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Cash for class - an investigation into child labour and enrolment subsidies in Peru

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Abstract: With high rates of child labour as a result of extensive poverty in Peru, measures are needed to protect children from exploitation. The conditional cash transfer (CCT) programme Juntos provides enrolment subsidies to incentivise sending children to school, with an indirect goal of keeping them out of the labour market. Previous research however indicates that Juntos beneficiary children engage in more unpaid labour than expected. Using ordinary least squares (OLS) regressions, we therefore test the effect of the programme on unpaid labour and whether a gender differential in the effect exists. Propensity score matching allows us to confirm our initial OLS results that show that Juntos participation results in increased unpaid child labour, with a particularly strong effect for beneficiary boys. Using these results, we focus testing on our primary data in order to understand the mechanisms behind this effect. Through OLS regressions we find that investment of the Juntos transfer in the family business increases the incidence of unpaid labour, especially for boys. We conclude that unpaid child labour is strongly affected by cash transfers and wish to initiate a discussion regarding the effectiveness of CCT programmes in countries with high school enrolment rates.

Keywords: child labour, unpaid labour, conditional cash transfers, child poverty

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1 Introduction

”Children belong in school, not in supply chains” (ILO, 2014). With 168 million children worldwide being involved in child labour today, 11% of the total child population performs work alongside or instead of going to school (ILO, 2013). This not only inhibits their personal development and future labour market opportunities (Emerson and Souza 2011), but also slows the economic and social development of the countries they live in. Fighting child labour has therefore become a social objective for many developing countries, but the complexity of the phenomenon makes it difficult to fight while not harming the families that are dependent on the extra income or workforce it represents. The complexity of the issue lies in the fact that child labour encompasses a wide range of activities and does not only cover paid work, as most research on the subject suggests. In fact, in developing countries unpaid work is an integral part of many children’s lives and exposes them to risks that extend beyond those of domestic work. These risks involve for instance sexual exploitation as a result of working on a site far from home or the risks related to walking long distances on roads with heavy traffic. Here defined as helping on the family farm, with the animals, with the family business, performing piecework or making handicrafts at home (based on Young Lives, 2011a), unpaid child work can be seen as characteristic of developing countries. As more policy makers and researchers have become aware of the risk of exploitation of children performing this type of work, the field of unpaid labour has grown in importance.

In order to understand how to combat child labour and improve the situation for children who lack access to education, the mechanisms behind child labour and the displacement of work and schooling must be understood. While banning child labour is likely to be counterproductive, alternative policies, such as implementing conditional cash transfer (CCT) programmes, have focused on making schooling more attractive for families by conditioning the money transfers on school attendance. Introduced in the majority of the Latin American countries, CCTs are a way to link monetary benefits to human capital investment, with the implicit goal of reducing child labour.

In this paper, we aim to study unpaid child labour through the perspective of a CCT programme incentivising school attendance in Peru. More specifically, we study the impact of the Peruvian Juntos programme on unpaid child labour and explore one potential mechanism explaining this effect; namely, whether investing the Juntos transfer in a family business leads to more unpaid work for the children. By providing an overview of the current situation in Peru as well as previous research on child labour and CCTs, we hope to build a background understanding of the circumstances for children living in poverty. Through a presentation of our data and method, we highlight the importance of fieldwork in analysing a matter of this type, as well as provide an overview of the applicable econometric methods. Finally, by presenting and discussing our results, we aim to provide an analysis of the mechanisms behind unpaid child labour in Peru, discussing both their validity and policy implications for Peru and beyond.

2 Background

In recent years, Peru has undergone significant advances in the economic, political and social arenas. As the fastest growing economy in Latin America, Peru's achievements include high economic growth, low inflation and macroeconomic stability (IMF, 2013). Between 2004 and 2013, the Peruvian GDP grew on average by 6.4% per year, leading to an increase of more than 250% in the country's per capita income and a halving of the national poverty rate during the same period (World Bank, 2014b). In a country as geographically, culturally and ethnically diverse as Peru, making growth more inclusive is a major challenge.

Despite its consistent economic growth, the situation for children in Peru remains difficult, about 40% of all children and adolescents below the age of 18 living in poverty (World Vision, 2014). The theory that children in general are the most vulnerable sector of the population, being the age group most affected by poverty (Gordon et al., 2003), is true for Peru where the poverty rate for children aged 6-11 is approximately 13 percentage points higher than the poverty rate for the overall population (UNICEF, 2011; MIDIS, 2012).¹ The high under-5 mortality rate of 180 per mille ranks Peru as the 100th country worldwide (UNICEF, 2013), a testament to the dire conditions many Peruvian children are born into.

The difficult living conditions and high rates of poverty contribute to the premature introduction of children into the labour force. According to UNICEF, 33.5% of Peruvian children aged 5 to 14 were officially involved in child labour in 2012 (UNICEF, 2013).² In Peru, boys are more represented in paid work than girls, who tend to perform more domestic chores, this gender gap being the largest in rural areas and among older children (UNICEF, 2011). The majority of children work in gold mines and in agriculture, caring for animals or producing grains, fruits and vegetables, but many children also work in the streets as vendors or within the domestic service sector (USDOL, 2014). However, due to the complexity of the child labour phenomenon, statistics on the subject must be treated with caution: unpaid work is often omitted in the data collection and analysis, which can give erroneously low estimates of the true child labour situation.

Interestingly, primary school attendance rates in Peru have been consistently high these past decades: in 2012, more than 95% of children attended primary school which represents two percentage points less than in 1998 and more than 80% attended secondary school, i.e. three percentage points higher than in 1998 (UNICEF, 2013; World Bank, 2014a).³ Particularly interesting is the almost complete gender equality in attendance

¹The poverty rate of children used by UNICEF is based on an index combining indicators for health, nutrition, education and protection of children's rights (UNICEF, 2011).

²As defined by UNICEF (ibid.): A child is considered to be involved in child labour activities under the following classification: (a) children 5 to 11 years of age that during the week preceding the survey did at least one hour of economic activity or at least 28 hours of domestic work and (b) children 12 to 14 years of age that during the week preceding the survey did at least 14 hours of economic activity or at least 42 hours of economic activity and domestic work combined.

³As defined by UNICEF (2013): the net primary [secondary] school attendance is the percentage of children in the age group that officially corresponds to primary [secondary] schooling who attend primary

rates, both in 1998 and 2012. Nevertheless, the fact that a significant share of children combine education and work remains an important issue for the Peruvian government and non-governmental child rights organisations alike.

To fight poverty and protect children, several policies and social protection programmes have been introduced throughout the past two decades by the Ministries for Development and Social Inclusion, for Women and Vulnerable Populations and for Economy and Finance, targeting children of all ages. Examples include the National Plan of Action for Children and Adolescents, a nationwide effort to reduce child labour and protect child rights, initiated in 1997 (USDOL, 2002), *Semilla*, a project launched in 2012 aimed at providing access to education as well as strengthening public labour policies put in place to prevent child exploitation (Cabitza, 2012) and the *Programa Nacional de Apoyo Directo a los Más Pobres*, coined *Juntos* ('Together'), a CCT launched in 2005, incentivising regular school attendance among children in poor communities (MIDIS, 2012; Juntos, 2014c).⁴ Among these, Juntos has been one of the most critical components of the country's poverty reduction strategies (Streuli, 2012). By breaking intergenerational transmission of poverty through access to education and striving for the inclusion of poor families in society, Juntos implicitly aims at reducing child labour (Perova and Vakis, 2012; Mr. Bazan, Regional Advisor for Child Rights for Save the Children Peru, 2014, pers.comm., 18 August).

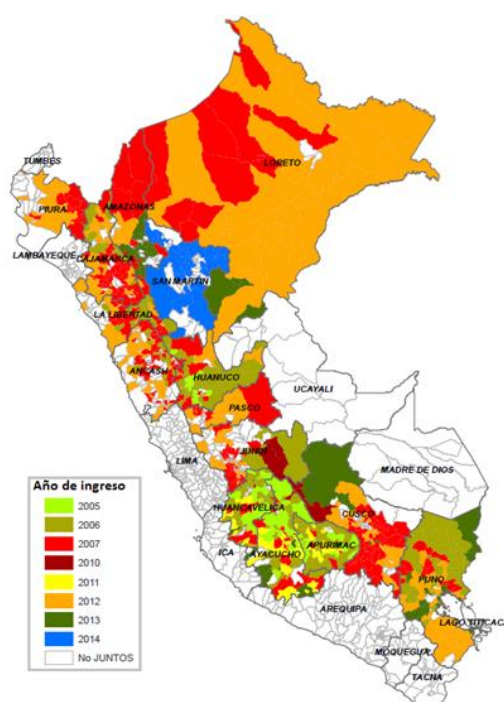


Figure 1: Coverage of the Juntos programme in Q3 2014, colour coded by entry year (Juntos, 2014a)

[secondary] school. These data come from national household surveys.

⁴The Juntos programme is modelled after the Mexican CCT Prospera (previously Oportunidades and PROGRESA).

The programme was first implemented with the objective of relieving poverty and stimulating human capital in the poorest regions of Peru (MIDIS, 2012) by transferring a bimonthly lump-sum payment of 200 Nuevo Soles to families on condition that they meet certain requirements.⁵ These conditions vary depending on the age of the children, but include attendance of regular health and nutritional controls, participation in vaccination programmes as well as consistent school attendance for all children in the family (Perova and Vakis, 2009; MIDIS, 2012). The initial goal of serving the 800 poorest districts of the country was reached in 2012, approximately 1150 districts being included in the programme by the third quartile of 2014 (Juntos, 2014a; Juntos, 2014d), as depicted in Figure 1. In 2013, public spending dedicated to Juntos represented approximately 0.18% of GDP (MIDIS, 2012; World Bank, 2014b).

Programme recipients are targeted both on a household and community level and families apply for programme participation once the community has been chosen to be included in the programme. Communities are selected for the programme based on five criteria: the existing poverty gap, the poverty level measured in terms of basic needs, the rate of exposure to political violence, the rate of chronic malnutrition among children and the rate of extreme income poverty (Perova and Vakis, 2012). Essentially all pregnant women and families with children aged 0-19 in chosen communities are then included in the programme (Jones, Vargas and Villar, 2008). By mid-2014, Juntos had grown from covering approximately 32 000 households in 2005 to 785 540 households, reaching 5.8% of the Peruvian population (Juntos, 2014d).

3 Theoretical background

3.1 Child labour

In light of an increased number of children working in export industries, the issue of child labour in developing countries has become more visible in international debates. The existence of child labour is primarily judged as immoral and eliminating it has become an obtainable social objective. Yet child labour encompasses a wide range of activities with equally as many different working conditions, which not all are exploitative nor harmful. The complexity of the phenomenon highlights the importance of understanding its causes and consequences to best evaluate its welfare implications and guide appropriate policy responses (Baland and Robinson, 2000).

3.1.1 Poverty as the key determinant?

Poverty is often seen by theoreticians as the key determinant of child labour. Its effect on child labour was introduced as the 'luxury axiom': based on the assumption that parents are altruistic, they will withdraw their children from the labour force once adult wages reach a certain level beyond which the household's conditions are reasonable (Basu and Van, 1998). In other words, children are sent to work only because adult wages and employment prospects are low and any positive impact on income will reduce child labour

⁵Approximately 70 USD every other month.

(ibid.). Empirical evidence supporting this axiom is however ambiguous. While some authors confirm the theory, others argue for only a limited effect of income on child labour, such as Robles-Vasquez and Abler (2000) who base their research on a sample of Mexican children working during the economic volatility of the 1990s.⁶ Another critique of poverty-based causes of child labour is put forth by Bhalotra and Heady (2003) who argue for a 'wealth paradox': interestingly, they show empirical evidence that owning larger amounts of land leads to increased levels of child labour. Similar results were found by Edmonds and Turk (2002) in Vietnam with households that start their own business.

The results of Basu, Das and Dutta (2010) suggest that these findings stem from the nonlinear relationship between child labour and poverty. More specifically, the authors find evidence that as land ownership increases, child labour will follow the shape of an inverted 'u', implying that there exists a turning point at which more land will lead to a decline in child labour. These results highlight to what extent child labour responds to opportunities and incentives, suggesting that the mechanism through which poverty affects child labour is likely to go beyond household income. Other factors related to poverty such as poor quality and availability of schools and few adult work opportunities may also influence child labour indirectly, as emphasised by Robles-Vasquez and Abler (2000). Following this line of thought, child labour has increasingly been considered as a consequence of both the supply of and the demand for child workers (Brown, Deardorff and Stern, 2002). More specifically, technology and other demand-side factors appear to interact with lack of markets in factors of production, household dynamics and culture to determine child employment (ibid.).

Strongly linked to poverty, market imperfections have also been emphasised by a growing body of literature as playing a determining role on child labour. In countries where unanticipated shocks can create significant variations in income and financial markets are inexistent, child labour is a way to cope with these instabilities: cross country evidence reveals that children are less likely to work during a period of economic volatility when the families have access to credit (Dehejia and Gatti, 2003). In settings where children's time has an economic value, education is seen as an opportunity cost. When facing credit constraints, parents are unable to smooth consumption over time by borrowing against the future, which prevents them from efficiently assessing the trade-off between the current income from the child's wage and the child's future earnings (Ranjan, 2001). In the case where work displaces schooling, credit constraints become costly also in the future in reducing the potential adult wage of children. However, this reasoning assumes future employment opportunities for the child as an adult, which is not necessarily the case in developing countries. In fact, besides financial market imperfections, these markets are often characterised by failures in the labour and land market: employing workers or leasing land can be difficult. Dumas (2013) argues that these imperfections cause parents to turn to internal work force rather than invest in human capital, in line with both the results of Basu, Das and Dutta (2010) and Brown, Deardorff and Stern (2002).

