins	0.26	0.48	0.04	0.05
<i>North-East</i>	Maranhão	0.38	0.70	0.05	0.06
	Piauí	0.47	0.78	0.05	0.06
	Ceará	0.44	0.66	0.01	0.02
	Rio Grande do Norte	0.40	0.61	0.08	0.08
	Paraíba	0.47	0.72	0.06	0.08
	Pernambuco	0.39	0.67	0.08	0.09
	Alagoas	0.44	0.71	0.05	0.06
	Sergipe	0.36	0.57	0.10	0.10
Bahia	0.39	0.63	0.05	0.05	
<i>South-East</i>	Minas Gerais	0.26	0.37	0.01	0.02
	Espírito Santo	0.22	0.35	0.02	0.03
	Rio de Janeiro	0.09	0.22	0.01	0.01
	São Paulo	0.11	0.18	0.01	0.01
<i>South</i>	Paraná	0.19	0.24	0.03	0.03
	Santa Catarina	0.11	0.14	0.03	0.03
	Rio Grande do Sul	0.18	0.25	0.00	0.01
<i>Centre-West</i>	<i>Mato Grosso do Sul</i>	0.09	0.30	0.07	0.07
	<i>Mato Grosso</i>	0.17	0.27	0.03	0.04
	<i>Goiás</i>	0.15	0.29	0.07	0.07
	<i>Distrito Federal</i>	0.11	0.21	0.01	0.00
<i>Total</i>	0.24	0.39	0.03	0.03	

Note: Columns 1 and 2 report the fraction of households receiving Bolsa Familia over the number of eligible households by state in 2004 and 2007. The latter is computed as the number of households with children aged 0-15 irrespective of income.

Columns 3 and 4 report the proportion of children receiving PETI as a fraction of eligible children. The latter is computed as the number of children aged 7-15 irrespective of income.



158. The numbers in Table 23 provide admittedly imperfect measures of program exposure, as they reflect both the demand for these programs as well as their supply. To the extent, for example, that higher child labour incidence implies that a higher proportion of children in the relevant age group will benefit from PETI, one will find a positive coefficient on the PETI exposure variable in a child labour equation, overestimating the causal effect of the policy. By the opposite token, if, say, a higher proportion of children in school implies that fewer will benefit from Bolsa Familia, regression estimates of the impact of Bolsa Familia in a schooling equation will be downward biased, hence leading to underestimate the effect of this policy.

159. It is also worth stressing that in the regressions we condition on household income, poverty status and aggregate poverty and inequality. The Bolsa Familia and PETI variables hence will pick up any effect of the policies over and above their effect on parental income and the incidence of poverty. This is important as these are likely to be relevant channels behind the effect of these policies.

160. Focusing on the pooled sample, in Table 24, one first observation is that results are slightly less precise than for the entire period. This should not be surprising, as the reduction in sample size (from 12 waves to 4 waves of the PNAD) implies essentially that standard errors will roughly double. In particular differences across ethnic groups in child labour seem to be insignificant. This might be effectively the result of differences in sample size or of a substantial time convergence across ethnic groups in the incidence of child labour, with larger progress among more disadvantaged groups.

161. Indeed, coefficients on the other household variables are in general lower in magnitude: this is true for access to piped water, parental education, the rural dummy and household income. This implies that differences in school attendance and child labour across socioeconomic groups have become less pronounced over time.

162. Once we focus on the effect of Bolsa Familia, we find that for extra 100 children in the program, there are 2 additional children in school. The effect on work is similar in magnitude and of opposite sign but not statistically significant.

163. The effect is admittedly modest, implying that most Bolsa Familia beneficiary children would have attended school anyway. As said, though, our conclusions are tempered by the fact that we are conditioning on parental income and poverty status. Also, recall that coefficients are possibly underestimated if higher school attendance implies that a lower proportion of children benefit from Bolsa Familia due to reverse causality. Measurement error in the estimated coverage is also likely to lead to estimates that are biased towards zero. By all accounts, these regression results must be taken with a degree of caution.

164. We find no significant effects of PETI, measured by the fraction of beneficiary children in the relevant age group. This is most likely due to the modest changes in the size of the programme in the period considered and to the fact that, as previously mentioned, we control for changes in poverty.

#### 6.4 Explaining the fall in child labour in Brazil

165. In this section we use the evidence from the regressions above to quantify the extent by which economic variables - both at micro and the macro level - can explain the decline in child labour observed in Brazil between 1992 and 2008. To do so, we revert to the results from the main regression for the entire period in Table 21. We discuss in closing the role of government policies.

