The Impact of MGNREGA on the Welfare of Rural Children Analysed on the Basis of Child Labour and Educational Attendance

Keywords: MGNREGA, Welfare Program, Child Labour, Children's Education , Children's Welfare

JEL-Codes: I38, J13, O15
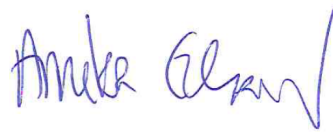
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EUROPEAN MASTER
IN LAW & ECONOMICS

Master thesis by Annika Echarti

"I hereby declare and confirm that this thesis is entirely the result of my own work except where otherwise indicated. I acknowledge the supervision and guidance I have received from Prof. Dr. Vijay Laxmi Pandey. This thesis is not used as part of any other examination and has not yet been published."

August, 15 2017/ Annika Echarti

Abstract

The Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) of 2005 provides 100 days of unskilled manual labour per year to the adult members of any rural household that demands it. This thesis examines the effects the act has on child labour and children's educational attendance by assessing the children of the participating households. Logit regressions and chi-square tests reveal that children of households which have worked during the year 2011-12 under the act are insignificantly less prone to engage into child labour and significantly less likely to attend school. The income effect is theorized to be the reason that possibly fewer children need to engage into child labour if the household receives a salary from MGNREGA works. The reason for the lower school attendance seems to be the substitution effect: If members of the households work for MGNREGA, especially girls are more likely to quit school attendance probably in order watch out for the younger siblings and to take care of the household. The results of this thesis imply that MGNREGA will not be able to sustainably solve the problem of poverty in rural India, as it promotes educational drop out, which will lead to an unskilled and poor population in the future.

Content

1. Introduction

India has the fourth fastest growing economy worldwide (Mourdoukoutas, 2017), but an overwhelming poverty, especially in the rural areas, is still persistent.

Many researchers have asked the question: Why are some countries rich while other countries are remaining poor? Olson (1996) for example looks at the standard growth accounting exercises to verify if it can provide any answers to the question. However, he finds that roughly 80% of cross-country variation of the GDP is attributed to the residual and not explained by factor accumulation or total factor productivity. Olson reasons that institutions might have a stake in answering the question and concludes that formal and informal institutions influence distinct structures of incentives. He focuses on the importance of contract rights; however, other researchers go further and show that institutions are also important for the economy as a whole to be able to grow. Scully (1997) for example shows with his model that it is important for the rule space in an economy to be efficient. If implemented rules are inefficient, growth will only increase up to a certain threshold and deteriorate afterwards. He shows that even if the capital accumulation per head is positive, this characteristic cannot make up for an inefficient rule space. However, good implemented and efficient rules are able to overcome little or no change in capital accumulation per head in such a way that the economy can still grow. These are only two examples of researchers hypothesising that good institutions are important for a society to rise from a third world country to an industrialized nation. Along these lines, this thesis will evaluate if the Mahatma Gandhi National

Rural Employment Guarantee Act of 2005 (MGNREGA) demonstrates any impact on the welfare of rural children, which will be analysed on the basis of child labour and educational attendance. The aim is to verify whether the act has the potential to terminate poverty in the long run and sustainably.

Due to the striking inequalities particularly between the rural and the urban regions in India, the MGNREGA was implemented in 2006 in order to provide 100 days of unskilled manual labour to any household willing to work at the minimum wage. Through this policy, poor people have the opportunity to receive a minimum salary every year or, if employment cannot be provided according to the given terms, these people will receive the unemployment allowance. Since its implementation, 125.5 million job cards have been issued and 252.5 million workers have been registered in all India (Government of India, 2017). It is not these numbers alone which trigger the interest of the government, researchers and other (developing) countries in the performance of the act. A lot of research has emerged over the past ten years evaluating the effect of the implementation of the act towards the enhancement of the livelihood security of poor people in rural areas. This preceding research has mostly focused on primary goals like employment, nutrition security and women empowerment. However, there is still a big lack of research on the secondarily affected people as well as the sustainable development of the country. Apart from building resources in the villages in order to connect them and enhance the infrastructure, it is not very clear so far if the programme is able to not just cure the symptoms of immense poverty, but also promote long-term development. To get a deeper look into this issue, this thesis will investigate the effects of

MGNREGA on child labour and children's attendance of educational institutions. These two outcome variables are important issues to look at in order to generate progress in the development of a country and to decrease poverty in the long-term. Child labour in this sense is a major indicator of poverty, since parents will only send their children to work if they are unable to afford the minimum subsistence of the family. Education on the other hand is one of the most important shares in the sustainable development of a country. An increase in educational attendance rates indicates at least the opportunity for the society to advance living standards by receiving more knowledge and chances to participate in the economy. One of the aims of the costly scheme should not only be to ease the symptoms of underdevelopment and poverty, but to also tackle the grounds. The analysis in this thesis will investigate whether the act has been able to reach the root of the solution - children - and influence their circumstances positively.

The particular variables in question of this research are the effect of MGNREGA on children in the labour force: whether fewer children between the age of six years and 14 years have to work in order to support their family's subsistence, and the effect of MGNREGA on the children's attendance at school. Both variables are assessed on the household level.

A decrease in occurrence of child labour could be explained by the income effect: Due to members of the household working under the MGNREGA, earning the minimum salary and therefore possibly being able to secure the livelihood of the family, child labour in that specific household would be made redundant. Explanations for a change in children's attendance in

education could be of different nature and are mentioned by various researchers. Apart from the income effect, which would have a negative impact on child labour and a positive effect on education, by allowing more children to go to school as the members of the household would be able to take care of themselves and their subsistence, there are three further channels that could have an influence on the probability of a child to drop out of education. The first possible explanation is the substitution effect, which is mostly apparent if the mother works during the day. In that case, somebody needs to watch the younger children and to take care of the household. Often the older girls are the ones who need to take over the role of the mother and are therefore not able to attend school any longer. A second possible explanation is that the mother starts working under the MGNREGA and due to her participation in the household's income supply she receives empowerment within the household. If the mother values her children's education highly enough, it is possible that she is able to raise the educational participation rate through her bargaining strength within the family. This possible effect is brought up by Afridi et al (2012), who find that mothers' participation in MGNREGA has a positive effect on their children's time spent in school. The last possible influence, MGNREGA could have on children's education is through the time members of the household spend working, instead of walking the children to school. As the working hours of the employment offered through the act are quite rigid, it is possible that nobody would be available to walk younger children to school if it is located far away. This circumstance would lead to a higher school dropout rate as well.

In the following, this thesis will first explain the background information, like main objectives, terms and the implementation procedure of MGNREGA. Second, some papers that have focused on the research of the impact of the programme regarding the possible rise of the livelihood security, the empowerment of women who work for the programme and its effect on wages in employments offered outside of MGNREGA will be summarized in the literature review. Third, the data used for this research will be defined, before; fourth, the methodology of the statistical analysis will be explained. Fifth, the results of the statistical tests will be analysed and checked for robustness. Seventh, limitations like the selection bias of the data will be discussed and recommendations for future research will be pointed out. Lastly, a small summary and a conclusion will be provided.

2. Program Background

First named the National Rural Employment Guarantee Act or Scheme (NREGA or NREGS), later renamed into Mahatma Gandhi National Rural Employment Guarantee Act or Scheme (MGNREGA or MGNREGS), is one of the largest and most aspirating social public works programs in the world (Das and Singh, 2014 p.2). The programme was expected to create two billion days of work during its first year in operation, because its good realization was thought to be crucial for the favourable outcome of the Millennium Development Goal to cut poverty in half between 1990 and 2015 (Jha and Gaiha, 2012 p.18).

The Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA), was enacted on 25 August 2005, launched on 2 February

2006, and arose due to the problem of high unemployment rates in India (Desai et al. 2015, p.9). The Act provides 100 days of unskilled manual labour at the minimum wage each financial year to any rural household that demands it. Each household can apply for registration at the local Gram Panchayat[1], which will, after verification, issue one job card to the whole household, containing photos of each eligible household member. Each member, who is at least 18 years old, has the possibility to work in the programme. With the job card, the household can apply for employment under the MGNREGA, which its members are supposed to receive within 15 days. If the Gram Panchayat is not able to provide a job position within the 15-day timeframe, the daily unemployment allowance has to be paid in cash. Also, if the employment is located further away than a five-kilometre radius of the village, extra wages of 10% are applicable (Ministry of Rural Development, 2007, p.4). The Gram Panchayat, together with the block[2] plan the different projects, which are supposed to be approached during the upcoming fiscal year (Ministry of Rural Development, 2008, p.8). The applicants do not have a direct influence over the selection of the projects; they can however raise their voice during social audit sessions. During the selection process of the projects it must be borne in mind that a ratio of 60:40 for wages and material must always be kept and that no machinery is permitted to support the MGNREGA works (Ministry of Rural Development, 2008, p.28). The total cost of the act is split between the federal government and the state governments. The federal government has to pay the complete

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[1] Gram Panchayat: A Gram Panchayat is in charge of a group of villages and at the bottom of the administration in the Indian government in order to decide on local matters effectively.
[2] Block: A block is a district subdivision, a planning and development unit, which is the intermediate between the Gram Panchayat and the district level (Taluk).

costs of the unskilled manual workers as well as 75% of the costs of the skilled and semi-skilled workers and the material, which will be used at the work side (Ministry of Rural Development, 2008, p.3). The state government has to bear the costs of the remaining 25% of wages and material as well as the unemployment allowance payable, in case that there cannot be any job assigned to the applicant within the maximal permitted 15 days (Ministry of Rural Development, 2008, p.38).

The objective of MGNREGA is not only to improve the current livelihood security by providing employment and with it a salary, but also to create future livelihood opportunities by building sustainable assets. This promotes, among others, the rural water conservation, connectivity of the villages, flood protection and drought proofing through which national resources get improved (Desai et al. 2015, p.10). Through the work on these sites, the act approaches causes of chronic poverty like floods, droughts, and missing infrastructure (Ministry of Rural Development, 2007 p.2). Another objective is to enhance the stance of women by demanding that at least one-third of the people who receive work under MGNREGA have to be women, who unlike in normal employment relationships earn the same wage as men. A crucial contribution to its success is supposed to be the demand-driven planning framework. As the planning is done between the Gram Panchayat and the block, the individual requirements of each village can be taken into account when possible projects are chosen. This way, the government does not enforce any undertakings the area does not need and oversight is close to the activities (Desai et al. 2015, p.11).

The scheme was first implemented in February 2006 in the poorest 200 districts of the country during Phase 1, then broadened in April 2007 to further 130 districts in phase 2, and finalized in April 2008 during phase 3. It has a budget of close to 2.3 per cent of total federal government spending and was able to employ 21 million households with 905 million person days of work during its first year of implementation in 2006-07 (Ministry of Rural Development, 2010). By the year 2010-11, MGNREGA supplied 54.9 million households with employment opportunities (Das and Singh, 2014, p.3).

3. Literature Review

Since its implementation, there has been a considerable amount of research about the act and its various effects. As the MGNREGA includes all rural India and suggests reducing problems such as immense poverty, inequality and missing infrastructure, academic interest has emerged over the past ten years to verify the progress. The literature review will describe a few research papers in order to give an overview of what has been done so far, especially with respect to child labour and children's education. The next section will be subdivided into the topics of enhancement of livelihood security, female empowerment, children's education and child labour. The first two topics are important to look at because their success is a good indicator of an increase in children's welfare.

3.1 Enhancement of Livelihood Security

A main objective of MGNREGA is to improve the livelihood security of the poor in rural areas, however, the literature has been inconclusive in the overall assessment of to what extent the scheme has really improved the living situation in the villages so far.

Jha and Gaiha (2012) address the question how much, and what kind of work has been terminated through MGNREGA labour and how beneficial it has been. They analyse a report issued by the government (GOI 2012a) containing key figures collected in 2009-10 and 2011-12 as well as a report published by the Ministry of Rural Development (GOI 2012b) with data for 2006-07 until 2011-12. The authors follow four criteria in order to evaluate their results: 1. The average quantity of work provided per household; 2. The percentage of households which worked for the full 100 days under MGNREGA; 3. The percentage of expenditure on the scheme valued against the total available funds; and 4. The percentage of total work completed under MGNREGA. If the act was duly implemented, say the authors, it should assist meeting the basic needs in rural India. However, after analysing the data according to the four criteria, they find that only the percentage of households who completed the 100 days of employment went up. All other performances; the average workdays per household, the percentage of money spent by the government and the percentage of completed resources, deteriorated over the examined time span. The authors conclude that regardless of the economic growth during the past years and the implementation of the scheme, the problem of high unemployment stays deep-seated in India.

Kumar and Joshi (2013) use the 66th round of the National Sample Survey (NSS) from 2009 to analyse the alteration in household consumption pattern and nutritional security of poor rural households. To examine the influence of MGNREGA on the dietary structure and nutritional status of these households, the authors establish the following groups: Non-job card holders, job card holders, job seekers, non-job seekers, beneficiaries – the households receiving employment under MGNREGA, and non-beneficiaries – the households not receiving employment under the act. They first compare the participation over different regions, income groups, land classes and household types, where they find among others that 83,4% of the MGNREGA job seekers were successful in receiving employment for an average of 43,1 workdays in 2009. A further comparison the authors make is between the dietary pattern, the share of food expenditure out of the total expenditure and the nutritional status of MGNREGA job card holders, which are further divided into non-beneficiaries and beneficiaries and non-job card holders. The authors find (amongst other things) that people, who received employment under the act, had a higher calorie and protein intake compared to households who sought for a job, but did not get the opportunity to work. This finding, according to the authors, reveals that the act is achieving its goal of nutritional security provision to the poor in rural areas. Lastly, Kumar and Joshi (2013) compare non-food expenditures of beneficiaries versus non-beneficiaries and find that beneficiary households spend more on non-food items. They conclude that the study reveals a direct positive effect on the income of the rural poor through the implementation of MGNREGA. According to their study, 22.5% of the rural

households have benefited through the provision of an average of 43 days and with this, the poverty level was reduced by 4%. Due to the rise in income, the consumption of cereal, non-cereal as well as non-food expenditure has increased in all categories of the rural households. In their opinion in accordance with the statistical results, MGNREGA has had a good and effective influence, causing an increase in household food consumption, a change in the dietary scheme and provision of food security the poor households in rural India.

Azam (2011) analyses MGNREGA's causal impacts on public works and labour force participation as well as the real wages of casual workers by taking advantage of the act's implementation over three stages (February 2006, April 2007, April 2008) across all districts in India. The author uses the 61st round (covering data of 2004-05) and the 64th round (covering data of 2007-08) of the Employment and Unemployment Schedule conducted by the National Sample Survey Organisation (NSSO), which is part of the government of India, to perform his research. The 61st round serves as the baseline for the Difference-in-Difference framework. As phase three districts implemented the act as recently as April 2008, they are not covered by the data of the 64th round and are therefore treated as control districts. The author further uses the Employment and Unemployment round for the year 1999-00 to control for differential trends, which had been existent before and are therefore not caused by MGNREGA. Major findings of his analysis are: First, compared to non-MGNREGA districts, districts in which MGNREGA was implemented show a significant increase of participation in the public work sector. This increase has been

particularly high for female workers as well as for Scheduled Caste (SC) and Scheduled Tribe (ST)[3] workers. Second, even though there has been a downward trend in labour force participation in rural India after 2004-05, the positive impact on labour force participation, which is contingent to the significant positive impact on the female labour force participation, has been able to mitigate this trend in districts where MGNREGA was implemented. Third, the author finds a positive impact of MGNREGA on average wages of casual workers, which is mainly caused by the wage increase of female workers by 8% compared to non-MGNREGA districts. The wage increase of male casual workers however, was found to be less than 1%, which implies that the implementation of MGNREGA caused prevailing gender gaps in wages to decrease.