⁶For work confirming the theory see Edmonds (2005) for his findings on child labour during the 1990s in Vietnam, or Blunch and Verner (2000) for their results on the positive relationship between poverty and child labour in Ghana.

Banning child labour has been the most debated policy intervention. Theoretically, a ban on child work can help developing countries move away from the low-wage child labour trap; however, the presence of the above-mentioned market inefficiencies in poor countries is likely to make the working household worse off and the well-meaning intervention counterproductive (Basu and Van, 1998). One issue is that policy interventions aiming at eliminating child labour are based on the premise that working has negative consequences on the child.⁷ Yet, while some tasks are clearly harmful for children, most work activities children are engaged in have more ambiguous consequences (see for instance the findings of Beegle, Dehejia and Gatti, 2009; Emerson and Souza, 2011). Alternative policy interventions have been proposed to more efficiently target the complex phenomenon of child labour, such as conditioning cash transfers on schooling, as will be discussed in section 3.2.

3.1.2 Hidden work

Child labour has many faces and goes far beyond conventional engagement in market work. Literature’s tendency to narrow the analysis of child labour down to include solely paid work is misleading: when ignoring unpaid and household work, not only does one give an erroneously low estimate of the true situation, but also undercount the labour of girls (Ilahi, 2001; Basu and Tzannatos, 2003). In fact, only a minority of working children are actually engaged in salaried employment. In developing countries, parents are the largest employer of children, especially when child labour complements other family assets such as land (Brown, Deardorff and Stern, 2002). For some cultures, human capital can be acquired not only through schooling; unpaid child work represents a central form of apprenticeship, by providing valuable skills and attitudes needed in the future (Larsen, 2003). Using representative data from Africa and Asia, Webbink, Smits and de Jong (2010) explore further this form of hidden work and find that household level factors explain most of the variation in housework and family business work for children in these regions: socio-economic factors such as wealth or parental education and demographic variables such as the number of siblings are shown to have a significant impact on child employment. Several authors argue that failure in the market for land and labour is the leading cause for parents to employ their children for housework and family business work (see Dumas, 2013; Basu, Das and Dutta, 2010; Brown, Deardorff and Stern, 2002).

These findings underline the importance for policy makers and researchers to focus not only on market labour, but also on these more informal forms of child labour. Policy makers are encouraged to look at these traditional lifestyles more critically: unpaid labour can be exploitative and not necessarily a beneficial learning experience (Larsen, 2003). Finally, non-market work accounts for an important share of children’s activities, especially those of girls and excluding it will bias policy prescriptions (Ilahi, 2001).

⁷See for instance Ray and Lancaster (2005) and Gunnarsson, Orazem and Sanchez (2006) for the negative impact on educational variables and O’Donnell, Van Doorslaer and Rosati (2005) for the negative consequences on health.

3.1.3 Child labour in Peru

Compared to health and educational issues, research on child labour in Peru is relatively limited and includes mostly statistical studies by various labour organisations. Jacoby and Skoufias (1997) were among the first to explore wages' impact on child labour in Peru. Their findings show that child labour responds positively to a rise in the unskilled wage. Similar wage effects were found by Ray (2000) in his cross-country comparison of the determinants of child labour in Peru and Pakistan, who argues that a decrease in adult male wage leads to increased child labour, thus supporting the 'substitution hypothesis'. In line with the findings of Gahlaut (2011) that shock variables do not increase child labour, Ray (2000) also shows that in the Peruvian context, the luxury hypothesis is rejected, a finding that is nuanced by Ilahi (2001) when dividing child labour into paid work and housework. When controlling for gender differences and the type of site the family lives in, Ilahi (*ibid.*) finds that, in rural settings, girls perform more household work but less paid work when wealth increases. Thus, the luxury axiom does hold for girls in a rural environment working for pay but not when it comes to housework. Instead, rural housework seems to follow the 'wealth paradox' mentioned earlier (see Bhalotra and Heady, 2003) and is likely to be due to failures in the market for land and labour. Unlike girls, boys seem to be unaffected by changes in wealth (Ilahi, 2001).

Ilahi's (*ibid.*) findings also confirm a division of tasks where Peruvian girls engage mostly in housework whereas Peruvian boys usually work for pay. This phenomenon is largely due to both social norms and differences in economic incentives and constraints that girls and boys face. This division of tasks leads to a more sensitive demand for girls' education and work to variations in household welfare, demographics and female employment than for boys'. For instance, if the household's women are employed, the demand for household work is increased, which affects girls to a larger extent than boys. In other words, Peruvian girls adjust their activities in response to changes more than boys do (*ibid.*).

Interestingly, Ray (2000) finds that the school enrolment rates for Peruvian children are significantly higher and more gender balanced than those for Pakistani children: Peruvian children combine work and school mainly due to Peruvian parents' relatively high value for education. Community variables and adult female education have been shown to play a more central role in reducing child employment than income does (*ibid.*). According to Ilahi (2001), characteristics such as age, birth order and household size are also important determinants of housework in Peru, in line with previous findings of Patrinos and Psacharopoulos (1997) for paid work. Moreover, girls perform more paid labour when they live in a rural environment and they work more when a family member is sick. Noteworthy is that the determinants of child labour vary according to the gender of the child and the type of site its family lives on (Ilahi, 2001), highlighting the importance for policy makers to include housework in their child labour assessment as well as gender and location differences. More generally, from a policy point of view, the authors' results imply that increasing investments in basic amenities and implementing strong incentives for female education are likely to reduce Peruvian families' reliance on child labour. Also, the implementation of safety nets and access to credits, in order to protect incomes from shocks, are policy options motivated by the above-mentioned results.

Since the 1980s, child labour in Peru has become increasingly organised, elevating children's rights to participate in society to the centre of the debate (Liebel, 2003). In Peru, participation in labour organisations appears not to lead to major improvements in children's working conditions: the need for extra income for the majority of the families implies that children choose to endure the exploitative situation rather than fight for their rights. Nevertheless, Van den Berge (2007) argues that organisations in Peru can be of real value by taking into account children's perspective to change the structural constraints and promote child agency.

3.2 Conditional cash transfers and child labour

The complexity of the child labour phenomenon has led to a search for alternative ways to reduce it while not harming the families dependent on the extra income or workforce it represents. While the effects of banning child labour can be counterproductive, an interesting option is to make schooling more attractive for the families (Ravallion and Wodon, 2000). Conditional cash transfers are a way to link monetary benefits to human capital investment: by reducing the shadow price of schooling, these programmes aim at implicitly reducing the incidence of child labour.

3.2.1 The negative impact of CCTs on child labour

In Latin America, reducing child labour is not an explicit condition or objective for the majority of the CCTs currently employed. Only one programme targets child labour explicitly: the Brazilian *Programa de Erradicacao do Trabalho Infantil* (PETI), which includes the withdrawal of children from the workforce as an explicit eligibility criterion (ILO, 2007).⁸ Launched in 1996, PETI's unique feature is that besides imposing school attendance, it focuses on poor children working in harmful activities and requires them not to work while they participate in the programme (Pero and Szerman, 2005). Its impact on child labour is therefore straightforward: Pianto and Soares (2003) find that the programme is indeed efficient in significantly reducing child labour and increasing school attendance.

Even though reducing child labour is not an explicit condition or objective for the majority of the CCTs currently employed, these programmes affect children's time allocation and are thus expected to have an influence on child labour, yet not as evident as on school attendance. When reviewing existing empirical studies, broad evidence is found that CCTs do in fact lead to a reduction in child labour (de Hoop and Rosati, 2014). Skoufias and Parker (2001) argue that the Mexican *Prospera* successfully fights low school attendance and high incidence of child labour simultaneously: beneficiary children are more likely to attend school and their labour force participation is decreased by 15 to 25 percent compared to pre-program participation. In the case of Nicaragua, Gee (2010) argues that the national CCT *Red de Proteccion Social* not only reduces the probability

⁸The Costa Rican Avancemos explicitly includes the reduction of teenage labour as one of its objectives but does not impose any working restriction (Marinakos, 2009). Its effect on child labour is therefore less direct than for PETI (ibid.).

of being engaged in child labour, such as Prospera does, but it also reduces the time children spend working each week by 4 hours. Similar results are found for the *Bono de Desarrollo Humano* (BDH) in Ecuador: besides increasing school attendance, programme participation lowers the likelihood of working as a child, as influences their entry and exit of the labour force (Araujo and Schady, 2006). Interestingly, the impact of BDH on child labour has been shown to be substantially larger than the effect associated with Mexico's Prospera, even though the conditions were never monitored nor enforced in Ecuador. This underlines the importance of spill-over effects from one programme to another and families' beliefs in influencing the efficiency of the programmes (ibid.). Finally, the Brazilian *Bolsa Escola* programme seems to have a double effect on labour: it reduces the probability for children between 6 and 15 years old to engage in the labour force while at the meantime increasing the probability for the parents to work (Ferro, Kassouf and Levison, 2010).

When controlling for gender differences, one can see that the impact of CCTs on child labour is heterogeneous: for boys, paid work is reduced the most, whereas for girls, household chores are decreased the most relatively to other kind of work (de Hoop and Rosati, 2014). Also, CCTs reduce child labour the strongest in poor areas, confirming the luxury axiom and the use of children's wages to smooth consumption (ibid.). These findings are in line with empirical evidence from Honduras: the national programme PRAF decreases the likelihood of working, both outside and inside the household, but does so exclusively for the poorest subsamples (Galiani and McEwan, 2013).

3.2.2 Combining school and work

However, noteworthy is that since school and work are not mutually exclusive, increased school attendance does not systematically lead to an equivalent reduction in child work: children can combine both activities and adjust leisure to changes in one or the other of these two activities (de Hoop and Rosati, 2014). This is in line with the findings of Skoufias and Parker (2001) regarding the impact of Prospera. Using a broader definition of work that includes unpaid activities, their analysis reveals that not only wage work is reduced, but also domestic work. Yet, the programme's impact is different for boys and girls: the effect is lower on the incidence of work for girls compared to boys, suggesting that girls tend to combine school with work, especially domestic chores and adjust their leisure time accordingly (Skoufias and Parker, 2001). Thus, the efficiency of CCTs in fighting child labour relies on the assumption that schooling and child labour are substitutes. Yet, the true relationship between child labour and education remains debated. Ravallion and Wodon (2000) find that the Bangladeshi school stipend has only a small negative impact on child labour, suggesting that parents substitute other activities such as leisure to the schooling of their children. This would explain why beneficiary children combine work and schooling. According to Cardoso and Souza (2004), the CCTs do not reduce child labour as a net effect; instead, CCTs change how children's time is allocated between school and work. While CCTs can send children to school, it cannot guarantee that they will stop working and study more instead. Findings in Brazil suggest that while it has been shown that participating in the Bolsa Escola decreases the likelihood for children of being engaged in the workforce (see the findings of Ferro et al., 2010),

the programme has no significant impact on already employed children's probability of working: because the amount received from the programme is too small to give up the extra wage income, children tend to combine school and work (Cardoso and Souza, 2004).

While CCTs have been shown to be efficient in reducing child labour in general, de Janvry et al. (2006) show that in the presence of income shocks, CCTs' efficiency is reduced. As discussed in previous sections, lack of markets in factors of production and income shocks lead poor parents to take their children out of school and send them to work. Based on data from Mexico's Prospera, the results of de Janvry et al. (2006) reveal that CCTs act as safety nets for school enrolment but not for child work, in response to shocks: they prevent children exposed to shocks from dropping out of school but do not protect them from working. The income effect is thus not sufficient to reduce the use of child labour as a risk-coping strategy. When the conditions do not target child labour specifically, the programmes' efficiency in reducing it depends on several factors such as the amount of the transfers, the wage of the child relative to that amount, parents' value for education and the monitoring of the conditions (Hirata, 2008). The persistence of child labour can also be seen from a cultural aspect, where working is perceived as being more valuable than schooling as it is seen a way of developing skills (*ibid.*). In that case, child labour will not be perceived as a substitute for education and CCTs will be less efficient in reducing it.

Evidence shows that CCTs are an important tool in reducing child labour; nevertheless, further action is needed. For instance, complementary supply-side measures such as improving the supply of schools or teacher and educating parents on the benefits of schooling are options likely to increase the programmes' efficiency in reducing child work (ILO, 2007). Child labour being such a complex phenomenon, CCTs must tackle it with multi-dimensional instruments (*ibid.*).

3.2.3 The impact of Juntos on child labour

The research on Juntos' impact on child labour is sporadic. Perova and Vakis (2009) were the first to quantitatively evaluate Juntos' impact on a set of key indicators including child labour. Relating to children's time allocation, two specific findings emerge from their study. Firstly, a significant impact on school enrolment and attendance is found but only at the transition points, which is not surprising considering the already high rates of attendance in Peru. Then, although the analysis suggests that there is an overall improvement of several welfare indicators due to programme participation, the authors show that beneficiary children are more likely to have worked last week than non-beneficiaries. Using data collected five years after the programme's initial launch, Perova and Vakis (2012) further explore the general effects of Juntos by analysing both the overall impact five years after the launch and the differences between beneficiaries according to the length of programme participation. When looking at the child work variable, the authors find that Juntos affects child labour only in the long term: the longer children are part of the programme, the more likely they are to work. Unfortunately, neither the scope of their study nor the national survey used in their assessment allow for more detailed analyses of these alarming findings: the authors perform a general assessment which does

not focus specifically on child labour, using a survey that does not distinguish between different types of work nor capture changes in the number of hours worked.