166. One direct way to assess the contribution of observed covariates in explaining trends in child labour consists in examining the patterns of the time effects in the regressions in Table 21. The time dummies pick any change in child labour over time that is unaccounted for by the model. Estimates show that, conditional on all the included regressors, the time dummy for 2006, i.e. the unexplained difference in child labour between the end and the beginning of the period (the omitted time dummy) is -4.46 percentage points. This has to be compared with an overall change in child labour of approximately 10 percentage points from 1992 to 2006. This implies that the included regressors explain around 54 percent of the observed fall in child labour. This is a remarkable result for a relatively parsimonious model and one that is not typical of comparable analyses for other countries.

167. One can alternatively compute the individual contribution of different variables using the regression coefficients in Table 21 together with observed changes in the exogenous covariates in Table 14. In line with our initial decomposition, the regression estimates confirm that just below 30 percent of the observed fall in child labour is explained by changes in the distribution of observable household characteristics, primarily improvements in parental education. The residual 30 percent is explained by improvements in living standards and an overall fall in poverty (around 17 per cent), increased access to piped water (8 percent) and improvements in school quality (5 percent).

168. We are unable to identify a very significant effect of Bolsa Familia and PETI. This is due to the poor quality of the data and an array of econometric problems that we are unable to address given these data restrictions. Most important, our empirical analysis attempts to identify the role of these policies over and above their mediated effect on poverty, the single major force behind the fall in child labour in Brazil. To the extent that government policies, and especially Bolsa Familia, are responsible for most or all of the fall in poverty observed in the period of analysis, a very positive evaluation of their role emerges.

Table 24. Determinants of children activity, 7-14 year-olds - controls for Bolsa Familia and PETI

Linear regression with robust standard errors

State fixed effects included

Explanatory variables		Work		School	
		Coeff.	t	Coeff.	t
<i>Child age, sex and race</i>	Age	-0.04487	-27.32	0.063712	49.31
	Age^2	0.003126	39.55	-0.00326	-53.27
	Female	-0.05141	-59.36	0.004595	7.47
	White	-0.00158	-0.15	0.032521	3.54
	Black	-0.00469	-0.45	0.020267	2.18
	Yellow	-0.01048	-0.84	0.02028	1.86
	Mixed	-0.00223	-0.22	0.028773	3.13
<i>Household characteristics</i>	Household size	0.000469	1.21	0.000645	2.16
	Siblings aged 0-4	0.000734	0.82	-0.01619	-21.55
	Siblings aged 5-14	0.003657	5.75	0.000474	1.03
	Extreme poor	0.018574	10.47	-0.01429	-10.71
	Moderate poor	-0.0014	-0.94	-0.00537	-4.9
	Piped water	-0.04355	-22.09	0.022026	15.49
<i>Education of household head</i>	Primary	-0.01105	-7.28	0.017302	15.2
	Secondary	-0.02354	-13.92	0.029917	23.74
	Higher	-0.03606	-23.06	0.037742	32.23
<i>Place of residence and year dummy</i>	Rural	0.103742	34.94	-0.00514	-2.64
	Year 2005	0.007202	4.05	0.001782	1.41
	Year 2006	0.00087	0.36	0.000627	0.37
	Year 2007	-0.0031	-1.23	-0.0013	-0.74
	Year 2008	-0.01386	-5.72	0.003186	1.92
<i>State indicators</i>	Adult unemployment rate	-0.38137	-7.08	-0.12711	-3.5
	Gini Index	-0.00588	-0.16	0.012911	0.48
	Bolsa Familia**	-0.01592	-1.2	0.023455	2.57
	PETI***	0.050396	0.46	-0.00163	-0.02
	Const	0.256331	9.72	0.604247	30.06

Reference categories are the following. Race: indigenous; head's education: no education; year: 2004.

\*Note: Children's income is dropped from the household income.

\*\*Note: Ratio of number of households-recipients to the total number of the eligible households, by state

\*\*\*Note: Ratio of number of children-recipients to the total number of eligible children, by state

Source: UCW calculations based on Brazil PNAD survey, 2004-2008

## 7. CONCLUSIONS

169. This report has highlighted the long distance that Brazil has travelled along the road towards child labour elimination over the last decade and a half. A comparison of the results of the *Pesquisa Nacional por Amostra de Domicílios* (PNAD) survey programme from 1992 to 2009 indicates an overall fall in children's employment among 7-15 year olds by more than half, from 18 percent to less than seven percent. During the same period and for the same age group, school attendance rose from 85 percent to 97 percent. The decline in children's employment and the increase in their schooling extended to the entire 7-15 age range, but the fall in children's employment and the rise in the school attendance of 12-15 year-old were particularly pronounced. Gender, rural-urban and regional disparities in school attendance were substantially reduced if not eliminated over the 1992 to 2009 period.