3.2 Female Empowerment

Holmes et al. (2010) conduct their research in four villages of the districts of Khargone and Betul in the state of Madhya Pradesh in 2009. In order to find out about important gender-specific vulnerabilities, to see if and in what context gender issues get discussed and integrated already into social protection policies, to which degree gender deliberations are integrated into these policies, and to analyse the role MGNREGA plays in this framework, the authors structure their research around the following fields: 1. They try to understand the pluralism of social and gendered economic risk; 2. They analyse the design and the social protection policies with regard to gender; 3. They evaluate the impact of these social protection

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[3] Scheduled Castes and Scheduled Tribes are official groups which consist of people who have been disadvantaged historically in India. They were known as the Depressed Classes over the era the British ruled over India. The Scheduled Castes consist of about 16.6%, the Scheduled Tribes about 8.6% of the population. These groups form the baser part of the society in India.

programs on the gender equality, the food security and possible reductions of poverty or vulnerability at the household, intra-household and the community level; and 4. Lastly they give suggestions for policy and program designs in the future in order to enhance the social protection effectiveness. Focussing on MGNREGA through a gender lens, the authors find an improvement in the policy design. The one-third quota is an important key to help women in receiving more employment, the Equal Remuneration Act 1976, achieves equal wage payment of men and women and social forums, which the authors invoke as an example, promotes the participation of women in the development and assessment of necessary community assets. They also observe a significant increase in earning opportunities and household income contribution for women. However, a huge gap still persists because women work fewer days under the act than men, due to reasons like heavy work exclusion where women are not allowed to help. Further problems are inflexible working hours, which might conflict with the domestic responsibilities the women still face (in contrary to men) and the absence of crèche facilities, even though the policy design asks for their provision. Therefore women might face the problem that nobody is available to care for younger children, which means that they are unable to attend any job. The authors moreover find that women participate less in the community meetings where MGNREGA works are planned and discussed. This again leads to decisions mainly made by men, which potentially exclude the women's needs. For these reasons, they provide an extensive list of recommendations in order to empower women and decrease the gender gap in the long run. The overall tone of the paper is that

MGNREGA is a good step into the right direction, but still a lot needs to be done.

Narayanan and Das (2014) evaluate women's participation and rationing in MGNREGA compared to men by using the Employment and Unemployment Schedule of the 68th round (2011-2012) of the National Sample Survey. They address the question of whether women receive the same access opportunities to direct wage employment benefits as men and try to narrow down the design and implementation factors that stipulate their participation in the program. While, according to the authors, the nationally representative data implies that the program has performed well in being inclusive of women and helping them to take part in the act, they also ascertain that the findings are mixed across the states and sub-populations, where some report better participation and rationing as others. They conclude that policies may need to be designed with distinct focal points for different performing states.

The literature review above which is focusing on the enhancement of livelihood security and female empowerment through MGNREGA is inconclusive about the progress the act has brought into the households of the rural poor. Both of the above-discussed topics are important indicators of children's welfare and have a particular influence on children's education and the necessity for them to engage in work. The next section shows that research has also been ambiguous about findings on both child labour and children's participation in education with regard to MGNREGA. Even though literacy rates in India have, according to the census data, exclusively

increased over the past 20 years at least, they are still at about 74% on average (Government of India, 2011). As education is a very important criterion to generate sustainable growth and decrease the gap between rich and poor, it is relevant to find out if MGNREGA has been able to have a positive impact. Child labour is indivisibly linked to poverty and illiteracy. To solve this problem, concentrated efforts of the whole society are needed (Ministry of Labour and Employment, 2015). According to the Ministry of Labour and Employment (2015), which refers to data from the census and the National Sample Survey Organisation, the number of children in work has reduced from 9,075,000 in 2004-05 to 4,353,000 in 2011. The following literature review will discuss whether MGNREGA has had an impact on the increase in children's education and the decrease in child labour.

3.3 Children's Education and Child Labour

Afridi et al. (2012) find that a higher participation of mothers in the MGNREGA is positively related to their children's education outcomes, whereas father's participation in the program seems to have a negative impact on their children's education. The authors first argue that there are two possible outcomes of an increase in employment for mothers: It could either lead to a decrease in children's education due to a substitution effect, that somebody, normally the older children, needs to take over duties in the household when the mother is at work. Or it could lead to an increase in children's education, because the mother gets into a higher bargaining position as she contributes to the household's income. If the mother values education enough, this will lead to better results of the children at school. Afridi et al. (2012) use panel data from the Young Lives Study rounds 2

(2007) and 3 (2009-10), which solely covers the districts of the state Andhra Pradesh, to test their hypothesis. The authors take into account the stage-wise implementation across the districts and compare the participation rates of the household members over the given time span, using the age group of 16 to 60 year old women. The results indicate that, ceteris paribus, a gain in employment for mothers through MGNREGA can possibly influence the decisions of the household in such a way that her preferences are better incorporated in the outcomes. They further show that the participation of mothers in the program has a positive influence on children's time spent in school. These effects are particularly large on children from the poorest wealth group, girls and younger children in the household. According to the authors, their findings also implicate that the grades of both the younger children of the household as well as children of less landed households get better as the mothers participation in MGNREGA increases. They conclude that the evidence implies that the positive effect of the mother's participation in MGNREGA would be due to her better standing in the household's decision making, which implies that the influence of the act is over and above the pure income effect.

Das and Singh (2014) examine whether MGNREGA has an influence on children's education by employing a Difference-in-Difference test using cross-sectional datasets from 2002 to 2004 and 2007 to 2008 of the District Level and Household Survey (DLHS). Their sample contains around 890,000 children who are aged between seven and 15 years. Apart from the reasons that can influence children's education either way mentioned by Afridi et al. (2012), Das and Singh (2014) add one more possibility, which is solely

income related: They suspect, apart from the already named possibilities, that due to a mother's greater participation in the workforce, which leads to a higher income, households get the opportunity to make bigger investments towards their children's education. Their results however, do not confirm the hypothesis. There is no evidence that MGNREGA influences children's education through any of the mentioned channels. The results depict large standard errors and no significant coefficients, which would have indicated a positive influence. The only indication for any effects on children's education are negative coefficients between the Employment Guarantee Scheme and girls' educational attainment especially in a female-headed household. These results improve, the older the girls are. The authors theorise that the income effect seems to be weaker than the possibility that the older girls have to substitute the working mother at home to care for the family and work in the household. They further state, like Holmes et al. (2010), that there are not enough day-care facilities for small children provided close to the work sites. This forces the older girls to look after their younger siblings while the mother is at work. A last possibility for the statistical results is, according to the authors, that schools are too far away for the children to walk alone. If the mother participates in MGNREGA, she no longer has the time anymore to walk with them, which means that the children have to stay at home.

Mahendra Dev (2012) uses data and results from various published papers in order to analyse possible influences the MGNREGA could have on children's well-being. He bases his research on three pathways, which could, through a social protection programme like MGNREGA, improve

outcomes on child well-being variables like education, nutrition, health and child labour. These pathways are: 1. Indirect effects of the programme on both the reduction of risks and vulnerabilities, as well as the rise of income and livelihood security of the households. 2. Well-being of the females and their decisions within the household 3. Direct effects of crèche facilities and connections with SSA[4] and ICDS[5]. He emphasizes, though, that there are significant disparities across the regions and that poverty cannot be the decisive factor since the poorest states, Bihar, Uttar Pradesh and Orissa have lower numbers on child labour than comparable richer states like Andhra Pradesh, Karnataka and Tamil Nadu. Before he brings the findings of the papers into context, the author identifies various supply and demand side factors which affect the occurrence of child labour, which are: 1. The occurrence of poverty, as poor people are more likely to let their children work. 2. Economic development, which can influence child labour in both ways: Either it decreases the likelihood that children are sent to work, as better opportunities for adult employment and children's education arise, or it could lead to the opposite just because better labour opportunities arise. 3. The wage rate is another important variable influencing the probability of child labour. Higher wages for adults should have a negative effect on the probability of parents sending their children to work, as they can effort a better living without monetary help from the children. Throughout the paper, the author analyses the findings of other authors. He

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[4] SSA: Sarva Shiksha Abhiyan, a programme of the Indian government with the goal of the universalization of elementary schools' education. It was established in order to meet the demand for qualitative primary education across all India.
[5] ICDS: Integrated Child Development Services, a welfare programme by the Indian government, which provides nourishment, preschool education and essential healthcare to children under the age of 6 and their mothers.

concludes that the evidence on the influence of MGNREGA on the well-being of children, whose parents participate in the programme, is mixed. An important finding is that the well-being of women, as well as an increase in income and the empowerment of women, is a crucial factor which determines the improvement of children's health, nutrition and education as well as a reduction in child labour – especially in the agricultural sector.