The qualitative study among Juntos beneficiaries performed by Jones, Vargas and Villar (2008) suggests that programme participation affects the time allocation of children. Due to the school attendance condition, children now spend time performing unpaid work and domestic tasks after school, on weekends and during vacation. Interestingly, Juntos does not lead children to stop working; instead, they use their time differently to fit both schooling and working (*ibid.*). Quantitative research on the differences in the allocation of time between beneficiary and non-beneficiary children was conducted by Escobal and Benites (2012). Based on Young Lives' data with more detailed information on children's daily time use, the authors find that children receiving Juntos perform 10 minutes less paid work per day than non-member children, in line with the findings of Gahlaut (2011). Moreover, they show that this reduction seems to be compensated for by an increase in the time beneficiary children spend on unpaid work: 23 more minutes per day compared to similar non-beneficiaries. Interestingly, no increase in the time spent at school, studying or playing is found. Clearly, the distribution of beneficiary children's time has changed, with a shift from paid to unpaid work that the authors assume is the consequence of a shift in mothers' time use.

Even though several positive impacts of the programme have been identified, both Perova and Vakis (2009; 2012) and Escobal and Benites (2012) show in their broad-based assessments of Juntos that the programme has an unexpected negative effect on children's time use when it comes to work. However, none of the authors delve deeper into these findings as the scope of their studies is not centred on child labour. Therefore a need for further research and policy improvement remains.

4 Purpose

The purpose of this paper is to study the impact of the Juntos programme on unpaid child labour and to explore one potential mechanism explaining this effect; namely, investigate if children work more due to households' investment of the Juntos money in the family business. By digging deeper into the determinants of unpaid child work and analysing it through the perspective of a CCT programme, we aim to contribute to the current research on child labour. More specifically, we aim to contribute to filling a research gap in terms of our specific focus on unpaid child labour and on the impact of CCTs on children's time allocation. Also, since empirical evidence shows that boys' and girls' work activities vary greatly, we will analyse child labour more precisely by taking gender differences into account.

Unpaid labour has been chosen as the variable of interest because of the growing interest in the topic as well as the research gap which currently exists. Paid labour has been a widely discussed topic since the late 1990s (see Basu and Van, 1998; Ravallion and Wodon, 2000; Bhalotra and Heady, 2003), research often highlighting labour market participation and its effect on schooling, health and future employment performance. Un-

paid labour research has only gained popularity and importance in the past decade, when more resources have been invested into the further exploration of unpaid and non-market labour. This development is partly due to the fact that the sector has been recognised as being of growing weight, in particular for economies with a strong agricultural focus like Peru (USDOL, 2014). This has led to more research taking children's household and unpaid labour into account (see for instance Webbink, Smits and de Jong, 2010), but great potential exists for deeper research focusing on these types of labour. We intend to contribute to filling this research gap by focusing our research on unpaid labour in Peru, exploring the determinants and patterns of child work through the perspective of the Juntos programme.

Most of the studies on CCTs focus on the overall impact of the programmes on several variables of interest, such as school attendance, child labour and health. While interesting results are found on child labour, only a handful of the studies look deeper into the incidence and determinants of child labour (see Skoufias and Parker, 2001; de Janvry et al., 2006; Hirata, 2008). This holds true also for Juntos assessments. In fact, the programme has been studied by a number of researchers over the past years (see Perova and Vakis, 2009 and 2012; Escobal and Benites, 2012), but none of the studies focuses on child labour. Besides, few quantitative assessments exist due to the absence of evaluation framework in the programme design, thus restricting research to non-experimental or qualitative evaluation methods.

As presented in the theoretical background section of this thesis, Escobal and Benites (2012) have a broad-based approach to the analysis of the Juntos programme, studying programme impacts on health, education, labour, quality of life and attitudes of children, as well as impacts on the household economy. In their evaluation of child labour within the programme, the authors find that Juntos beneficiaries work fewer paid hours but longer unpaid hours than non-beneficiaries (*ibid.*).⁹ The net increase in work hours is surprising since Juntos beneficiaries are asked to attend school regularly, an expected indirect effect of the programme thus being that the children perform less work. The scope of the study does however not permit the authors to delve deeper into the topic and explain this surprising finding. Taking a further look at current research regarding child labour within the Juntos programme, we see that Perova and Vakis (2009) find inconclusive results due to data limitations, as discussed in the previous section. Their intensity analysis performed five years after the first implementation of Juntos reveals an unintended impact of the programme: beneficiary children are found to be more likely to be engaged in labour the longer they form a part of the programme (Perova and Vakis, 2012). The analyses of Perova and Vakis (2009; 2012) however present three limitations that we wish to exploit. Firstly, the scopes of the studies prevent the authors from deeper research into the subject of child labour. Secondly, no distinction is made between paid and unpaid child labour and the impact of Juntos on the number of hours worked is not analysed. Finally, the National Household Survey (ENAH) used in the assessments contains only one question relating to child labour, asking whether the child worked the past week or not - the narrow formulation can create a bias in the results by omitting all

⁹9.55 minutes less paid work per day, significant at 1% level and 22.79 minutes more unpaid work per day, significant at 5% level.

types of irregular work, thus underestimating the true number of child workers.

What beneficiary families spend the cash transfer on is also a little studied subject, both for Juntos and for other similar programmes. Interestingly, there are studies showing that cash transferred to poor families is not only used for consumption and investment in children’s human capital, but also for investment in productive activities (see for instance Gertler, Martinez and Rubio-Codina, 2012; Sadoulet, de Janvry and Davis, 2001). The qualitative studies performed in the region of Ayacucho and the district of Chuschi show that in Ayacucho, 52% of the beneficiaries interviewed have started some type of activity generating income for the family that would last after the programme ends (Huber et al., 2009; Arroyo, 2010). The investments are on a small scale since only a share of the Juntos transfer is invested, the rest of the money being used mainly for food, whilst saving over several months in order to make a larger investment has never been observed. Common investments include the purchase of a smaller animal, renting an extra piece of land or buying raw materials for the family business (ibid.).

Similarly, Gertler et al. (2012) find that Prospera beneficiaries invest a share of the money transferred from the programme in productive assets, resulting in considerable long-term gains in income and in new opportunities for children: directly working for the family business or replacing an adult’s work within the household. However, these consequences on children’s time allocation have not yet been explored in depth. The little empirical evidence that has touched upon the subject suggests that the effects of household investments on child labour are offset by a stronger income and substitution effect that keeps children in school (de Hoop and Rosati, 2014) but these results are again based on wage work. By investigating the hypothesis that Juntos money invested in family businesses leads to increased unpaid child labour, we hope to contribute to a better understanding of the effect of CCTs effects on children’s time allocation and more generally, the determinants of child labour. If there are such hidden effects that lead to increases in unpaid child labour, being aware of their existence is of central importance for policy makers when improving the programmes.

5 Research question and hypotheses

By using a CCT programme as a lens through which to study children’s allocation of time, we intend to contribute to filling the research gap on unpaid child labour, with a particular focus on the effect of capital injections on family behaviour and how this differs by gender. We intend to study this topic through two separate research questions and corresponding hypotheses.

Research question 1. Do beneficiary children perform more unpaid work than non-beneficiary children?

In investigating this aspect of child labour, we will study the following hypotheses:

Hypothesis 1. Children who benefit from the Juntos programme perform more unpaid work than non-beneficiary children.

As previous research by Escobal and Benites (2012) shows, Juntos beneficiary children perform more unpaid labour than non-beneficiary children. Since this result is both surprising and has not been found in other research, we aim to test if the result holds when alternative testing methods are used.

We expect to find that Juntos beneficiaries perform more unpaid work than non-beneficiaries.

Hypothesis 2. The effect of the Juntos programme on hours of unpaid work is greater for boys than for girls.

In Peruvian culture, boys are commonly seen as being physically stronger than girls. As well as this, men have a more powerful stance in many communities where they speak for their households and make decisions for their families. Given that unpaid labour often implies walking long distances and carrying heavy items, as well as that boys will be prioritized over girls because of their status, boys are more likely to be engaged in unpaid labour in the first instance if hypothesis 1 holds true.

We therefore expect to see a larger effect of participation in the Juntos programme on unpaid labour for boys compared to girls.

Hypothesis 3. Beneficiary children perform unpaid work at the cost of other activities at home.

When the beneficiary children start performing more unpaid work, it is likely that they do so at the cost of leisure time, domestic work, time spent caring for others and time spent studying at home. Due to the conditions on school attendance as well as the persisting need of extra income sources for the family, beneficiary children are unlikely to substitute time at school or time performing paid work.

We thus expect to find a negative effect of Juntos programme participation on leisure, domestic work, caring for others and studying. We expect to see no effect on school and paid work.

In addition to our study of the effect of the Juntos programme on unpaid work, we wish to study one potential mechanism behind this effect. We will do so using the following research question:

Research question 2. Does investment of the Juntos money in family businesses affect the incidence of unpaid child labour?

In order to answer this research question we will study two hypotheses:

Hypothesis 4. Investment of the Juntos money in family businesses increases unpaid child labour.

A household uses the Juntos money to invest in the family business, leading to more unpaid work for the entire family, including the child. In other words, the incidence of child labour is affected by whether or not a family invests its Juntos transfer in the family business.

We expect to see an increase in the incidence of unpaid labour as a result of investment of the Juntos transfer.

Hypothesis 5. Investment of the Juntos money in family businesses affects boys' unpaid labour more than girls' unpaid labour.

Investment of the Juntos money in family businesses creates new work opportunities for family members. Since girls are primarily responsible for domestic chores and caring for others and given the gender division in Peru, it is expected that the boys will take on the new work opportunities in the family businesses.

We therefore expect to find a larger effect of Juntos investment in family businesses on unpaid labour for boys than for girls.

6 Data

This paper is based on both primary and secondary data. The first source of data is the 2009 Young Lives survey on childhood poverty in Peru. The second dataset was collected by the authors through fieldwork performed in the region of Ayacucho in Peru in August and September 2014.

6.1 Secondary data

6.1.1 Dataset overview

Young Lives is an international study of childhood poverty, spanning 12 000 children in Peru, Vietnam, Ethiopia and India (Young Lives, 2014). Using a combination of quantitative methods and in-depth qualitative research, Young Lives provides policy makers and researchers with child, household and community level data, in order to improve the understanding of childhood in developing countries (Young Lives, 2013). In Peru, Young Lives is known as *Niños del Milenio* and focuses its research on understanding the reasons for inequalities among children. More specifically, the research priorities are the investigation of how malnutrition impacts children as they grow older, how work and self-esteem affects children's well-being and how poverty affects children's education opportunities and ability to learn (Niños del Milenio, 2014). The Young Lives study also analyses current social policies targeting children, such as Juntos, in order to assess their impact on child development based on young people's experiences.

This paper is based on the third round of the Young Lives surveys, carried out in 2009 and published in 2011. The data was collected through a large-scale household questionnaire in 74 localities across Peru, covering different geographical regions and both urban and rural locations. The survey provides information on demographic, socio-economic and cultural characteristics of the Young Lives' families (Young Lives, 2013). 2621 children and their corresponding household members were interviewed, split into two age cohorts of children aged 7 to 8 and children aged 14 to 15. In this paper, the sample used is restricted to 1397 households, thus including exclusively the households that responded to the questions regarding current Juntos programme enrolment. Of this sample, 427 households, i.e. 30.6% of the sample, are Juntos beneficiaries (Young Lives, 2011b).

6.1.2 Children's allocation of time

Regarding the variables of primary interest for this paper, children's time allocation, Young Lives distinguishes between eight types of activities: sleeping, caring for others, domestic chores, unpaid work, paid work, school, studying and leisure. Unpaid work is defined as the hours spent on tasks on the family farm or at the family business, cattle herding, shepherding, piecework or handicrafts done at home, on a typical day.

Whilst the broad geographic coverage and large sample size improve the reliability of the data, some limitations regarding the distribution of children's time exist. Young Lives relies both on responses from the mothers and from the children themselves, for the younger and older cohorts, respectively. Although this mix of respondents could potentially lead to biased estimates, the use of mothers is justified by the very young age of the children in the first cohort, whose notion of time might be erroneous.

6.2 Primary data

6.2.1 Purpose of fieldwork

The Young Lives dataset is complemented by primary data collected through fieldwork in Ayacucho, Peru. Fieldwork was performed in order to collect additional data for two primary reasons. Firstly, additional data is needed in order to better understand the detailed underlying mechanisms explaining child labour among Juntos beneficiaries. Secondly, in order to account for intermittent employment, children's weekend activities need to be accounted for.

The region of Ayacucho was chosen because it is representative of the Young Lives sample of Juntos beneficiaries, being mountainous with high poverty rates (see Table 1). Ayacucho was the epicentre of the civil conflict of the 1980s in Peru and was severely affected by the terrorism of the guerrilla group Shining Path (Starn, 1995). Ever since, the region has had difficulties developing and its poverty levels have remained high (INEI, 2014). In addition, Juntos has long been established in the area since Ayacucho was one of the first regions to benefit from the programme. The political violence that characterises the region was one of the reasons why the Peruvian government chose to launch the Juntos programme in Ayacucho in 2005 (Juntos, 2006). The presence of several local organisations in Ayacucho also facilitated the establishment of contact with Juntos families. Thanks to Save the Children in Peru, contact was established through *Children lead*

Table 1: Overview of poverty statistics for Ayacucho region

	2005	2013	2014
<i>Regional statistics, Ayacucho</i>			
Poor population	78.6%	52.9%	
Extremely poor population		16.2%	
Households receiving Juntos	9 258		44 453
Districts receiving Juntos	23.2%		93.8%
Territory above 3000 metres	90.0%	90.0%	90.0%
<i>National statistics, Peru</i>			
Poor population	55.6%	23.0%	
Extremely poor population		4.7%	

Notes: Poverty is defined as average daily consumption of \$2.00 or less and extreme poverty as \$1.25 or less (World Bank, 2010).