170. Not only did the level of involvement in employment decline substantially, but the age of entry in employment increased by almost two years. In 1992, participation rates were positive for children aged eight years or more, while in 2008, the involvement of children in employment remained essentially negligible until the age of 10 years, and started to only increase thereafter. A similar pattern can be observed for school attendance rates – not only did the level of school attendance increase over the years, but children in 2008 entered earlier and left school substantially later than 16 years prior. The intersection of these two trends has meant a favourable change in the profile of the (diminishing share of) children in child labour: they are older (and therefore are less vulnerable) and attend school in greater proportion (and therefore are less compromised educationally) compared to child labourers in the past.

171. This progress notwithstanding, the national development milestone of child labour elimination has not yet been reached in Brazil. PNAD data for 2008 indicate that some 2.1 million children aged 7-15 years, almost seven percent of this age group, were still at work in employment in this reference year, underscoring the scale of remaining challenge posed by child labour in the country. Who are these children? The PNAD data also permit a statistical profile of the group still in employment: they are more likely to boys than girls, to live in the countryside rather than in cities and town, and to be at the upper end of the 7-15 years age spectrum. The largest share is found in the agriculture sector and in unpaid family or other informal sector work, largely beyond the realm of formal labour inspections. Almost all are also students, but the fact that they must log an average of almost 20 hours of work per week limits their time and energy for study, and consequently their ability to keep up with their non-working peers.

172. Understanding the factors underlying Brazil's success in reducing child labour over the last decade and a half will be important to extending this success to the remaining child labour population. What were the primary contributors to Brazil's success? A large body of evidence suggests that the role of policy was critical. The policy reforms and national-level interventions in the social sphere enacted in Brazil over the study period (see Section 2) contributed to profound changes in the country's socio-economic conditions: living standards improved, poverty fell, access to basic services expanded, schools improved, and successive generations of parents became increasingly educated. These positive socio-economic changes in turn accounted for much of the explained decline in child labour over the study period.

173. Impact evaluations of Bolsa Escola – the large-scale Government cash transfer programme conditional on school attendance (but *not* on removal from child labour) – indicate that it played a particularly important role in reducing inequality in the country (World Bank, 2009; Paes de Barros, Foguel and Ulyssea, 2006) and in raising school attendance rates (Abramovay et al., 1998; World Bank, 2001b; Aguiar and Araújo, 2002; Cardoso and Souza, 2004). Early evaluations of Bolsa Escola were inconclusive in terms of its effect on child labour, but more recent studies, involving more sophisticated comparisons of treatment and control groups, indicate that the programme has also succeeded in reducing the probability of child labour (Ferro, Kassouf and Levison, 2007; Ferro and Nicollela, 2007). Initial impact evaluations of another Government cash transfer programme – PETI – that does contain removal from child labour as an explicit eligibility criterion suggest that the programme has also had a significant effect on child labour rates in the programme sites (Yap et al, 2001; World Bank, 2001b; Pianto and Soares, 2003).

174. Research also points to the importance of policy efforts in other areas. Ferro and Kassouf (2005b) found that the increase in the minimum working age in 1998 from 14 to 16 years led to a statistically significant decline in the share of 14-15 year-olds in child labour. A study by Santos and Souza (2007) highlighted the important role of addressing school quality factors such as the average schooling of public school teachers. Manacorda and Rosati (2009) point to the important role of changes in the industrial mix and production technologies, in turn partially the product of Government industrial policy. They found that Brazilian states witnessing declines in the relative importance child labour-intensive industries (i.e., low productivity industries with obsolete production technologies) also saw declines in child labour.

175. The empirical analysis presented in the current study – based on the unique PNAD dataset covering the 1992 to 2008 period – corroborates other research pointing to the central role of policy in the decline in child labour. In specific terms, the empirical analysis indicated that about 30 percent of the fall child labour was attributable to improvements in parental

education, while only a small percentage was attributable to other changes in the population structure less susceptible to direct policy intervention, including smaller family sizes and greater urbanisation. Improvements in living standards and an overall fall in poverty – spurred by social security reforms and broad-scale cash transfer schemes such as *Bolsa Escola* and PETI – also played a central role, accounting for around 17 percent of the decline in child labour. Successful efforts to increase piped water access and to improve school quality, accounted by eight and five percent, respectively, of the decline in child labour.