An important part of Mahendra Dev's (2012) analysis is Uppal's (2009) research. Uppal's paper uses data from the Young Lives Study, which collected data of 1,008 children born in 1994-1995 and 2,011 children who were born in 2001-02, and surveyed them in 2002 and 2006-07 respectively. The collection was limited to six districts of Andhra Pradesh, representing the diversity of the different areas and income levels within the state. In order to approach the question of whether MGNREGA is a safety net for children, Uppal (2009) focuses first on the characteristics the programme aims at and the typical features people exhibit who self select into it. He then tries to assess the impact programme participation has on children in households that take part in MGNREGA. He finds that households from lower castes as well as poorer households and ones that had been affected by drought are more likely to enrol into the programme. He further discovers that household registration in the programme decreases the likelihood of boys entering child labour by 13.4% and of girls by 8.19%. Important to note is that boys are considerably more likely to engage into child labour if a drought affects the region, whereas girls who live in rural areas are more prone to work, compared to girls living in urban areas. Both effects are almost entirely cured by the MGNREGA. Also, as

stated above, households plagued by a drought are more likely to take part in the act. The author's conclusion is positive as he summarises that the MGNREGA seems not only to build a safety net for many rural families per se, but also it seems to have a valuable impact on the well-being of the household's children in particular.

Islam and Sivasankaran (2014) measure for children and adults on the individual level, how much time was spent on distinct activities during the last seven days. They use cross-sectional data from the National Sample Survey (NSS) rounds 60 (2004) and 64 (2007-08) to detect and compare the effects of parents who work under MGNREGA on children's education and child labour. This data has the limit that it is impossible to see whether the adults and children captured in the data belong to the same family. To verify the robustness of the statistical results, the authors use NSS panel data, which was collected over a time span from 2009 to 2011 in the three states Andhra Pradesh, Madhya Pradesh and Rajasthan. This data was used to find out how children in a specific household allocated their time in response to adults taking on employment under MGNREGA. This allows the verification whether the response of children in the cross-sectional data is similar to the response of children in the panel data. Their findings suggest that one additional day of an adult doing casual public work results in an increase of 0.038 days of labour outside the household for children aged between 15 and 17 years. This finding is significant at the five per cent level and translates to an increase of 18% in labour for children under 18 years. They further find for the same age group, that the extra time working outside the household decreases the time worked in the household by 0.027

days, which is also significant at the five per cent level. For the age groups six to nine years and ten to 14 years the statistics show different results: For every extra day adults spend in casual public work during the past seven days, children aged between ten and 14 years will spend 0.018 additional days at school. This finding is significant at the five per cent level. Children aged between six and nine years respond similarly: with any additional day spent by adults in public casual work, they spend 0.013 days more at school. This result is significant at the one per cent level and translates to 3% of additional time spent on education. These results back up the results from the results from the cross-sectional data analysis. The authors are therefore able to conclude that younger children, aged between six and fourteen years, benefit from MGNREGA, as they spend more time in school if the adults of the household participate in MGNREGA works. Older children aged between 15 and 17 years however, are more likely to take on work if the adults of the household receive employment through the scheme. They hypothesise that this development could be triggered by job openings, which result through adults working under the MGNREGA instead of any other casual work, as well as by the fact that adults spend less time working for the household enterprise. If the work the children do in the household is complementary to the work adults perform, the decrease of adults performing tasks would lead to children working less at home and more outside the household. A reason could also partly be that higher wages, which are caused by MGNREGA attract more children to substitute school for employment. The authors state that all these developments tend

to be a consequences which had not been intended by the policymakers of the programme.

4. Datasets and Selection of States

This research uses the data of the 68th NSS (National Sample Survey) round, which was collected between July 2011 and June 2012 by the National Sample Survey Office (NSSO), which is part of the Ministry of Statistics and Programme Implementation and in charge of collecting socio-economic data. The survey asked individuals of different households situated in all India questions regarding employment, unemployment and other closely related issues like household consumption expenditure and individual activities during unemployment.

This research focuses on exploring exclusively the cross-sectional effects on child labour and children's attendance in educational institutions that may result from working under MGNREGA in the surveyed households. No panel data is used in this case.

The top ten states, ranked by the number of inhabitants according to the Census of 2011, were included into the survey in order to give a broad overview of the country and its rural population. The included states are: 1.8, with a population share of 16.49% and 199,812,000 inhabitants of which 155,111,000 live in rural areas. 2. Maharashtra, with 112,374,000 residents in total, 61,545,000 of which are rural population and a population share of 9.28%. 3. Bihar, counting 104,099,000 people in total, resulting in a population share of which 8.58%, 92,075,000 residents live in rural areas. 4. West Bengal with 91,276,000, a population share of 7.55%

and a rural population of 62,214,000. 5. Madhya Pradesh, accommodating a total of 72,627,000 people of which 52,538,000 live in rural areas. The state has a total share of population of 6%. 6. Tamil Nadu, where 72,147,000 people live of which 37,189,000 belong to the rural population. 7. Rajasthan with a population share of 5.67% and 68,548,000 inhabitants of which 51,540,000 live in rural areas. 8. Karnataka, with a total population of 61,095,000, which amounts to a population share of 5.05%. 37,554,000 people in Karnataka live in rural areas. 9. Gujarat, which has a population share of 5%. 60,384,000 people in total live in Gujarat, 34,671,000 of them live in rural areas. 10. Andhra Pradesh, with a total population of 49,387,000, a population share of 4.08% and 34,776,000 people living in rural areas. Only households located in rural districts were considered for the assessment since the MGNREGA exclusively applies for people living in villages. The complete sample consists of a total of 30,504 children, out of which 16,292 are boys and 14,212 are girls between the age of six years and 14 years, living in 33,149 households. This research focuses on the children aged between six and 14 years, since according to the law, children are required to attend school during this age range. Above the age of 15 however, they are allowed to pursue non-hazardous work. The sample researched contains 16,385 households, which have at least one child according to the above stated definition.

As both statistical analyses, on child labour and on child education, use the same independent variables, they are going to be explained only once in this section.

HH_Worked_MGNREGA: This variable declares whether at least one person of the household in question has worked during the past 365 days under the MGNREGA and is the most important independent variable for the test. The survey gives information about the existence of a job card in the household, the number of job cards available in the household, as well as the possession of a job card on the individual level and whether the person received work under MGNREGA during the past 365 days, sought for work but did not receive any or did not seek work during the past 365 days. This variable is a construction of the data on the individual level, whether the person worked under MGNREGA or not, aggregated over the household. It does not account for the difference in whether a person sought work or not, since it does not make a difference in the outcome, which is either way the same: The person did not work under the MGNREGA and therefore did not receive any salary. The variable is constructed such that if the individual in question worked for the act during the past 365 days, the variable takes the value zero and if the person either did not receive work or did not seek work the variable takes the value one. The individual variable was then aggregated over the household level in such a way that it equals to zero if any person of the household worked during the past year and it equals to one, if no individual of the household has worked under the scheme for the past 365 days. This variable is the variable of interest and is expected to decrease the occurrence of child labour as well as decrease children's drop out of education.

State: There are nine dummy variables for the states Uttar Pradesh, Maharashtra, Bihar, West Bengal, Madhya Pradesh, Tamil Nadu, Rajasthan, Karnataka and Gujarat. Andhra Pradesh serves as the constant. These variables are used in order to account for any state specific policies of each state the individual households are located in. These policies cannot be observed otherwise, but might have an effect on either of the two dependent variables, which should be accounted for.

HH_Size: Each household indicates the number of members sharing one accommodation. This variable is included since the size of the household can have a severe impact on both child labour as well as child education in both ways. Either the household is so poor that the more members it has, the more likely it is that children have to work, and therefore the less likely that these children are able to attend an educational institution; or it could also be that the more members a household has, the more people can work and are able to support the livelihood. Furthermore, the more members a household has, depending on its composition, the more likely it is that somebody is able to stay at home and watch the children, walk them to school and care for the household.