Sources: Juntos, 2014b; INEI, 2014; World Bank, 2014b.

the way, a programme within Save the Children promoting working children’s rights to protection, education and health and *Movimiento de Adolescentes y Niños Trabajadores Hijos de Obreros Cristianos (MANTHOC)*, the first labour union for Peruvian working children. Finally, the rural microcredit institution *RedRural* provided valuable assistance in meeting with Juntos families.

Data was collected in three areas in Ayacucho, namely Huamanga, Chuschi and Coracora. The districts of Jesús Nazareno and San Juan Bautista were chosen for interviews in the area of Huamanga, whereas in Chuschi, interviews were held exclusively in the district of Chuschi. In the area of Coracora, interviews were performed in four localities situated between Chavina and Chumpi: Carhuanilla, Chavina, Nueva Esperanza and San José. Because of their similarities and close geographical location, as well as to facilitate the reading, these four localities have been grouped together.¹⁰ Common to the areas of Huamanga, Chuschi and Coracora is that the location selection criteria was based on accessibility by road, high poverty level, long-term presence of Juntos and the inclusion of both rural and urban localities. In-depth poverty statistics for each district are shown in Table 2.

¹⁰An overview of the geographic classifications of the fieldwork areas by province, district and locality can be found in Appendix A, Table 11.

Table 2: Fieldwork district characteristics, 2009 and 2014

	Country		Region		Districts		San Juan Bautista	Chumpi	Chavina
	Peru		Ayacucho		Chuschi	Jesús Nazareno			
Population	29 132 013		642 972		8 015	17 712	48 770	n/a	n/a
Rural population (%)	24.1		n/a		55.2	7.0	2.0	31.9	33.5
Monetary poverty (%)	33.5		62.6		73.6	44.7	54.4	63.6	55.1
Extreme monetary poverty (%)	9.5		26.2		40.5	13.7	17.9	24.5	23.1
Rate of chronic malnutrition (%)	n/a		31.2		42.2	40.8	41.2	42.0	40.6
Juntos member households	831 943		50 070		1 391	340	1 273	336	231
Juntos subscriber households	785 54		48 039		1 336	299	1 187	326	226

Notes: The table describes the characteristics for the region of Ayacucho and its five districts where the fieldwork was conducted. All statistics are for 2009 except the number of Juntos member and subscriber households which are for 2014. Regions are defined as the first-level administrative subdivisions of Peru, Ayacucho being one of the country's 24 regions. Peruvian regions are further divided into provinces and then districts. Juntos member households are defined as validated households that have formalised their membership, crediting the requirements of the Juntos programme but have not yet started or are temporarily not receiving the Juntos transfer. Juntos subscriber households are defined as households that receive the bi-monthly Juntos transfer.

Sources: Juntos, 2014b; MIDIS, 2014.

6.2.2 Dataset overview

Interviews with 140 Juntos beneficiaries were conducted in August and September 2014, of which 121 observations are valid. All three areas of investigation exhibit signs of poverty such as large households, few Spanish-speakers and large reliance on own business for income, as summarised in Table 3.

Table 3: Fieldwork area descriptive statistics

	Chuschi	Huamanga	Coracora
Observations	53	41	27
Mean age	11.292	11.805	12.185
Proportion boys	0.490	0.463	0.593
Mean hours of unpaid work / day	1.525	0.345	1.130
Mean household size	4.472	5.317	5.889
Proportion Spanish-speakers	0.196	0.756	0.704
Proportion own business	1.000	0.585	0.444
Main income source is business	0.660	0.268	0.111

Source: Primary data collected by authors.

Of the three areas, Chuschi is definitely the poorest. Being a rural community where independent farming is the main income source for families and only a low percentage of the population speaks Spanish, it is not surprising that a large share of children perform unpaid work. In comparison, Coracora and Huamanga are doing better with a larger Spanish-speaking population and more work opportunities, in particular in urban Huamanga. Nonetheless all three areas are difficult to live in and show high poverty rates, as highlighted previously in Table 2.

6.2.3 Survey structure and targeting

The survey covers topics such as household characteristics, ownership of family business, spending of Juntos money and children’s time allocation. Only mothers with children between 4 and 19 years old living in the household were selected to participate. Firstly, the variable of interest of this paper being child labour, it does not make much sense to include children under the age of 4, since the probability of them working is close to zero. Secondly, 19 was chosen as the upper age limit since it is the oldest a child is allowed to be to participate in the Juntos programme under the new rules. The mothers were asked to answer the questions regarding their oldest child who still lived in the household. The survey being anonymous, it was easier for mothers to answer the questions regarding the child’s time use when picturing one in particular. Since intra-siblings dynamics have been shown to impact a child’s time allocation (see for instance Chesnokova and Vaithianathan, 2008; Emerson and Souza, 2008), siblings’ activities were taken into account

with several questions regarding their time use. A full list of questions is provided in the translated survey in Appendix B.

The families were targeted through NGOs, a microcredit institution, the Juntos administration and the authors independently. This mix of targeting vectors ensured an objective selection of respondents and avoided potential biases due to local officers' desire to show exclusively the success stories of the programme.

After discussing with child labour specialists with local expertise, the use of the verb help and not work was chosen for questions relating to unpaid work.¹¹ In the highlands, there is another concept of work for children where all tasks within or for the household is considered as help. Thus, the use of the verb work would have been misleading and confusing. This does not reflect any judgement from our side as authors. Also, as mentioned earlier, questions regarding the children's activities included not only the weekdays but also the weekends. In this way, the shortcomings of the Young Lives questionnaire are addressed and more detailed information about child labour in the Highlands is provided.

Income questions were judged too sensitive in some regions. Therefore, to ensure uniformity in all the survey answers, these were replaced with other questions reflecting families' wealth: electricity in the house, insurance of any family member, main source of income.

7 Method

In order to investigate the impact of the Juntos programme on unpaid child labour, we analyse both the effect of Juntos on the allocation of children's time and the mechanisms governing the engagement in unpaid child labour. The effect of Juntos on the allocation of a child's time is analysed through the Young Lives dataset and the complementary analysis of the mechanisms governing decision making is performed using the fieldwork data collected in Ayacucho.

7.1 Juntos' effect on allocation of children's time

Unlike its Mexican sister programme Prospera, Juntos was not designed as a random experiment and therefore its impact cannot be evaluated by comparing beneficiaries to non-beneficiaries. In the absence of counterfactuals an Ordinary Least Squares (OLS) model can be used to approximate the effect of the programme on time allocation. OLS models can however present endogeneity problems, so as a consistency check the effect of Juntos on time allocation can also be estimated using propensity score matching (PSM).

¹¹Expert interviews regarding child labour include: Inés Lazarte, Coordinator for Labour Exploitation Projects, Save the Children Peru, 15.08.2014; Juan Enrique Bazan, Regional Advisor for Child Rights, Save the Children Peru, 18.08.2014 and 25.09.2014; Alejandro Cussiánovich, Director of the Instituto de Formacin para Educadores de Jvenes, Adolescentes y Niños Trabajadores de América Latina (IFEJANT), 25.09.2014.

7.1.1 OLS and matching models

Using the first dataset, primarily the OLS method is used in order to determine the effect of the Juntos programme, controlling for a number of variables affecting the family poverty level as follows:

$$unpaidwork = \beta_0 + \beta_1juntos + X + \varepsilon$$

where *unpaidwork* is the average hours the child spends on unpaid work per day, *juntos* is a dummy equal to one if the child benefits from the programme and *X* is the set of control variables.¹²

An extension of this regression is performed with additional control variables directly affecting the incidence of unpaid labour as a robustness check of the initial control variables chosen.¹³ In order to investigate the specific effect on gender, an interaction term is used as follows:

$$unpaidwork = \beta_0 + \beta_1juntos + \beta_2male + \beta_2juntos * male + X + \varepsilon$$

where *unpaidwork* is the average hours the child spends on unpaid work per day, *juntos* is a dummy equal to one if the child benefits from the programme, *male* is a dummy equal to one if the child is a boy and *X* is the set of control variables.¹⁴

Due to the fact that potential endogeneity issues exist with the OLS method, nearest-neighbour PSM is used as a consistency check. Nearest-neighbour matching pairs beneficiaries to non-beneficiaries with the closest propensity score and thus permits the construction of a comparison group similar to the treatment group on a set of observed characteristics. Members of the two groups are then matched based on propensity scores, i.e. the probability of participating in Juntos based on a set of observed characteristics unaffected by the programme.¹⁵ As a robustness check observations with weak common support are dropped in order to minimise variance and exclude observations with extreme propensity score values (as recommended by Heckman, Ichimura and Todd, 1998).¹⁶ In order to increase the precision of the estimates, matching is also performed with two control units for one treatment unit, as well as with exact matching on propensity scores.

¹²Control variables: gender and age of child, whether family lives in a city or a rural area, how much land the family owns, whether or not the family owns a car, how big the family's house is, the parents' level of education and whether or not the locality is a part of the Wawasi programme, has a secondary school and a health centre.

¹³Additional control variables tested: number of children in the household, time spent in school, time spent performing paid work and time spent performing domestic chores.

¹⁴For a list of control variables see footnote 12.

¹⁵A more thorough theoretical explanation for this method can be found in Appendix C.

¹⁶The appropriateness of the nearest-neighbour technique is also confirmed by changing the dependent variable and checking that statistical and economic significance exists where it should and vice-versa, comparing these results to those of previous research. As well as this, control variables are added and removed from the regression to check how the variable of interest changes. In addition, other PSM techniques such as kernel and radius matching are tested in order to compare the results to those of the nearest-neighbour matching.

In order to understand the mechanisms behind engagement in unpaid labour, we test the effects of the Juntos programme on the different activities a child can spend its time on. By running tests on how a child spends its time when not performing unpaid labour, one can begin to better understand the effect the Juntos programme has on the allocation of children's time. The impact of the programme on these daily activities is tested as follows:

$$activity = \beta_0 + \beta_1juntos + \beta_2male + \beta_3juntos * male + X + \varepsilon$$

where *activity* is one of the child's daily activities, *juntos* is a dummy equal to one if the child benefits from the programme, *male* is a dummy equal to one if the child is a boy and *X* is the set of control variables.¹⁷¹⁸

The reliability of the OLS estimates is also checked using the PSM method. Since the PSM method confirms the reliability of the OLS method, the OLS method is used as the primary model in the remaining investigation of the mechanisms governing engagement in unpaid child labour.

7.1.2 Underlying assumptions

For the OLS model to be the best linear unbiased estimator (BLUE), five assumptions must hold true: linearity in parameters, random sampling, a zero conditional mean, no perfect collinearity and homoskedasticity. When using the Young Lives data, mainly one of these assumptions is more sensitive to violation, namely the zero conditional mean. Since it is difficult to know with certainty which variables to include in the model there exists the risk that we have an omitted variable bias resulting in violation of the zero conditional mean assumption. However, our numerous expert interviews and our field-work in Ayacucho minimise the likelihood of omitting an important variable. To be sure that we can base our discussion on unbiased estimators from the OLS, we perform several consistency checks using PSM.

The validity of PSM depends on two assumptions: unconfoundedness and common support. In other words, if differences in participation in the programme are based only on observed characteristics and if the distributions of the covariate for the treatment and control groups are similar, PSM will yield unbiased estimators.

The matching exercise and the construction of a control group are made possible both by the nature of the Young Lives dataset and the continuous roll-out that characterises the Juntos programme. In fact, between 2009 and 2014, the number of beneficiary districts almost doubled (Juntos, 2014c) and since the Young Lives study targets children in the poorest regions of Peru, the probability that the Juntos programme was rolled-out to households in the control group is high. We can thus assume that common support

¹⁷The tested activities are: domestic chores, caring for others, paid work, school, studying at home and leisure.

¹⁸For a list of control variables see footnote 12.

exists. Moreover, the extensive data on both beneficiaries and non-beneficiaries permits the construction of a good control group and the control of sufficiently many observable variables that may influence the participation in Juntos, thus supporting the unconfoundedness assumption.

7.1.3 Variables chosen

The set of conditioning variables chosen from the Young Lives dataset is based on three criteria: the variables should affect poverty levels of families and thus the allocation of their children's time, the variables should capture key determinants of participation decisions in Juntos and that the variables should be unaffected by the programme. It is important to choose control variables that determine programme participation since these allow for discerning of the effect of the Juntos programme. Only when controlling for background poverty, community and child characteristics can one investigate the differences between those who received the transfer and those who did not. The condition of the variables being unaffected by the programme is important in the presence of post-treatment data, as well as in order not to violate the unconfoundedness assumption for PSM.

The observable characteristics that are used as control variables in the analysis of the secondary data are presented in Table 4.¹⁹ Estimating propensity scores through a logistic model and comparing these, we see that common support exists and that the model is appropriate for the PSM technique. The full data and visual representation of the overlapping assumption can be found in Appendix D.

The poverty status of the family is a central determinant for participating in Juntos; however, it is directly affected by the programme's cash transfers and can therefore not be included in the set of conditioning variables. Therefore, variables that are unlikely to change from the monthly transfers but that still witness of a family's wealth are included: how many rooms the house has, the amount of land owned and whether the family has a car or not. After performing several interviews with experts as well as analysing how Juntos beneficiaries spend the money received, evidence was found that none of the above mentioned variables were affected by programme participation.²⁰ The transfer amount received is small and does not permit the purchase of a bigger house, more land or a car. Other household level variables included are the parents' education as they are expected to affect a family's awareness of the programme (see Behrman et al. 2010).

¹⁹Four additional control variables are used in the extended testing of the original OLS model, as shown in Table 14 in Appendix E. Since these do not significantly affect the results nor are not included in the PSM testing, they are not shown in this summary table.