176. What lessons does Brazil offer for countries where efforts against child labour have been less successful? First and foremost, the Brazil experience highlights the importance of an active Government response. The decline in child labour in Brazil did not happen by itself – only a small proportion can be explained by changes in the population structure unrelated to policy. Much of the decline, on the other hand, can be traced to active policy efforts to extend and improve schooling, which have led to more educated generations of parents, efforts to implement broad-scale cash transfer schemes, which have helped improve living standards and shift incentives structures in favour of schooling, and efforts to expand basic services, which have freed children from tasks such as water collection. This leads to a second key lesson from Brazil – the *nature* of a policy response to child labour. The complexity of child labour means that there is no single answer to it. Brazil's success has underscored the value of a comprehensive policy response, addressing in an integrated fashion the wide range of factors contributing to child labour.

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## ANNEX I: TECHNICAL APPENDIX. THE REWEIGHTING PROCEDURE

Suppose one wants to decompose the changes in children's work between time  $t=0$  and  $t=1$  into a component due to changes in observable characteristics ( $Z$ ) and a component due to changes in the returns to these characteristics (plus changes in unobservable). Following DiNardo et al. (1996), let the incidence of children's work ( $CL$ ) at time  $t=0$  be:

$$(A1) \quad P(CL|t_{CL}=0) \equiv P(CL|t_{CL/Z}=0, t_Z=0) = \int P(CL/Z, t_{CL/Z}=0) f(Z|t_Z=0) dZ$$

where  $t_x$  denotes the time at which  $X$  is measured. By definition the incidence of children's work at time  $t=0$  can be thought of as the incidence of children's work that prevailed given that both the distribution of observables ( $t_Z$ ) and the mapping between observables and children's work ( $t_{CL/Z}$ ) were the ones observed at  $t=1$ . This is weighted average of the conditional probability of children's work, with weights given by the distribution of  $Z$  at time  $t=0$ . Changes in children's work between the  $t=0$  and  $t=1$  are then:

$$(A2) \quad P(CL|t_{CL}=1) - P(CL|t_{CL}=0) = \\ = [P(CL|t_Z=1, t_{CL/Z}=1) - P(CL|t_Z=1, t_{CL/Z}=0)] + [P(CL|t_Z=1, t_{CL/Z}=0) - P(CL|t_Z=0, t_{CL/Z}=0)]$$

where the first term in square brackets picks up changes in "returns to observables" and the second term picks up changes in observable characteristics between the time 0 and time 1.

One can derive the counterfactual incidence of children's work that would have prevailed at time  $t=0$  had the distribution of  $Z$  been the one observed at time  $t=1$  (but the returns to  $Z$  been the ones observed at time  $t=0$ ) as follows:<sup>15</sup>

<sup>15</sup> We have assumed that  $P(CL|Z, t_Z=1, t_{CL/Z}=0) = P(CL|Z, t_{CL/Z}=0)$ , i.e. the mapping between  $Z$  and  $CL$  does not depend on the overall distribution of  $Z$  (no general equilibrium effects).

$$(A3) \quad P(CL|t_Z=1, t_{CL|Z}=0) \\ = \int P(CL/Z, t_{CL|Z}=0) f(Z|t_Z=1) dZ = \int P(CL/Z, t_{CL|Z}=0) G(t_Z, Z) f(Z|t_Z=0) dZ$$

where:

$$(A4) \quad G(t_Z, Z) = P(Z|t_Z=1)/P(Z|t_Z=0) = \frac{P(t_Z=1/Z)}{[1-P(t_Z=1/Z)]} \times \frac{P(t_Z=0)/P(t_Z=1)}$$

In practice equation (A3) suggest to compute this counterfactual distribution of children's work by simply reweighing observations at time  $t=0$  by  $G(t_Z, Z)$ . These weights only rescale observations at time  $t=0$  by their distribution at time  $t=1$ . Based on the last term in equation (A4) that comes from applying Bayes' rule, one can compute these weights by simply regressing (for example via a probit model) a dummy for being observed at time  $t=1$  on the covariates of interact ( $Z$ ). This allows us to recover  $P(t_Z=1/Z)$  and hence the first term in curly brackets in (A4). The second term in curly brackets can simply be recovered by estimating the unconditional probability of being in the sample at time  $t=1$ . If – as in our case – data are weighted, one needs to use sampling weights to compute these relative probabilities.