HH_NumOfChild: The number of children per household might, like the number of total household size, influence the probability of child labour and education dropout rates. The more children a family has, the more probable it might be that some of them have to work to help securing the livelihood of the family, it is also more likely that the older children need to stay at

home and help with the household and their younger siblings. This variable is constructed by assigning dummy variables to the households. Each household having at least one member aged between six years and 14 years is counted in the sample as a household with children. The sum of the children was then aggregated over the household so that the number of children living in each household is counted. This variable therefore indicates how many children live in the household.

Social Group: Social group is divided into Scheduled Castes (SC), Scheduled Tribes (ST) and other backward classes (OBC). This variable is important to use since these groups generally form the poorer part of society, which might be prone towards high rates of child labour and low rates of participation in educational institutions.

Religion: This variable consists of the dummy variable for Islam. Hinduism serves as the constant. Christianity, Sikhism, Jainism, Buddhism and Zoroastrianism were not included in the analysis as their numbers were not reliable enough due to small numbers of members. The variable religion is included as an independent variable, because different religions may either be more likely to have money or more or less children. These probabilities reflect in the likeliness of children to engage either in child labour or education. Also there are religions which put more importance on education than others; this as well might have a strong effect on the outcome variable, which is why the household religions need to be included in the test.

Ln30DayCons: The average monthly consumption expenditure per household serves as a proxy for the available income. The survey asked each household how much money they spend per month on various items like food, tobacco and other intoxicants, fuel and light, personal care, but also on other expenditures like entertainment, rent, medical expenses and taxes. The survey also asks about yearly expenditures on, for example, tuition fees, clothing, furniture and maintenance costs. The variable taken for the analysis is the average monthly household consumer expenditure over all the expenditure for the past 365 days. The logarithm of the average monthly household expenditure was taken in order to decrease the variance. Therefore the effect of strong outliers is reduced and the marginal effect of relative changes, rather than absolute changes in the consumption is given. Instead of accounting for changes per unit, percentage point changes determine the outcome.

HH_BankPost: This variable indicates whether any member of the household has a bank or post account. Only people living in rural areas get to answer the question of whether any member of the household has a bank or post office account, which also include accounts that are exclusively held in order to receive wages earned through MGNREGA work. People working under the MGNREGA are required to have an account where money can be transferred to. This variable might be able to have an affect on the outcome variables, as it may be an indicator of regular employment and therefore regular income. At the least it could be an indicator of whether people were able to work for an employer who does not only pay cash after the end of

every day, which might be customary for very casual work, but who employs them on a regular basis, transferring the salary periodically. Out of 33,149 households, 9,675 reported to have at least one member who has a bank or post account.

5. Methodology

The upcoming part is going to specify the empirical models and explain the outcome variables used for the examination to test the two hypotheses:

Hypothesis 1: The implementation of MGNREGA led to a decrease in child labour for households participating in the programme.

Hypothesis 2: The implementation of MGNREGA led to an increase in children's attendance of educational institutions for households participating in the programme.

The forthcoming section will be divided into the two topics under investigation, child labour and children's attendance of an educational institution, in order to explain each model clearly. As stated above, the NSS data used is based on a 365 day period in which household individuals were able to self-report, among others, any information on their employment and unemployment status, whether the household applied for a MGNEREGA job card, sought employment and received work through the act. All the information for the variables in the statistical analysis is taken from this data source.

First, a table (table 2) was created, which shows the distribution of households over the ten examined states that either have no MGNREGA job card (non-job card holders) or that own a MGNREGA job card. The latter is subdivided into three further possibilities: households that did not seek work under the MGNREGA work, households that sought work, but were unsuccessful in receiving employment and households that sought work and also received employment under the act. The groups are called non-work seeking households, work-seeking households and benefited households respectively. All these households are allocated across the states in question in order to get an overview of the situation in 2011/2012. The allocation of the respective households was done by creating a dummy variable for each of the three sub-possibilities. If the household displayed at least one person who had received employment under the act during the past 365 days, the household was counted as a household that has benefited. If the household displayed at least one person who sought work who was however unable to receive employment, it was counted as a household seeking work. The third sub-group containing households which did not seek MGNREGA work, was created for households where nobody had worked or sought the MGNREGA work during the past year.

The analysis of this paper uses household instead of individual level data for two reasons: First, in order to overcome the limitation Islam and Sivasankaran (2014) face in their analysis. Since their evaluation is based on the individual level, it is not clear if the MGNREGA work performed by one person affects child labour and children's education of children living in the same household. The authors are solely able to claim that changes in

MGNREGA work in general affect the time usage of children in general. This shortcoming is overcome in the analysis of this thesis by measuring the variables on the household level. The second reason for using the variables on the household level instead of the individual level is that whether a child needs to work or goes to school is not the decision of one individual but rather of the whole household.

Variable Name	Description	Impact on Dependent Variable 1	Impact on Dependent Variable 2
HH_Worked_MGNREGA	Indicates whether at least one person has worked for MGNREGA in the specific household during the past 365 days	Negative	Negative
State	Dummy variables for nine of the top ten states: Uttar Pradesh, Maharashtra, Bihar, West Bengal, Madhya Pradesh, Tamil Nadu, Rajasthan, Karnataka and Gujarat	Negative/Positiv, depending on the state policies	Negative/Positive, depending on the state policies
HH_Size	Indicates the number of people who live in a particular household	Positive	Positive
HH_NumOfChild	The number of children living in a household	Positive	Positive
Social Group	Dummy variables for SC, ST, other backward groups, that indicate whether the household belongs to such a social group	Positive	Positive
Religion	Indicates whether the household belongs to Hinduism or Islam		
Ln30DayCons	The average monthly consumption expenditure per household	Negative	Negative
HH_BankPost	The dummy variable indicates whether any member of the household has got a bank or post account	Negative	Negative

Table 1: Explanation of the independent variables and their expected effect on the dependent variables. Note: Dependent variable 1: If household exhibits child labour, coded as 1, otherwise 0. Dependent variable 2: If at least one child in household does not attend educational institution, household is coded as 1, otherwise 0.

5.1 Child Labour

In order to test the first Hypothesis,

Hypothesis 1: The implementation of MGNREGA led to a decrease in child labour for households participating in the programme,

the following model has been established:

$$HH\_ChildLabour = \beta + \beta_2 * HH\_Worked\_MGNREGA + \sum \beta_3 * State + \beta_4 * HH\_Size + \beta_5 * HH\_NumOfChild + \sum \beta_6 * HH\_Social\ Group + \sum \beta_7 * HH\_Religion + \beta_8 * Ln30DaysCons + \beta_9 * HH\_BankPost$$

The categorical outcome variable HH_ChildLabour is defined by households that have at least one child who engages in any kind of work. That means, any member of the household aged between six and 14 years, who answered in the NSS survey that he/she worked either in the household enterprise (self-employed) as an own account worker, an employer, a helper or a regular salaried employee, or that he/she worked as a casual wage labourer in either public works or other types of work, or that he/she follows any other kind of work including begging and prostitution is defined as being engaged in child labour. To receive the status as a child labourer, both, the usual principal activity as well as the usual subsidiary economic activity are taken into account.

5.2 Children's Educational Attendance

The second hypothesis states

Hypothesis 2: The implementation of MGNREGA led to an increase in children's attendance of educational institutions for households participating in the programme,

and will be tested by means of the following model:

$$HH\_Educ\_Attce = \beta + \beta_2 * HH\_Worked\_MGNREGA + \sum\beta_3 * State + \beta_4 * HH\_Size + \beta_5 * HH\_NumOfChild + \sum\beta_6 * HH\_Social\ Group + \sum\beta_7 * HH\_Religion + \beta_8 * Ln30DaysCons + \beta_9 * HH\_BankPost$$

The categorical outcome variable HH_Educ_Attce consists of households that have at least one child aged between six and 14 years, who did not attend any educational institution at the time the survey asked about the current status of attendance in 2011-12. Any answer ranking from never attended school because the school is too far, the child has to supplement the household income, education is not considered as necessary, or the child has to attend domestic chores, to previously attended, but currently not attending school for the same reasons, was taken as into consideration when coded as having not attended educational institutions.

For the whole analysis, cross-sectional variables were used to examine whether MGNREGA employment received by one member of the household during the past 365 days has an effect on the children's welfare in terms of education and child labour in the same household. If panel data had been

used, this effect would have been lost, as it would have been necessary to use district level data.