²⁰Expert interviews regarding poverty include: Lennart Reinius, Country Director, Save the Children Peru, 06.08.2014; Virginia Rey-Sanchez, Communications Coordinator for Young Lives Peru, GRADE, 06.08.2014; Rodolfo Mendoza, Project Coordinator at Center for Public Policy Peru, EQUIDAD, 07.08.2014; Inés Lazarte, Coordinator for Labour Exploitation Projects, Save the Children Peru, 15.08.2014.

Table 4: Description of variables used in the secondary data model

Variable	Description	Values	Obs.	Mean	Std. dev.
Unpaid work	Time spent performing unpaid labour	Hours/day	1394	0.509	1.103
Juntos	Child is a Juntos beneficiary	0 = no 1 = yes	1397	0.306	0.461
Age	Age of child	Years	1396	9.636	2.987
Male	Gender of child	0 = girl 1 = boy	1381	0.519	0.500
City	Locality where child lives is a city	0 = no 1 = yes	1129	0.795	0.404
Land owned	Total land owned by household	Square kilometres	1388	0.356	11.059
Car	Somebody in the child's household owns a working car/truck	0 = no 1 = yes	1396	0.047	0.211
Small house	Child lives in a house with 1 or 2 rooms	0 = no 1 = yes	1396	0.456	0.498
Big house	Child lives in a house with more than 4 rooms	0 = no 1 = yes	1397	0.135	0.341
Mother primary education	Child's mother has attended all of primary school	0 = no 1 = yes	1314	0.131	0.337
Father primary education	Child's father has attended all of primary school	0 = no 1 = yes	1067	0.176	0.381
Wawawasi	Wawawasi or other subsidised child care for children 0-3 exists in locality	0 = no 1 = yes	1129	0.452	0.498
Secondary school	A secondary school exists in the locality or a nearby locality	0 = no 1 = yes	1129	0.749	0.434
Health centre	A health centre exists in the locality or a nearby locality	0 = no 1 = yes	1129	0.994	0.079

Notes: Unpaid work is defined as helping on the family farm, with the animals, with the family business, performing piecework or making handicrafts at home (Young Lives, 2011a).

Sources: The descriptions are adapted from Young Lives (ibid.). The data is from Young Lives (2011b), authors' calculations.

Variables characterising the communities the families live in are incorporated into the model, since the main targeting for the Juntos programme takes place at the community level. Whether a secondary school exists and if a health centre is present in the locality or nearby locality is central to the effective functioning of the Juntos programme since attendance of school and health checks are requirements of the programme. Whether the locality is rural or urban is also included since it is a key determinant of community infrastructure and size. Finally, whether or not the low-cost, low-income day care programme (UNICEF, 2001) Wawa Wasi is established in the community is included as a covariate. One of the key objectives of the Juntos programme is to provide day care to young children living in poverty or extreme poverty (Cueto et al., 2009) and Wawa Wasi's establishment in a community can be seen as an indicator of the poverty level of the community.

With regard to the child in question, the gender is included in order to account for differences in attitudes and norms regarding parenting since gender is deemed an important cultural element in Peru. The age of the child is also included as a covariate since it is a determinant of programme participation.²¹

7.2 Mechanisms governing unpaid labour

Our primary data collected in Ayacucho is used in order to study the specific mechanisms governing engagement in unpaid labour as well as test our hypotheses regarding investment of the Juntos transfer in the family business leading to increased unpaid child labour.

7.2.1 OLS model

The focal point of the analysis is if investment in the family business of the Juntos transfer affect unpaid child labour. Firstly the effect of investment of the Juntos transfer on time spent performing unpaid labour is tested using the following regression:

$$unpaidwork = \beta_0 + \beta_1 investfambusiness + X + \varepsilon$$

where *unpaidwork* is the average hours the child spends on unpaid work per day, *investfambusiness* is a dummy equal to one if the family invests some or all of the Juntos money in the family business and *X* is the set of control variables.²²

In order to determine whether gender differences in the effect of investment of the transfer exist, an interaction term is added in order to measure the simultaneous effect of investment and the child's gender, as follows:

²¹In 2009, at the time of data collection, children were eligible for participation in the Juntos programme until they were 14 years old.

²²Control variables: gender and age of child, the father's level of education, the child's mother tongue, the walking distance from home to school and whether anyone in the household has taken a credit in the past 12 months.

$$unpaidwork = \beta_0 + \beta_1 investfambusiness + \beta_2 male + \beta_3 investfambusiness * male + X + \varepsilon$$

where *unpaidwork* is the average hours the child spends on unpaid work per day, *investfambusiness* is a dummy equal to one if the family invests some or all of the Juntos money in the family business, *male* is a dummy equal to one if the child is a boy and *X* is the set of control variables.²³

7.2.2 Underlying assumptions

The assumptions necessary for the OLS model to be BLUE are as is discussed earlier linearity in parameters, random sampling, a zero conditional mean, no perfect collinearity and homoskedasticity. The same issue exist for our primary data as for the Young Lives dataset, omitted variables are the biggest threat to the validity of the estimates. To some extent, the small size of the sample can also lead to low variation in independent variables, which could challenge the collinearity assumption.

Since no data on non-beneficiaries is available in this sample, we cannot perform consistency checks using PSM. Instead we argue for the reliability of our results using theory and observations made in the field.

7.2.3 Variables chosen

The set of control variables used in these regressions is chosen based on the criteria that the variables should affect the poverty levels of the families studied and thereby how much the children need to work in order for the family to survive. Since we are only studying programme beneficiaries in this dataset, the variables need not capture determinants of programme participation as was the case for the Young Lives dataset. The characteristics that are used as control variables in the analysis of the primary data used in this paper are presented in Table 5.

The income level of the family is a central determinant for how much the children work, but due to privacy concerns income data could not be collected. Instead other variables that witness of a family's income status are included in the set of conditioning variables: what mother tongue the child speaks, whether or not the father has attended school and how far from the community the family lives, proxied by the distance from home to school.

With regard to the child in question, the gender is included in order to account for differences in attitudes and norms regarding parenting. The age of the child is also included as a covariate since it is an important determinant of to what extent children engage in child labour as well as what type of labour they perform, aside from being a determinant of programme participation.²⁴

²³See footnote 22.

²⁴In 2014, at the time of data collection, children were eligible for participation in the Juntos programme until they were 19 years old.

Table 5: Description of variables used in the primary data model

Variable	Description	Values	Obs.	Mean	Std. dev.
Unpaid work	Time spent performing unpaid labour	Hours/day	113	1.003	1.278
Juntos investment	Family invests some of monthly Juntos transfer in family business	0 = no 1 = yes	119	0.143	0.351
Age	Age of child	Years	113	11.681	4.184
Male	Gender of child	0 = girl 1 = boy	117	0.504	0.502
Spanish	Mother tongue of child is Spanish	0 = no 1 = yes	119	0.504	0.502
School distance	Time taken to travel from home to school by foot	Minutes	119	19.025	19.778
Father basic education	Child's father has attended some or all of primary and secondary school	0 = no 1 = yes	106	0.915	0.280
Credit	Somebody in the household has taken a credit in the past 12 months	0 = no 1 = yes	120	0.083	0.278

Notes: Unpaid work is defined as helping on the family farm, with the animals, with the family business, performing piecework or making handicrafts at home.

Source: Authors' data.

8 Results

8.1 Juntos' effect on allocation of children's time

We start by running an OLS regression to estimate the effect of being a Juntos member on the number of hours children spend performing unpaid work, controlling for programme participation and several variables affecting programme participation. The results shown for regression 1 in Table 6 suggest that children who receive Juntos perform on average 0.519 hours or approximately 30 minutes more unpaid work per day than non-beneficiary children. Due to potential bias from omitted variables or model misspecification, we wish to confirm our OLS estimates by using propensity score matching, generating the results shown in Table 7.

The results of the propensity score matching in Table 7 show us that participation in Juntos indeed has an effect on hours of unpaid labour performed, all three models (one-on-one, one-on-two and one-on-two exact matching) having both strong positive economic and statistical significance: Juntos children perform on average between 34 and 39 min-

Table 6: The effect of Juntos on unpaid child labour

	(1)	(2)
	Basic OLS	OLS w/ interaction
Juntos	0.519*** (0.077)	0.255** (0.109)
Male	-0.026 (0.072)	-0.201** (0.088)
Juntos * male		0.500*** (0.148)
Age	0.094*** (0.012)	0.096*** (0.012)
City	0.145 (0.092)	0.148 (0.092)
Land	2.296 (1.511)	2.324 (1.502)
Car	-0.256 (0.164)	-0.285* (0.163)
Small house	-0.056 (0.078)	-0.051 (0.077)
Big house	-0.130 (0.107)	-0.127 (0.106)
Mother primary education	-0.149 (0.107)	-0.145 (0.106)
Father primary education	0.130 (0.096)	0.129 (0.095)
Wawawasi	-0.043 (0.079)	-0.050 (0.078)
Secondary school	-0.023 (0.091)	-0.023 (0.091)
Health centre	-1.005** (0.404)	-0.986** (0.402)
Constant	0.438 0.438	(0.434) (0.432)
Observations	856	856
R-squared	0.140	0.152

Notes: Dependent variable: unpaid labour, measured in hours per day. *** p<0.01, ** p<0.05, * p<0.1. Standard errors in parentheses.

utes more unpaid work per day than non-beneficiary children.²⁵ Noteworthy is that when increasing the precision of the matching exercise, the difference between the coefficients from the OLS and from the matching increases, suggesting that the OLS coefficient may be suffering from a slight downward bias.

Table 7: Average treatment effect of Juntos programme participation on unpaid labour

	1:1 matching	1:2 matching	1:2 exact matching
Average treatment effect	0.571*** (0.122)	0.605*** (0.106)	0.652*** (0.107)
Observations	856	856	856

Notes: Dependent variable: unpaid labour, measured in hours per day. ***p<0.01, ** p<0.05, * p<0.1. Standard errors in parentheses. Number of observations is size of sample before matching.

In order to further test the significance of our findings, we decrease the sample size to the area of common support.²⁶ We drop observations below the 25th percentile of non-participants of the programme and above the 75th percentile of participants of the programme, thus limiting our data sample to the people who are most similar. We run our propensity score matching tests on this sample, generating the results shown in Table 8.

Table 8: Average treatment effect of Juntos programme participation on unpaid labour for limited sample

	1:1 matching	1:2 matching	1:2 exact matching
Average treatment effect	0.444*** (0.116)	0.508*** (0.107)	0.512*** (0.096)
Observations	570	570	570

Notes: Dependent variable: unpaid labour, measured in hours per day. ***p<0.01, ** p<0.05, * p<0.1. Standard errors in parentheses. Dataset has been limited to observations above 25th percentile of non-beneficiaries and below 75th percentile of beneficiaries. Number of observations is size of sample before matching.

Studying the propensity score matching results for the smaller sample in Table 8, we see that the effect of programme participation on hours of unpaid labour is still positive and statistically significant. The results do however show a smaller impact of the effect of the programme since the coefficients are smaller than in the propensity score matching with the full sample (see Table 7) but closer to the coefficient from the OLS (see Table 6). The fact that the three models generate similar coefficients to the OLS estimator, especially

²⁵0.571 * 60 minutes = 34.26 and 0.652 * 60 minutes = 39.12.

²⁶See Appendix D for visual representation of area of common support.

for the most precise model with exact matching, indicates that the OLS model is reliable. For the remaining analysis we will therefore adopt the OLS methodology. With positive and significant results of the effect of Juntos participation on unpaid child labour, we thus conclude that our first hypothesis, stating that children who benefit from the Juntos programme perform more unpaid work than non-beneficiary children, holds.

Looking at the other variables in the OLS estimates presented in regression 1 in Table 6 we see that the child's age has a positive effect on unpaid labour, where the child being one year older on average results in approximately an additional 6 minutes of unpaid labour per day.²⁷ This is consistent with previous research and is an indication of the fact that as children grow older, they become stronger and develop more skills, which in turn allows them perform more labour. We also find that the presence of a health centre has a negative impact on the incidence of unpaid labour, where having a health centre in the locality or next locality on average results in a full hour less unpaid labour per day. This could indicate that there exists an inverse relationship between health and child labour, but could also simply be a representation of the relationship between infrastructure, poverty and child labour.

Other factors not included in the OLS estimate presented in Table 6 are likely to affect the incidence of unpaid labour. For instance the number of children in the household is expected to affect how much each child has to work since tasks are likely to be distributed among children. As well as this, the most significant daily activities that are likely to compete for a child's unpaid working time, such as going to school, performing paid work and performing domestic chores, are likely to impact how much unpaid labour a child performs. For this reason we perform an OLS estimate with an extension of variables not impacting programme enrolment but impacting the incidence of unpaid labour.²⁸ We find that the impact of the Juntos programme is slightly smaller, with domestic chores having a significant positive impact and schooling having a significant negative impact. This indicates that some of the impact of the Juntos programme on unpaid labour found in regression 1 in Table 6 could stem from attitudes regarding child employment in domestic chores and unpaid work in and around the home. Nonetheless excluding or including these additional variables does not have a large effect, indicating that Juntos programme participation is one of the most important factors and confirming the possible use of a model specification that allows for propensity score matching in order to add an additional perspective to the study.

To better understand children's time allocation we further study if the Juntos programme has a differential impact on gender. By including an interaction term between programme participation and gender, we are able to further analyse the gender differences in unpaid work for both beneficiaries and non-beneficiaries. Regression 2 in Table 6 shows that beneficiary boys are the group that perform the most unpaid work, the strongly economically and statistically significant interaction term showing that beneficiary boys on average perform approximately 18 minutes more unpaid labour per day than beneficiary

²⁷ $0.094 * 60 \text{ minutes} = 5.64 \text{ minutes}$.