The variables under question are dichotomous choice variables because it is very difficult to analyse non-mutually exclusive possibilities, which would happen if children of one household answer the same question differently. In order to see whether the action of adults in a household affects the welfare of at least one child in that household detrimentally, it is not possible to analyse the variables on the individual level. Since the categorical variables only have two different outcomes, it makes sense to use a logit regression model. This model was chosen because it also allows calculating odds ratios, which make it possible to interpret marginal effects in terms of change in the odds or chances of the occurrence of a specific outcome.

Since the data is based on the household level, it is not obvious if girls or boys are affected in the outcome variable. In order to get an overview of the differences between the two genders regarding both child labour as well as the probability of children not attending school, a chi-square test was performed for both hypotheses. Since the information about each gender gets lost on the household level[6] the variable Child_Labour and Educ_Attce, which have not been aggregated over the household, have been used to depict the link between gender and child labour or gender and educational attendance.

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[6] A household normally has more than one child. This makes it difficult to show in the logit regression which child, or if it is more than one, which ones of the children were engaged in child labour or did not attend school.

6. Results

Table 2 gives an overview of the number of rural households per state, based on the top 10 states by population used in this analysis. The table indicates how many of them applied for a job card, how many sought work and how many worked between July 2011 and June 2012. It shows that MGNREGA does not seem to be equally well implemented in all the states. While in some states like Tamil Nadu, Uttar Pradesh and Andhra Pradesh, most of the people who applied for work under MGNREGA received employment, in other states, like Gujarat and Maharashtra, the government was not able to provide MGNREGA work to most of the people who applied for it. The table also indicates that out of the 33,149 households surveyed, about one third applied for a job card. Out of these households, more than a quarter did not want to work for MGNREGA and just possess the job card. The reasoning behind this behaviour might be that people would like to be in the position to bargain for higher wages if the workload of the agricultural sector is high, farmers need workers and are pressured to pay higher prices for labour. The same goes for women, who are able to receive higher wages only by being in the possession of a job card that promises equal wages for both genders during the 100 days of employment. A positive indication though is that overall well more than half of the people who have a MGNREGA job card also received work. This leaves only about one sixth of the people who sought for MGNREGA jobless.

State	Total households per state	Non-work-seeking household	Work-seeking household	Benefitted household	Non-Job Card holders
Andhra Pradesh	**3,926**	442	183	1,068	2,233
Bihar	**3,311**	109	181	246	2.775
Gujarat	**1,712**	142	116	89	1,365
Karnataka	**2,048**	90	95	148	1,715
Madhya Pradesh	**2,736**	933	237	458	1,108
Maharashtra	**4,032**	195	212	158	3,467
Rajasthan	**2,581**	438	259	922	962
Tamil Nadu	**3,319**	212	86	1,147	1,874
Uttar Pradesh	**5,916**	185	185	997	4,549
West Bengal	**3,568**	299	374	1,124	1,771
Total	**33,149**	**3,045**	**1,928**	**6,357**	**21,819**

Table 2: Inter-state comparison of rural population with regard to MGNREGA work efforts

This table gives a good overview to understand how many households in the sample are directly affected by MGNREGA. This helps to grasp the scope of this survey as well as its impact.

6.1 Child Labour

The regression table exhibiting the odds ratios (table 3) shows many significant values. Most of the predictor variables exhibit a strong influence on the outcome variable which means that most of the predictor variables actually do indicate whether it is more probable for a household to have a child aged between six and 14 years who engages in child labour or not. Unfortunately, most of the coefficients in table 3a are positive, which expresses a positive impact on the occurrence of child labour in a household.

Variable	Odds Ratio	SE	Probability > t
HH_Worked_MGNREGA	0.981	0.098	0.847
Uttar Pradesh	3.023	0.490	0.000***
Maharashtra	1.175	0.237	0.426
Bihar	2.529	0.431	0.000***
West Bengal	1.983	0.358	0.000***
Madhya Pradesh	1.194	0.230	0.356
Tamil Nadu	0.334	0.106	0.001***
Rajasthan	2.579	0.460	0.000***
Karnataka	1.306	0.291	0.231
Gujarat	1.914	0.404	0.002***
HH_Size	1.081	0.018	0.000***
HH_NumOfChild	1.490	0.047	0.000***
HH_ST	2.488	0.338	0.000***
HH_SC	1.871	0.204	0.000***
HH_OBC	1.446	0.135	0.000***
HH_Islam	2.808	0.232	0.000***
Ln30DayCons	0.390	0.031	0.000***
HH_BankPost	1.145	0.104	0.138
Constant	20.455	0.683	0.000***

Table 3: Regression results, odds ratio, for the impact on child labour, number of observations: 16,385. Note: *p>0.1, **p>0.05 ***p>0.01

Out of the states, solely Tamil Nadu has a significant negative influence. All the other states are positively correlated with the outcome variable. However, only the results for Uttar Pradesh, Bihar, West Bengal, Rajasthan and Gujarat are significant. Maharashtra, Madhya Pradesh and Karnataka do not affect the dependent variable significantly. These outcomes indicate that nine of the ten states included in the analysis seem to have any kind of policy or occurrence that favours child labour. Tamil Nadu alone seems to have an effective cure against child labour.

Variable	Coefficient	SE	Probability > t
HH_Worked_MGNREGA	-0.019	0.100	0.847
Uttar Pradesh	1.106	0.162	0.000***
Maharashtra	0.161	0.202	0.426
Bihar	0.928	0.179	0.000***
West Bengal	0.685	0.181	0.000***
Madhya Pradesh	0.178	0.192	0.356
Tamil Nadu	-1.095	0.318	0.001***
Rajasthan	0.947	0.178	0.000***
Karnataka	0.267	0.223	0.231
Gujarat	0.649	0.211	0.002***
HH_Size	0.078	0.016	0.000***
HH_NumOfChild	0.399	0.031	0.000***
HH_ST	0.911	0.156	0.000***
HH_SC	0.627	0.109	0.000***
HH_OBC	0.369	0.093	0.000***
HH_Islam	1.033	0.083	0.000***
Ln30DayCons	-0.942	0.080	0.000***
HH_BankPost	0.135	0.091	0.138
Constant	3.018	0.683	0.000***

Table 3a: Regression results, coefficients, for the impact on child labour, number of observations: 16,385. Note: *p>0.1, **p>0.05 ***p>0.01

It needs to be noticed that according to the Reserve Bank of India (2013) only Rajasthan and Andhra Pradesh had fewer rural people living below the poverty line than Tamil Nadu in 2004-05 measured on the basis of MRP[7] consumption, which could also be an indication for the reason behind the positive correlations of the other states (Government of India, 2013). The size of the household has, as expected, a significant positive relationship with the outcome variable. This seems to make sense, as it might be that the whole family shares accommodation if they are so poor that they cannot

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[7] MRP: Mixed Reference Period is a data collection method and used in India since the 2000's. Apart from asking people to recall how much money they have spent over a period of the past 30 days on consumption products, they are also asked to recall the expenditures of five less frequently used items such as durables, education, health and clothing over the past year.

afford to live in separate houses. This means that everyone needs to work as soon as possible in order bring enough food to the table.

The number of children living in a household shows a significant positive correlation with child labour as well. This could be related, as stated above, to the challenge of feeding every child if the household is poor. Therefore, it seems to be the case that the more children who live in a household, the more likely it is that these children need to work.

The social group a household belongs to depicts a significant positive outcome, too. Scheduled Castes, Scheduled Tribes and other backward classes, all predict a higher probability of children aged between six years and 14 years to be workers if the household they live in belongs to one of these social groups. This also seems to be understandable as the population who forms these groups belongs to the poorest part of the society. Some of these households appear not to have a choice other than sending their children to work to guarantee the family's survival.

The Islam dummy variable shows a significant positive relationship towards the probability of occurrence of child labour in a household, the reason behind this outcome is could be the high number of children these families have (please see table 16 in the appendix).

The average consumption expenditure during the past 30 days displays a very obvious outcome if one bears in mind that child labour is manly caused through poverty. The average household consumption expenditure was integrated into the analysis to serve as a proxy for income. Naturally households who have more income will also tend spend more. Therefore it makes sense that the average consumption expenditure per household is

negatively correlated to child labour. Stated differently, the more money a household is able to spend, the less likely it is that it needs to let the children work.

The bank dummy variable shows a low but significant positive correlation with the outcome variable. As all the people who work under the MGNREGA need to have an account in order to receive the money they have earned, it could have an influence on the outcome, since also many poor people who actually do not need an account on a regular basis, have one.

The most important independent variable, whether the household participated in MGNREGA works during the past year, does not show a significant relationship with the dependent variable. However, even though the relationship is insignificant, it needs to be noted that the coefficient is negative which means that MGNREGA work has an insignificant negative influence on the probability of child labour occurrence in a household as can be seen in table 3a. This outcome does not conform with hypothesis 1, because it is insignificant.

One limitation that using the data on the household level involves, is that it is not easy to determine whether more boys or girls were engaged into child labour. Therefore, a chi-square test was performed for the purpose of defining the relationship between child labour and gender. The results in table 4 show that out of a total of 30,504 children, 1,753 had to engage into work during July 2011 and June 2012, of which 953 were boys and 800 were girls. These numbers indicate that there is no significant difference between the likelihood of boys or girls having to pursue work.

Members Sex	Child_Labour		Total
	No child labour	Child Labour	
Male	15,339	953	16,292
Female	13,412	800	14,212
Total	28,751	1,753	30,504

Table 4: Chi-Square test: Pearson chi2 = 0.681, Pr= 0.409

6.2 Children's Educational Attendance

The results for children's attendance in an educational institution can be seen in table 5 and are not entirely different to the results the regression on child labour shows above. The categorical outcome variable HH_Educ_Attce takes the value zero if all the children of the household in question were currently attending school at the moment the questions of the survey were answered. It takes the value one if at least one child of the household had never attended school or ever attended but was currently not attending.

The results in table 5a show that most of the states have a positive correlation with the outcome variable indicating that the probability of school dropout for a child who is living in a household located in one of the significantly positive correlated states, such as Uttar Pradesh, Bihar, West Bengal, Rajasthan and Gujarat, increases. Again, only Tamil Nadu seems to have a positive impact on children's attendance in school. Maharashtra depicts a negative correlation with educational dropout as well, these results however, are not statistically significant.

Variable	Odds Ratio	SE	Probability > t
HH_Worked_MGNREGA	1.207	0.111	0.041**
Uttar Pradesh	2.295	0.322	0.000***
Maharashtra	0.953	0.171	0.790
Bihar	2.418	0.355	0.000***
West Bengal	1.382	0.222	0.044**
Madhya Pradesh	1.205	0.198	0.258
Tamil Nadu	0.276	0.078	0.000***
Rajasthan	2.446	0.376	0.000***
Karnataka	1.148	0.226	0.482
Gujarat	1.928	0.351	0.000***
HH_Size	1.091	0.017	0.000***
HH_NumOfChild	1.492	0.044	0.000***
HH_ST	2.448	0.301	0.000***
HH_SC	1.741	0.176	0.000***
HH_OBC	1.364	0.117	0.000***
HH_Islam	2.875	0.223	0.000***
Ln30DayCons	0.376	0.028	0.000***
HH_BankPost	1.079	0.092	0.372
Constant	38.767	24.494	0.000***

Table 5: Regression results, odds ratio, for the impact on children's educational attendance, number of observations: 16,385. Note: *p>0.1, **p>0.05 ***p>0.01

The same reasons as stated above may be the part of the explanation why so many states seem to create a negative surrounding for children to attend school: possible bad policies but mostly prevailing poverty.

The size of the household shows a positive influence on the probability of children between the age of six years and 14 years to not attend school. These results again, just as for child labour, could be related to many poor people living together in one household, where the children need to help in the household enterprise or get to work elsewhere in order to get the income needed to feed everyone and are therefore unable to attend school education. The number of children living in one household has, according to the coefficient, an even stronger impact on the likelihood of not attending the education institution than household size.

Variable	Coefficient	SE	Probability > t
HH_Worked_MGNREGA	0.188	0.092	0.041**
Uttar Pradesh	0.831	0.140	0.000***
Maharashtra	-0.048	0.180	0.790
Bihar	0.883	0.147	0.000***
West Bengal	0.324	0.161	0.044**
Madhya Pradesh	0.186	0.165	0.258
Tamil Nadu	-1.286	0.284	0.000***
Rajasthan	0.894	0.154	0.000***
Karnataka	0.138	0.197	0.482
Gujarat	0.657	0.182	0.000***
HH_Size	0.087	0.015	0.000***
HH_NumOfChild	0.399	0.029	0.000***
HH_ST	0.895	0.123	0.000***
HH_SC	0.554	0.101	0.000***
HH_OBC	0.310	0.086	0.000***
HH_Islam	1.056	0.078	0.000***
Ln30DayCons	-0.978	0.075	0.000***
HH_BankPost	0.076	0.085	0.372
Constant	3.658	0.632	0.000***

Table 5a: Regression results, coefficients, for the impact on children's educational attendance, number of observations: 16,385. Note: $*p>0.1, **p>0.05 ***p>0.01$

It seems very reasonable to hypothesize that the older children cannot go to school as they have to take care of the younger ones. It is further possible that these children need to start working early to increase the livelihood security of the household.

The social group dummy variables depict all more or less equally strong positive relationships with the outcome variable. Again, as these groups, Scheduled Castes and Scheduled Tribes in particular, but also other backward classes, are the poorest and most discriminated people of the society, it seems no wonder that households belonging to these groups cannot afford to send their children to school for a long time. These children might instead be needed to support the household in any possible way.

Also a significant positive influence shows the dummy variable Islam, again, families belonging to this religion generally have a lot of children (see table 16, appendix) and just one not attending school leads to the whole household counting as "not attending an educational intuition". With many children to raise it is possible that especially girls are taken out of school to help in the household.

The average monthly household consumption expenditure again has a significant negative impact on the school attendance of children. Poverty seems to have a massive impact on the probability that parents have to take their children out of school. As the income of the household rises, the likelihood of children attending an educational institution rises.

Whether a member of the household possesses a bank or a post office account has an insignificant positive influence on children's attendance in school.

The most important outcome however is that the household participation in MGNREGA works has a positive impact on the non-attendance of education which is significant at the five per cent level. This implies that adults working under the MGNREGA are more likely to have children in their household who drop out of school. This outcome does not conform with hypothesis 2.

From the regression it is not possible to identify any genders in this analysis, therefore it cannot be said who, the female members or the male members of the family, have the most influence on the school attendance of the children. According to existing theory however (e.g. Afridi et al, 2012), children, generally girls, are the ones who need to substitute for the mother

in the household if she is gone to work. It could also be that children need to stay at home if any other member of the household starts working. This research is inconclusive about the details.

Since the genders of the children in this analysis are not revealed either, a chi-square test is performed to see if educational dropout is associated more with either girls or boys. The variable Educ_Attce is taken on the individual level, in order to detect the difference in gender. The results in table 6 of this analysis show that out of 30,504 children in total, 28,433 attended classes in school, whereby 2,071 children did not. Out of the latter only 941 were boys and 1,130 were girls, even though the sample consists of around 2,000 fewer girls than boys. This outcome indicates that girls are much more likely than boys to being taken out of school in order to stay home and care for the household.

Members Sex	Educ_Attce		
	Attending school	Not attending school	Total
Male	15,351	941	16,292
Female	13,082	1,130	14,212
Total	28,433	2,071	30,504

Table 6: Chi-Square test: Pearson chi2= 56.751, Pr= 0.000***

6.3 Robustness

In order to check the robustness of the outcomes, various variables were taken out of the regressions and added back in different combinations. Even the main variable which indicates whether at least one member of the

household had worked under the MGNREGA during the past 365 days was replaced by the household participation rate (HH_MGNREGA_Part_Rate) which is a construction of the data on the individual level, whether the person worked for MGNREGA or not, aggregated over the household. The results stayed overall the same for all outcomes which indicates that they seem to be robust. Tables 17 and 18 are found in the appendix.

7. Limitations and Recommendations for Future Research

There are a few limitations of this analysis that need to be addressed.