²⁸The results of this test are found in Table 14 in Appendix E.

girls.²⁹ Both the Juntos programme and gender variables are strongly statistically significant with similar coefficient signs to the first OLS regression, showing that Juntos beneficiary children perform more unpaid labour than non-beneficiary children and boys overall perform less work than girls when controlling for the interaction effect of programme participation and gender. This implies that beneficiary boys do indeed perform more unpaid work than beneficiary girls, thus confirming our second hypothesis.

Furthermore, it is also of interest to dig deeper into children's time allocation between different activities and search for potential substitution effects. Table 9 presents the OLS estimates for regressions studying the effect of Juntos programme participation on the main activities Peruvian children spend their time on: domestic chores, caring for others, paid work, schooling, studying and leisure.³⁰ By including variables for gender and the interaction of gender and programme participation, we can study whether the Juntos programme has differential effects on gender for these activities.

When investigating children's time allocation, the OLS estimates in regression 1 in Table 9 indicate that beneficiary children spend more time performing domestic chores than non-beneficiary children, Juntos programme participation on average having a positive and statistically significant baseline impact of 21 minutes per day, not accounting for the interaction effect of programme participation and gender.³¹ The interaction term between programme participation and gender is statistically insignificant but on the whole we see that gender as such has a negative impact on time spent performing chores, boys performing on average almost 14 minutes less than girls per day.³²

Programme participation also increases the time spent caring for others by on average approximately 16 minutes per day, with no statistically significant gender differential but an indication of girls spending more time with the task than boys.³³ The opposite is true for the time spent studying at home where Juntos programme participation is expected to lower studying time by on average approximately 26 minutes per day, as indicated in regression 5 in Table 9.³⁴ This result suggests that there is a substitution effect between the time performing unpaid work and the time spent studying at home. Again we find no statistically significant gender differential but an indication that non-beneficiary boys on average study less at home than non-beneficiary girls whilst beneficiary boys study more than beneficiary girls.

²⁹ $(-0.201+0.500) * 60 \text{ minutes} = 18 \text{ minutes}$

³⁰We check the consistency of these results by performing propensity score matching in order to determine the average treatment effect (ATE) of the Juntos programme on the activities performed by the child. The results of these tests are presented in Table 16 in Appendix E. We find that OLS estimates are either entirely consistent with the matching ATEs for some activities and that the estimates are slightly downward biased for other activities, possibly resulting in an underestimation of the impact of the programme.

³¹ $0.350 * 60 \text{ minutes} = 21 \text{ minutes.}$

³² $-0.228 * 60 \text{ minutes} = -13.68 \text{ minutes.}$

³³ $0.272 * 60 \text{ minutes} = 16.32 \text{ minutes.}$

³⁴ $-0.429 * 60 \text{ minutes} = 25.74 \text{ minutes.}$

Table 9: The effect of Juntos on children's time allocation

	(1)	(2)	(3)	(4)	(5)	(6)
	Domestic chores	Caring for others	Paid work	School	Studying	Leisure
Juntos	0.350*** (0.0817)	0.272*** (0.0994)	-0.0762 (0.0684)	0.0129 (0.114)	-0.429*** (0.0816)	-0.113 (0.149)
Male	-0.228*** (0.0658)	-0.0971 (0.0801)	-0.00803 (0.0551)	-0.0270 (0.0922)	-0.0952 (0.0678)	0.453*** (0.120)
Juntos * male	0.0327 (0.111)	-0.0268 (0.135)	0.0532 (0.0927)	-0.0902 (0.155)	0.134 (0.110)	-0.164 (0.203)
Control variables	yes	yes	yes	yes	yes	yes
Observations	856	856	856	856	653	856
R-squared	0.155	0.049	0.036	0.027	0.104	0.080

Notes: Dependent variables: shown in top row, each measured in hours per day. *** p<0.01, ** p<0.05, * p<0.1. Standard errors in parentheses. Domestic chores is defined as "fetching water, firewood, cleaning, cooking, washing and shopping" (Young Lives, 2011a). Caring for others is defined as "caring for younger siblings and ill household members" (ibid.). Paid work is defined as "activities for pay or for money outside of household or for someone not in the household" (ibid.). School is defined as time "at school, including play time" (ibid.). Studying is defined as "studying at home, or extra tuition outside the home" (ibid.). Leisure is defined as "playing, seeing friends, using the internet, etc. Control variables: gender and age of child, whether family lives in a city or a rural area, how much land the family owns, whether or not the family owns a car, how big the family's house is, the parents' level of education and whether or not the locality is a part of the Wawasi programme, has a secondary school and a health centre." (ibid.) For full OLS results, including control variables see Appendix E, Table 15.

Regarding leisure time, the difference between Juntos members and non-members is negative but statistically insignificant, as shown in regression 6. Whilst the gender variable is both economically and statistically significant, we see no gender differential in the impact of the programme since the interaction term between gender and programme participation is statistically insignificant. This indicates that the difference in leisure time is true across the board for both beneficiary and non-beneficiary children, with little or no impact of the Juntos programme. As expected, we see no effect of Juntos participation on school attendance and paid work, for neither boys nor girls. Beneficiary children do not seem to substitute time performing unpaid work with time at school or time performing paid work. This is not surprising since Juntos is conditioned on school attendance and enrolment rates are high in Peru.³⁵ Also, the beneficiary families live in poverty and are in need of an extra income source, making substitution away of paid labour highly unlikely.

All in all, the results suggest that beneficiary children perform unpaid work at the cost of studying at home for both girls and boys. However, other activities at home such as domestic tasks and caring for others are increasingly performed by beneficiary children. Our third hypothesis is thus only partially confirmed.

8.2 Mechanisms governing unpaid labour

The analysis in the previous section has shown that beneficiary children perform more unpaid labour than non-beneficiary children. We will now study the mechanism behind this impact of the programme, using our primary data collected in the Ayacucho region.

Our fourth hypothesis states that when families invest the Juntos money in family businesses, unpaid child labour increases. The idea behind this is that as the business grows and the pertaining workload increases, the parents need the help of the children in running the business, resulting in more unpaid labour for the children. Equation 1 in Table 10 shows that this is indeed the case: when a Juntos family invests part of the cash transfer in their family business, the children work almost 42 minutes more per day compared to children in Juntos families who do not invest the transfer in their family business.³⁶ This result is statistically and economically significant.

In order to see if this investment effect is the same on beneficiary boys' and girls' unpaid work, we include an interaction term between Juntos investment and gender. When including the interaction term, both gender and investment become statistically insignificant, as can be seen in equation 2 in Table 10. The coefficient on the interaction term is however significant at the 10% level and economically large, which could indicate that most of the measured effect of the Juntos programme is coming through boys performing more unpaid work in families that invest their Juntos money in the family business. Whilst more testing is needed on a larger sample, we can conclude that our fifth hypoth-

³⁵Only 2.80% of the children interviewed by Young Lives do not go to school and only 1.69% of the children whose mothers we interviewed do not go to school. These numbers are representative of the national enrolment statistics for Peru, presented in the Background section.

³⁶ $0.699 \times 60 \text{ minutes} = 41.91 \text{ minutes}$.

Table 10: The effect of investment of the Juntos transfer in the family business on unpaid child labour

	(1)	(2)
	Basic OLS	OLS w/ interaction
Juntos investment	0.699** (0.344)	0.273 (0.413)
Male	0.193 (0.215)	0.068 (0.223)
Juntos investment * male		1.324* (0.731)
Age	0.094*** (0.027)	0.098*** (0.027)
Father basic education	-0.014 (0.390)	-0.100 (0.388)
Spanish	-0.826*** (0.217)	-0.845*** (0.215)
School distance	0.005 (0.005)	0.006 (0.005)
Credit	0.349 (0.389)	0.393 (0.385)
Constant	-0.034 (0.569)	0.059 (0.564)
Observations	95	95
R-squared	0.269	0.296

Notes: Dependent variable: unpaid child labour, measured in hours per day. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Standard errors in parentheses. "Juntos investment" is defined as investment of some of the bimonthly Juntos transfer in the family business.

esis, stating that boys perform more unpaid labour than girls as a result of investing Juntos money in the family business, holds true for our sample.

8.3 Validity of the results

There exists a risk that both our secondary and primary data estimates suffer from a bias due to omitted variables in our OLS model. Omitted variable bias can be minimised by a deep understanding of the context in which the study is carried out. In our case, the numerous expert interviews conducted in Peru and the experience acquired in the field made us well aware of the local context, thus minimising potential bias from omitting key variables. Additionally, the complementary matching tests confirming the estimates of the OLS lead us to believe that the OLS tests in the first part of this paper do in

fact show accurate results. Unfortunately, due to the limited sample size of our primary dataset, we were not able to use matching in order to confirm our findings regarding the effect of Juntos investment in the family business. Nevertheless, our results provide direction and guidance for what needs to be studied further.

Four aspects of the primary data collection could potentially damage the validity of our results. Firstly, self-selection bias is difficult to overcome in such settings: people who agreed to participate in the survey may not be representative of the overall population of Juntos beneficiaries. The fact that these people were willing to participate, had the time to do so and could access the site where the survey took place, suggests that they have certain characteristics that we cannot be certain are present in the rest of the population. To mitigate the self-selection bias and ensure the representativeness of our sample, we used several different targeting mechanisms when identifying respondents: local organisations, Juntos officials and personal contacts. A second potential bias could stem from the fact that we acted as interviewers. Some of the interviewees thought that we were sent from the Juntos programme administration, which means that there exists a risk that the survey participants held back information for fear of potential consequences. In order to combat this, we were very clear in explaining who we were, why the survey was being performed, how the data would be used and the fact that complete anonymity was guaranteed. Another potential issue is that language created a barrier to install trust. In the poor and remote areas of the Peruvian Highlands, the majority of the people have Quechua as their mother tongue. During the fieldwork translators were therefore needed at times. We chose trusted people from the community as translation aids, primarily asking women for help in order to ensure that the respondents felt comfortable enough to speak out. Finally, the survey was mainly performed in groups, which could have influenced individuals' answers. To ensure the most honest responses, groups included no more than 6 people and exclusively women in all but one instance.

The results stem from a sample that is representative of poor people living in the Peruvian Highlands who benefit from the Juntos programme. This permits the generalisation of the findings to other people living in poverty in rural Peru. Yet, many of the Juntos beneficiaries in the Ayacucho region have suffered from political violence that hit the country from the 80s and onwards, which could impede the generalisation of the findings on the investment of Juntos money in family businesses. Also, it has been shown that in very remote Peruvian communities, investing the Juntos money in family businesses is seen as useless due to the absence of market: this holds true for instance for beneficiaries living in the Amazonas (Van den Berge, 2006). In that case, generalising our results to beneficiaries from that part of Peru might give an erroneous image of the true situation. In general, the findings based on our primary data have little external validity as the sample is small and covers only on a small geographical area. Nevertheless, it highlights an interesting mechanism through which Juntos impacts unpaid child labour and provides indication for the potential direction for future research.

The findings are also likely to be generalised to beneficiaries in other Latin American countries who participate in a local CCT programme that is at a similar stage as the Juntos programme. Three aspects have been identified as potentially limiting the pos-

sibility of generalisation to other contexts. Firstly, Peru has been characterised by high school enrolment for two decades, which influences the impact of Juntos' schooling conditionality. A CCT established in a country with low attendance rates is likely to have a different effect on children's schooling, paid and unpaid labour. Besides, the amount transferred to Peruvian families is lower than for similar programmes in Latin America, as discussed earlier, implying that beneficiaries from other countries may have more freedom in spending their money. The generalisation of our findings may also depend on whether the luxury axiom holds in the relevant country. If it holds, the local CCT is likely to have a more efficient impact on child labour.

In this paper, only one mechanism through which Juntos affects unpaid child labour is studied, namely investment in family businesses. Child labour being such a complex phenomenon, with very little research existing on the topic of unpaid work, there still exists room for further research on how programmes such as Juntos impact child labour.

9 Discussion

Having found that the Juntos programme as a whole and the investment of the Juntos transfer in the family business both lead to more unpaid labour, especially for boys, we now discuss potential reasons for this effect. We also highlight possible policy implications and how our results can be used to improve the effectiveness of policies against child labour.

9.1 Do beneficiary children perform more unpaid work than non-beneficiary children?

Our results show that children who benefit from the Juntos programme perform more unpaid work than non-beneficiary children. Knowing that one of the implicit objectives of the programme is to reduce child labour while increasing access to education, this increase in unpaid child labour highlights an inefficiency of the programme. Moreover, there are gender differences in the incidence of unpaid work that confirm a division of tasks that previous studies have emphasised (see for instance Ilahi, 2001): beneficiary boys perform more unpaid work than beneficiary girls, who in turn spend more time on domestic chores and caring for others. In Peru, strong cultural norms lead the girls to work more with domestic tasks and caring for other members of the household whereas boys are chosen for more physical tasks.

Interestingly, not only unpaid work is increased: beneficiary children also perform more domestic tasks and spend more time caring for others than non-beneficiary children. Whilst Juntos does not affect children's leisure time, the results suggest that there is a substitution effect between the time spent performing unpaid work, performing domestic chores and caring for others and the time spent studying at home. The fact that only studying at home and not leisure is substituted is somewhat surprising considering Peruvian parents' high value for education. One potential explanation for this phenomenon is that the programme requirement of attending 85% of class is so high that parents feel

like the children do not need to spend additional time studying.

Noteworthy is also that we find that Juntos has no impact on paid work nor on school enrolment. Regarding paid work, this finding is somewhat surprising considering that the latest study on Juntos' impact found a reduction of beneficiary children's paid work (see Escobal and Benites, 2012). The fact that Juntos does not affect children's paid work could witness of the persisting need of the family for the extra income and the well-established perception that working is a way of educating children. This is reflected in the rejection of the luxury axiom (see Ray, 2000; Ilahi, 2001): not only poor children work and increasing the income of the family does not systematically lead to a decrease of child labour. The Juntos transfer amount, unlike other in CCT programmes, is the same for each family regardless of the number of children. As well as this, the transfer as a percentage of beneficiaries' average consumption per month is low compared to other CCTs in Latin America (Perova and Vakis, 2012). These two factors have initiated discussions regarding potentially increasing the transfer amount. It is however questionable if an increased transfer amount will have a significant impact on reducing child labour, since the luxury axiom generally does not hold in Peru. Ilahi (2001) however finds that the luxury axiom holds for girls' paid work, thus suggesting that increasing the amount of the Juntos transfer could lead to a reduction in paid labour performed by girls. Any increase in the transfer amount could however lead to increases in unpaid labour as our results show, so further research would be needed to correctly assess the impact of the transfer size on both paid and unpaid child labour.

Regarding schooling, we found no impact of the programme, a result which is in line with the findings of previous studies on Juntos but different from most findings on other CCTs. What differentiates Juntos from other CCTs is that the programme was implemented when school enrolment rates were already high. The reason is that Peruvian parents' value education relatively high compared to parents from other countries (Ray, 2000). Interestingly, in countries like Peru where enrolment rates have long been high, CCT programmes become like regular monetary transfers since the families are already fulfilling the programme conditions prior to become beneficiaries. The condition on school attendance then has less weight compared to countries where enrolment rates are lower, thus weakening the effect of the programme in changing attitudes toward education.

9.2 Does investment of the Juntos money in family businesses affect the incidence of unpaid child labour?

Our results show that investment of the Juntos transfer in the family business increases the incidence of unpaid child labour. This could be because investment in the family business leads to new work opportunities for the whole family, including the children. Because of the high poverty level of the beneficiary households and the inefficiencies in the market for land and labour, parents turn to internal workforce when new work opportunities arise within the family business. Thus, children's time spent on performing unpaid work increases.

A priori, investing the Juntos transfer in the family business goes against the primary

purpose of the programme, since the transfer is intended to be used for expenses related to the children's well-being and education. However, by investing the money into the family business, the families have the possibility to generate a lasting income and thus alleviate poverty in the long-run which is the ultimate goal of the Juntos programme. Beneficiaries have understood that the programme will not support them forever and by investing into a productive activity, they hope to secure future revenue for when they leave the programme (Huber et al., 2009; Arroyo, 2010). Little research has been performed on how the beneficiaries spend the money they receive. If investing the money transferred into a family business can lead to more stability even after the children turn 19 and the family has to leave the programme, policy makers need to consider providing information on profitable investments to programme participants. Another option could be to cooperate with local micro-credit institutions to provide trainings on entrepreneurship. The risk with these ideas is however that the Juntos programme could lose its original focus on children.

Our results show that boys are more affected by the investment in the family business than girls. This is not surprising considering the previous finding confirming that beneficiary boys perform more unpaid work compared to beneficiary girls. In addition, the strong gender-driven division of tasks that prevails in Peruvian households contributes to this finding- girls are primarily responsible for domestic chores and caring for others, so if new work opportunities arise in the family businesses following investment, it is likely that these will be allocated to boys in the first instance.

9.3 Policy implications

When discussing the implications for policies targeting children, their well-being should be put at the centre of the debate. In Peru, there exists a need to protect working children. Research shows that it is common for Peruvian children to combine work and school, which can be particularly demanding for their physical and mental health. Yet there exists a need to recognise the strong traditional perception that working as a child can serve as apprenticeship for the future, especially unpaid and domestic work. Child labour is deeply anchored in society's values in Peru. Considering the extreme poverty conditions in which Juntos beneficiaries live, as well as the dependence on the extra income or workforce from the children, banning child labour within the Juntos programme is not an efficient solution. Measures need to be implemented that ensure that children stay out of harmful industries or exploitative conditions, while at the same time recognising the value of education in performing moderate, harmless, work.

The difficulty with unpaid labour lies in its hidden aspect. In fact, children perform unpaid labour inside the house, which makes it challenging to monitor and control, thus making the working children vulnerable to exploitation. Performing unpaid work on the family farm or business often includes walking long distances by foot and on dangerous roads, working long hours without breaks, in the sun or in the cold depending on the season and carrying heavy items such as wood, water or food for the cattle. Unpaid labour is also hidden in the sense that it is not considered by many as work, but rather as help. Given these circumstances, we suggest the following measures in order to improve

the situation for children performing unpaid work:

a) Introducing or improving school organisations focusing on child labour.

Paid work being more easily identified, unions for working children such as MANTHOC, have been created in Peru to prevent children's exploitation and to protect their rights. Even though these organisations have limited power in withdrawing children from the paid workforce, they have been efficient in providing a forum for discussion and for elevating child labour issues to the centre of public debates (Van den Berge, 2006). When it comes to unpaid child labour, similar organisations are challenging to implement, due to the hidden aspect of such work as mentioned above. However, one possibility could be to leverage the school attendance requirement of CCTs in order to reach out to children: by giving children access to counsellors at school, they could talk about their activities, feelings and perceptions. It would not only create a forum for children to express themselves, but also contribute to more knowledge on the unpaid work children perform. In that sense, it would also be a way to address the information gap that exists around more informal forms of child labour.

b) Educating about the impact of unpaid labour and gender equality.

In countries like Peru where enrolment rates have been consistently high, CCTs should leverage their reach and inform beneficiaries of the benefits of schooling, the disadvantages of working as a child and the equal value of boys and girls. Since parents are the main employers of child workers, there exists a need to increase awareness that unpaid labour can be exploitative even when the children are working within their families. The spread of information could for instance be performed with the help of the officials who administrate the programme in every locality. This manner of using information and communication as a tool to combat child labour can be especially effective in remote rural regions where traditional norms are deeply anchored.

c) Improving the supply side of education.

Considering the high rates of school enrolment, there is a need to provide good educational services and to improve the quality of the education. Teacher absenteeism, deteriorated buildings or the need to walk long distances by foot are common for children going to school in remote rural areas. It is not enough for CCT programmes to achieve high enrolment rates, what is important is that the schools are accessible and that children learn something when in class, especially considering the objective of using CCTs to building human capital. Maintaining parents' high value for education in countries like Peru will contribute to decreasing the incidence child labour and this can only be achieved only through supply side improvements.

10 Conclusion

In this thesis, we study the determinants of unpaid child labour through the perspective of a CCT programme. In doing so, we contribute to filling the research gap in terms of our specific focus on unpaid child labour and on the impact of CCTs on children's time allocation. Our findings reveal that children who benefit from the Peruvian Juntos programme perform more unpaid work than non-beneficiary children, with a particularly strong effect for beneficiary boys, thus shedding light on an undesired effect of programme participation. Studying at home is the activity that beneficiary children substitute with unpaid labour, whereas the hours spent at school and performing paid work are unaffected by programme participation, mainly due to Peru's high historical enrolment rates and high level of poverty. In this context, Juntos fails to reach its implicit objective of reducing child labour. Moreover, in our effort to assess one mechanism behind the increase in unpaid child labour, our results show that investment of the Juntos money in a family business has a significant impact on the unpaid work performed by beneficiary children, with a stronger effect on boys. Even though the Juntos transfer is supposed to cover expenses related to children, investing it in a family business generates an income that will last after the programme's end, thus benefitting the family and the children in the long run.

In developing countries, there is a need to protect the children who work- combining work and school, as it has been shown to be common for Peruvian children, can be especially demanding for their health and well-being. Regarding policy implications, the difficulty in designing efficient programmes lies in the hidden characteristic of unpaid child labour: the tasks are performed at home and often considered only as help, thus making it challenging to monitor and control. Researchers and policy makers are encouraged to take into account all types of work performed by children as well as gender differences. In the meantime, we recommend building child labour organisations at school, to which children can turn if they need support with questions relating unpaid work. Additionally, CCTs must take advantage of their informative power: in the traditional areas where the programmes are implemented, families must be educated on the consequences of unpaid child labour and gender equality. Improving education from the supply side is also an important next step for increasing CCTs efficiency in combatting child labour. By implementing these policy recommendations, we believe that CCTs can be further improved in order to better fight unpaid child labour and contribute in a more efficient way to children's development.

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Appendices

Appendix A

Table 11: Overview of geographic classifications of fieldwork areas

Fieldwork area	Province	District	Locality
Chuschi	Cangallo	Chuschi	Chuschi
Huamanga	Huamanga	San Juan Bautista	San Juan Bautista
	Huamanga	Jesús Nazareno	Jesús Nazareno
Coracora	Parinacochas	Chumpi	Carhuañilla
	Parinacochas	Chumpi	San José
	Lucanas	Chaviña	Nueva Esperanza
	Lucanas	Chaviña	Chaviña

Appendix B

A translated version of the questionnaire used in the primary data collection in Ayacucho reads as follows:

Date: _____

Place: _____

Household Questionnaire - Ayacucho, August-September 2014

Instructions: This is an anonymous survey. Please write in capital letters. Some questions concern your child - please answer these questions for the child for whom you receive Juntos.

I. Household and community characteristics

1. How many members are there in your household?	_____ people
2. Does your household have an independent business?	<input type="checkbox"/> Yes <input type="checkbox"/> No
3. If yes, what type? (choose all relevant options)	<input type="checkbox"/> Farming/cattle <input type="checkbox"/> Shop/sell on street <input type="checkbox"/> Service <input type="checkbox"/> Other: _____
4. If no, what was the reason for not having an independent business? (choose all relevant options)	<input type="checkbox"/> I never thought about it <input type="checkbox"/> I don't know how <input type="checkbox"/> Too risky <input type="checkbox"/> Not enough funds <input type="checkbox"/> Other: _____
5. What is the main source of income of your household? (choose one option)	<input type="checkbox"/> Independent business <input type="checkbox"/> Work for wage <input type="checkbox"/> Public grants such as money from Juntos <input type="checkbox"/> Other: _____
6. Has anyone in your household taken a loan/credit in the last 12 months?	<input type="checkbox"/> Yes <input type="checkbox"/> No
7. If yes, for how much?	S/. _____
8. If yes, for what?	<input type="checkbox"/> Independent business <input type="checkbox"/> Other: _____
9. If no, why not? (choose all relevant options)	<input type="checkbox"/> I have enough resources <input type="checkbox"/> Too expensive <input type="checkbox"/> I already have a loan/credit <input type="checkbox"/> Too risky <input type="checkbox"/> Other: _____
10. Does anyone in your household have an insurance? (for example health insurance)	<input type="checkbox"/> Yes <input type="checkbox"/> No
11. Do you have electricity in your home?	<input type="checkbox"/> Yes <input type="checkbox"/> No
12. Are there any micro-credit institutions in your community?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> I don't know

Date: _____

Place: _____

13. Is there any information available on how to start/run your own business in your community?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> I don't know
14. How many people live in your community?	_____ people		
15. How much time does it take for the child to walk to school?	_____ minutes		

II. The following questions concern Juntos

16. Does your household receive Juntos?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
17. For how many months have you been part of the programme?	_____ months	
18. How much of the 100 soles from Juntos do you spend on, each month:	Food	S/._____
	Clothing	S/._____
	Health	S/._____
	Savings	S/._____
	Independent business	S/._____
	Other: _____	S/._____
19. If the Juntos money was increased to 200 soles per month, how much of the 200 soles from Juntos would you spend on:	Food	S/._____
	Clothing	S/._____
	Health	S/._____
	Savings	S/._____
	Independent business	S/._____
	Other: _____	S/._____
20. If you were to invest in your independent business what would you prefer? (choose one option)	<input type="checkbox"/> Conditional grant of 100 soles, such as Juntos <input type="checkbox"/> a loan of 100 soles with 5 soles interest	

III. These questions concern the child you receive Juntos for

21. Date of birth of child: ____/____/____ (month/year)	22. Gender of child: <input type="checkbox"/> Male <input type="checkbox"/> Female
23. Mother tongue of child:	<input type="checkbox"/> Spanish <input type="checkbox"/> Quechua <input type="checkbox"/> Other
24. How many of the child's siblings live in the household?	_____ brothers and _____ sisters

Date: _____

Place: _____

25. How many hours PER DAY does the child spend:	At school?	_____ hours
	Working for pay?	_____ hours
	Helping on the farm/with the animals/family business/ handicraft at home	_____ hours
26. How many hours PER WEEK does the child spend on:	Care for others in the family	_____ hours
	Domestic chores	_____ hours
	Helping on family farm/with the animals	_____ hours
	Helping with family business	_____ hours
	Piecework or handicraft done at home	_____ hours
	Helping outside the family house	_____ hours
27. How many hours per day do the child's SIBLINGS spend: (average for all siblings in the household)	At school?	_____ hours
	Working for pay?	_____ hours
	Helping on the farm/with the animals/family business/ handicraft at home	_____ hours

IV. Respondent characteristics

28. Your relation to the child: <input type="checkbox"/> Mother/father <input type="checkbox"/> Brother/sister <input type="checkbox"/> Other: _____	29. Gender: <input type="checkbox"/> Male <input type="checkbox"/> Female	
	30. Age: _____ years	
31. Which level of education did the father of the child attend?	<input type="checkbox"/> No education	<input type="checkbox"/> Primary education
	<input type="checkbox"/> Secondary education	<input type="checkbox"/> University

Thank you very much for your time and cooperation!

Appendix C

The following explanation of the theory of propensity score matching is adapted from Rosenbaum and Rubin (1983), Heckman, Ichimura and Todd (1998) and Khandker, Koolwal and Samad (2010).

We define the propensity score $p(x)$ as the probability of being treated (t) given pre-treatment characteristics x :

$$(1) \ p(x) = p(t = 1|x)$$

If the unconfoundedness assumption holds, we can say that given pre-treatment characteristics, the allocation to treatment is random. This can be expressed as the set of treated (Y^1) and pseudo-control (Y^0) outcomes being orthogonal to allocation to treatment, given the pre-treatment characteristics:

$$(2) \ (Y^1, Y^0) \perp t|x$$

If treatment allocation is random given pre-treatment characteristics, it should also be considered random given the propensity score by equation (1). We can thus say that the set of treated and pseudo-control outcomes also are orthogonal to allocation to treatment, given the propensity score:

$$(3) \ (Y^1, Y^0) \perp t|p(x)$$

The average treatment effect ATE is defined as the difference before and after treatment for a treated observation:

$$(4) \ ATE = E(Y^1 - Y^0|t = 1)$$

ATE can also be defined as the difference before and after treatment for a treated child, given the distribution of propensity scores $f(p(x))$:

$$(5) \ ATE = E_{f(p(x))}(Y^1 - Y^0|t = 1)$$

$$(6) \ ATE = E_{f(p(x))}(Y^1|t = 1) - E_{f(p(x))}(Y^0|t = 1)$$

$E_{f(p(x))}(Y^1|t = 1)$ represents the current post-treatment state for the beneficiary children, which is observed and available in the Young Lives dataset. $E_{f(p(x))}(Y^0|t = 1)$ however represents the former pre-treatment state for the beneficiary children, which has not been observed and is not available. However, by the condition of confoundedness expressed by equation (3), we can say that the pre-treatment state for beneficiary children is equal to the pre-treatment state for non-beneficiary children:

$$(7) \ E_{f(p(x))}(Y^0|t = 1) = E_{f(p(x))}(Y^0|t = 0)$$

Using equation (7) in equation (6) we see how propensity score matching uses coun-

terfactuals to measure the ATE:

$$(8) ATE = E_{f(p(x))}(Y^1|t = 1) - E_{f(p(x))}(Y^0|t = 0)$$

This means that we can find the average treatment effect by comparing treated beneficiary children with non-treated non-beneficiary children.

Appendix D

Table 12 shows the logistic distribution for the regression of the control variables on participation in the Juntos programme. From this logistic regression the propensity scores for participation in the programme are generated.

The distributions of the propensity scores can be compared for the treatment and control households. Figure 2 shows the area of common support. The overlapping assumption for matching holds: the distributions are similar and the two samples are balanced. In other words, it is possible to find a close match from the control group for each treatment household, based on the similarity of their propensity scores.

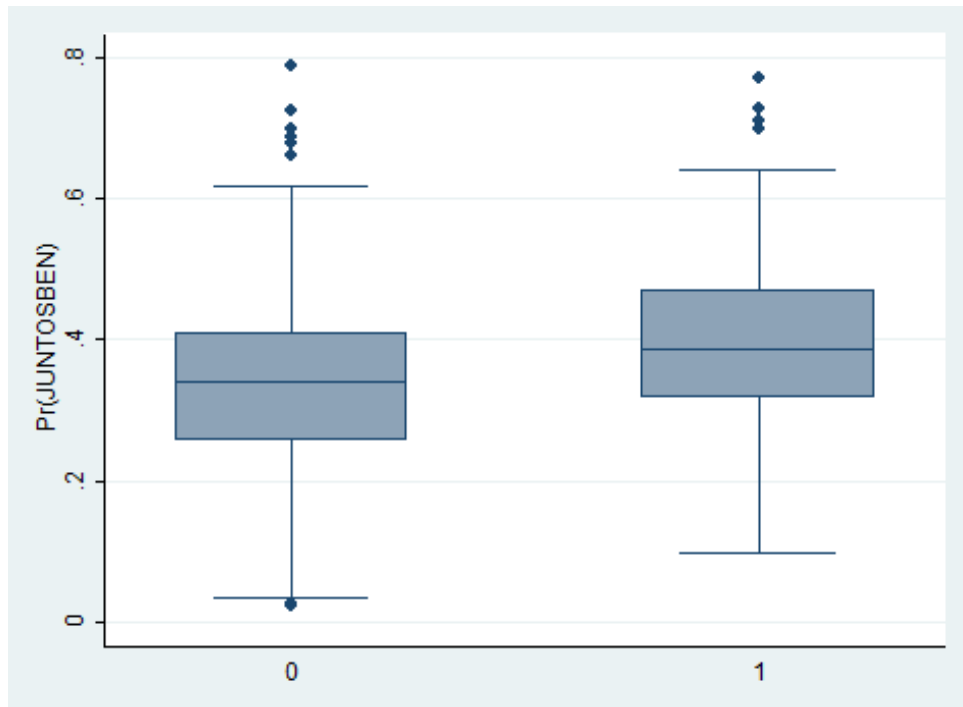


Figure 2: Boxplot showing balancing property of two samples

As Table 13 shows, the average propensity scores for the two groups are similar to each other, implying that the probability of participating in Juntos is approximately the same for individuals in both groups.

Table 12: Propensity score regression

	Logistic regression
Age	-0.096*** (0.027)
Male	-0.092 (0.150)
City	-0.160 (0.192)
Land owned	4.682 (3.121)
Car	-1.997*** (0.609)
Small house	-0.238 (0.161)
Big house	-0.339 (0.232)
Mother primary education	0.117 (0.218)
Father primary education	0.668*** (0.191)
Wawawasi	0.448*** (0.167)
Secondary school	-0.404 (0.191)
Health centre	-0.636 (0.805)
Constant	1.189 (0.867)
Observations	858
Pseudo r-squared	0.057

Notes: Dependent variable: Juntos programme participation *** p<0.01, ** p<0.05, * p<0.1. Standard errors in parentheses.

Table 13: Summary statistics: propensity scores by programme participation

Variable	Obs	Mean	Std. Dev.	Min	Max
Juntos = 0	542	.3305114	.1231638	.0228758	.7896401
Juntos = 1	298	.3988686	.1170744	.0965152	.7716845

Appendix E

Table 14: The effect of Juntos on unpaid child labour measured using additional controls

	Extended OLS
Juntos	0.426*** (0.080)
Male	0.003 (0.069)
Age	0.086*** (0.012)
City	0.163* (0.088)
Land	2.302 (1.446)
Car	-0.207 (0.157)
Small house	-0.063 (0.075)
Big house	-0.062 (0.103)
Mother primary education	-0.136 (0.102)
Father primary education	0.087 (0.092)
Wawawasi	-0.023 (0.076)
Secondary school	-0.012 (0.087)
Health centre	-0.628 (0.390)
Household children	0.006 (0.026)
Domestic chores	0.202*** (0.045)
Paid work	-0.062 (0.056)
School	-0.261*** (0.034)
Constant	1.457*** (0.448)
Observations	856
R-squared	0.218

Notes: Dependent variable: unpaid labour, measured in hours per day. *** p<0.01, ** p<0.05, * p<0.1. Standard errors in parentheses. 55 Unpaid labour, time spent in school, paid labour and domestic chores measured in hours per day. "Household children" represents the number of household members under the age of 18.

Table 15: The effect of Juntos in children's time allocation, full OLS results

	(1)	(2)	(3)	(4)	(5)	(6)
	Domestic chores	Caring for others	Paid work	School	Studying	Leisure
Juntos	0.350*** (0.0817)	0.272*** (0.0994)	-0.0762 (0.0684)	0.0129 (0.114)	-0.429*** (0.0816)	-0.113 (0.149)
Male	-0.228*** (0.0658)	-0.0971 (0.0801)	-0.00803 (0.0551)	-0.0270 (0.0922)	-0.0952 (0.0678)	0.453*** (0.120)
Juntos * male	0.0327 (0.111)	-0.0268 (0.135)	0.0532 (0.0927)	-0.0902 (0.155)	0.134 (0.110)	-0.164 (0.203)
Age	0.0850*** (0.00900)	0.0496*** (0.0110)	0.0346*** (0.00754)	0.0229* (0.0126)	0.0190 (0.0894)	-0.107*** (0.0165)
City	-0.0445 (0.0685)	-0.0783 (0.0834)	-0.00625 (0.0574)	0.0345 (0.0960)	0.114* (0.0672)	-0.199 (0.125)
Land	0.0791 (1.121)	0.355 (1.365)	-0.119 (0.939)	0.151 (1.572)	-1.419 (1.153)	-0.0383 (2.051)
Car	-0.0419 (0.122)	-0.156 (0.148)	-0.0652 (0.102)	0.171 (0.171)	-0.00632 (0.124)	0.283 (0.223)
Small house	0.0697 (0.0575)	0.0322 (0.0700)	0.0709 (0.0482)	0.00700 (0.0807)	-0.0257 (0.0580)	-0.0652 (0.105)
Big house	-0.0932 (0.0794)	-0.116 (0.0967)	0.000243 (0.0665)	0.185* (0.111)	0.138* (0.0809)	-0.0645 (0.145)
Mother primary education	0.0811 (0.0793)	0.0143 (0.0965)	-0.0731 (0.0664)	0.125 (0.111)	0.0761 (0.0783)	-0.148 (0.145)
Father primary education	0.0994 (0.0712)	0.0434 (0.0867)	0.0444 (0.0597)	-0.0976 (0.0999)	-0.0977 (0.0740)	-0.00700 (0.130)
Wawawasi	-0.0118 (0.0586)	0.0341 (0.0713)	-0.0802 (0.0491)	0.0872 (0.0821)	0.0957 (0.0600)	-0.197* (0.107)
Secondary school	-0.0694 (0.0677)	-0.0875 (0.0824)	-0.0141 (0.0567)	-0.00779 (0.0949)	0.142** (0.0688)	0.0195 (0.124)
Health centre	-0.115 (0.300)	0.0267 (0.365)	0.0728 (0.251)	1.339*** (0.421)	0.295 (0.310)	-0.301 (0.549)
Constant	0.446 (0.319)	0.134 (0.387)	-0.309 (0.270)	0.527*** (0.437)	1.248 (0.760)	4.677*** (0.577)
Observations	856	856	856	856	653	856
R-squared	0.155	0.049	0.036	0.027	0.104	0.080

Notes: Dependent variables: shown in first row, each measured in hours per day. *** p<0.01, ** p<0.05, * p<0.1. Standard errors in parentheses.

Table 16: Average treatment effect of Juntos programme for nearest-neighbour matching

	1:1 match	1:2 match	1:2 exact match
<i>Domestic chores</i>			
All	0.356*** (0.0760)	0.369*** (0.0651)	0.349*** (0.0668)
Boys	0.356*** (0.0980)	0.356*** (0.0820)	0.317*** (0.0793)
Girls	0.324*** (0.106)	0.389*** (0.0992)	0.447*** (0.113)
<i>Caring for others</i>			
All	0.388*** (0.0957)	0.315*** (0.0825)	0.341*** (0.0806)
Boys	0.175 (0.119)	0.179* (0.101)	0.263*** (0.0954)
Girls	0.583*** (0.137)	0.437*** (0.127)	0.406*** (0.126)
<i>Paid work</i>			
All	-0.0409 (0.0666)	-0.0456 (0.0513)	-0.0759 (0.0489)
Boys	-0.00655 (0.0957)	-0.0349 (0.0705)	-0.0459 (0.0511)
Girls	-0.0930 (0.0893)	-0.0779 (0.0713)	-0.0942 (0.0854)
<i>School</i>			
All	-0.0981 (0.129)	-0.106 (0.107)	-0.0993 (0.104)
Boys	-0.0371 (0.170)	-0.0568 (0.138)	-0.0808 (0.123)
Girls	-0.231 (0.183)	-0.0854 (0.147)	-0.166 (0.161)
<i>Studying</i>			
All	-0.317*** (0.0665)	-0.321*** (0.0616)	-0.368*** (0.0626)
Boys	-0.205** (0.0919)	-0.264*** (0.0845)	-0.262*** (0.0820)
Girls	-0.420*** (0.0931)	-0.406*** (0.0872)	-0.489*** (0.0884)
<i>Leisure</i>			

Continued on next page

Table 16 – *Continued from previous page*

	1:1 match	1:2 match	1:2 exact match
All	-0.311** (0.147)	-0.258* (0.125)	-0.259** (0.126)
Boys	-0.323 (0.203)	-0.329* (0.172)	-0.293* (0.167)
Girls	-0.211 (0.192)	-0.200 (0.171)	-0.275 (0.180)

Notes: Dependent variable: Juntos programme participation. *** p<0.01, ** p<0.05, * p<0.1. Standard errors in parentheses. The effect of the Juntos programme on each task is shown for all children (861 observations) and then separately for boys (458 observations) and girls (398 observations). Each task is measured in hours per day. Domestic chores is defined as "fetching water, firewood, cleaning, cooking, washing and shopping" (Young Lives, 2011a). Caring for others is defined as "caring for younger siblings and ill household members" (ibid.). Paid work is defined as "activities for pay or for money outside of household or for someone not in the household" (ibid.). School is defined as time "at school, including play time" (ibid.). Studying is defined as "studying at home, or extra tuition outside the home" (ibid.). Leisure is defined as "playing, seeing friends, using the internet, etc." (ibid.)

Whilst we cannot test the differences between genders using propensity score matching, we can look at the tendencies for each gender and activity type to determine the direction of the effect of the Juntos programme. The propensity score matching ATEs in Table 16 are entirely consistent with the OLS estimates in Table 9 for domestic chores, paid work and school. For leisure time, the matching model indicates a larger and strongly statistically significant effect of programme participation than the OLS model. Regarding the time spent caring for others and the time spent studying, the propensity score matching ATEs indicate a significant difference between genders whereas the OLS estimates find no gender differential.