First, the time span that had passed to properly implement the act: All of the NSS data used in this research was collected between 2011 and 2012. The last districts of the three-stage implementation had implemented the MGNREGA only in April 2008. Therefore, it could be that it had not been possible to implement many serious changes during this short amount of time. It would be advisable to analyse the situation with data collected a few years afterwards, too, in order to detect possible developments. A second limitation arises through the selection of household level analysis. Focusing solely on the whole household, which can comprise over 30 people, neglects a lot of information about the individuals. It would be helpful to include more facts about the genders, relationship between the individuals and ages. Third, due to limited information available in the questionnaire, it is probable that the analysis suffers from the omitted variable bias. Many more variables that can possibly influence the outcome of the children's welfare variables need to be included. Possible information that could have an influence is local infrastructure, the gender of the head of the household,

the kind of occupation the household members have and the education status of the parents. Obviously, there are many more variables that would be worth including in the tests, as they can have an impact on the outcome variables. It is also likely that selection bias is prevalent as the NSS data on its own is only representative of the sample and not of the whole population.

Further research could use panel data instead of a cross-sectional analysis to verify developments over time. It would also be good to use further variables and to verify who in the household has the most direct impact on the children's welfare and what needs to be done in order for MGNREGA to provide sustainable development.

What is also important is to go deeper into the reasons why children do not attend school. A possible explanation could also be that most of the children live too far away to attend regularly or that education is not highly valued within the household. Both impacts are possibly positively correlated with MGNREGA works, as families exhibiting them live in very rural areas or probably do not have a regular employment and/or a good education.

8. Summary and Conclusion

A lot of research about the impact of MGNREGA has emerged over the past ten years, but only a small fraction of it has focused on the impact of the act on secondarily affected people as well as the sustainable development of the country. The motivation of this thesis was to get a deeper insight into factors that are able to shape the future development of India, specifically the education of children and the labour they exert at a young age which

possibly leads to a loss of prospects to receive any employment that requires deep skills at an adult age. This analysis has gone further than previous research by examining data on the household level of the most populous ten states in India and therefore being able to directly see the impact of MGNREGA works on the children of the respective households. Data from the 68th round of the National Sample Survey which was collected between July 2011 and June 2012 was taken for the whole statistical analysis. In order to get a good overview of the number and distribution of households involved in the sample, table 2 was created. It shows the distribution of households across the ten states, which of these households received employment, sought work, but did not receive any, and households which had the job card but did not seek MGNREGA work during the year in question. Afterwards, logit regressions for the outcome variables that measure the occurrence of child labour in a household and the attendance of the household's children in an educational institution, where performed. The dependent variable indicating whether at least one child in a specific household was engaged in child labour was constructed by defining children as household members who were aged between six and 14 years, and who indicated in either the usual principal activity status or the usual subsidiary activity status that they had been engaged into any kind of work. The dependent variable, denoting whether a child of the same age range attended school, was constructed by specifying each child that indicated he or she had not attended school for any reason at the time the survey was conducted as dropped out of education. Additionally to the logit regressions, odds ratios were calculated which allowed the interpretation of

the marginal effects of changes in chances in terms of the occurrence of outcomes. Since no genders of the effected children can be revealed on the household level, chi-square tests completed the analysis by showing the proportion of boys and girls engaging in child labour and not having attended school.

The results show that the participation of adults in MGNREGA works affects the probability of the children engaging in child labour of that household only insignificantly negative. The chi-square test reveals that both girls and boys are equally likely to be working. The results for children dropping out of school display a significant positive relationship between the MGNREGA household participation rate and the dependent variable, it is therefore significantly less likely for children to attend school if members of their household have worked under the MGNREGA during the past 365 days. The chi-square test indicates that distinctly more girls are not able to attend classes than boys. This result is alarming, since MGNREGA was implemented in order to promote development and equality of men and women as well as equality within the society, raising the poor out of their misery. However, the results of this thesis show that in the case of child labour, the programme does not significantly lower the problem and in the case of children's education, it seems to promote inequality and an uneducated population which will not have the chance to engage in promising employments in the future.

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10. Appendix

Descriptive Statistics

Variable	N	Minimum	Maximum	Mean	Std. Deviation
Child_Labour	16,385	0	7	0.107	0.425
HH_Child_Labour	16,385	0	1	0.078	0.268

Table 7

Variable	N	Minimum	Maximum	Mean	Std. Deviation
Educ_Attce	16,385	0	7	0.126	0.455
HH_Educ_Attce	16,385	0	1	0.094	0.291

Table 8

Variable	N	Minimum	Maximum	Mean	Std. Deviation
HH_Worked_MGNREGA	16,385	0	1	0.202	0.401

Table 9

Variable	N	Minimum	Maximum	Mean	Std. Deviation
Uttar Pradesh	16,385	0	1	0.222	0.416
Maharashtra	16,385	0	1	0.103	0.304
Bihar	16,385	0	1	0.125	0.331
West Bengal	16,385	0	1	0.103	0,304
Madhya Pradesh	16,385	0	1	0.086	0.28
Tamil Nadu	16,385	0	1	0.075	0.264
Rajasthan	16,385	0	1	0.086	0.281
Karnataka	16,385	0	1	0.056	0.229
Gujarat	16,385	0	1	0.05	0.219

Table 10

Variable	N	Minimum	Maximum	Mean	Std. Deviation
HH_Size	16,385	1	39	5.740	2.391
HH_NumOfChild	16,385	1	10	1.862	0.982

Table 11

Variable	N	Minimum	Maximum	Mean	Std. Deviation
HH_ST	16,385	0	1	0.082	0.275
HH_SC	16,385	0	1	0.198	0.399
HH_OBC	16,385	0	1	0.493	0.5

Table 12

Variable	N	Minimum	Maximum	Mean	Std. Deviation
Islam	16,385	0	23	0.75	2.207
HH_Islam	16,385	0	1	0.121	0.326

Table 13

Variable	N	Minimum	Maximum	Mean	Std. Deviation
Ln30DayCons	16,385	6.272	11.775	8.643	0.519

Table 14

Variable	N	Minimum	Maximum	Mean	Std. Deviation
BankPost	16,385	0	28	1.774	2.883
HH_BankPost	16,385	0	1	0.314	0.464

Table 15

Results – Islamic Households

Variable	N	Minimum	Maximum	Mean	Std. Deviation
HH_NumOfChild	16,385	1	10	1.862	0.982
HH_NumOfChild_Islam	16,385	1	10	2.068	1.113

Table 16: Comparison between the number of children living in an average household and the number of children living in an Islamic household

Robustness

Variable	Coefficient	SE	Probability > t
HH_MGNREGA_Part_Rate	-0.287	0.479	0.549
Uttar Pradesh	1.104	0.162	0.000***
Maharashtra	0.155	0.202	0.442
Bihar	0.923	0.170	0.000***
West Bengal	0.685	0.181	0.000***
Madhya Pradesh	0.167	0.193	0.384
Tamil Nadu	-1.088	0.318	0.001***
Rajasthan	0.945	0.179	0.000***
Karnataka	0.262	0.223	0.240
Gujarat	0.642	0.211	0.002***
HH_Size	0.077	0.016	0.000***
HH_NumOfChild	0.398	0.031	0.000***
HH_ST	0.913	0.136	0.000***
HH_SC	0.628	0.109	0.000***
HH_OBC	0.369	0.093	0.000***
HH_Islam	1.032	0.083	0.000***
Ln30DayCons	-0.945	0.080	0.000***
HH_BankPost	0.154	0.086	0.075
Constant	3.055	0.685	0.000***

Table 17: Regression results, coefficients, for the impact on child labour. Number of observations: 16,385. Note: *p>0.1, **p>0.05 ***p>0.01

Variable	Coefficient	SE	Probability > t
HH_MGNREGA_Part_Rate	2.108	0.904	0.082*
Uttar Pradesh	2.309	0.324	0.000***
Maharashtra	0.957	0.172	0.807
Bihar	2.426	0.356	0.000***
West Bengal	1.383	0.222	0.043**
Madhya Pradesh	1.200	0.198	0.268
Tamil Nadu	0.280	0.079	0.000***
Rajasthan	2.461	0.378	0.000***
Karnataka	1.151	0.227	0.477
Gujarat	1.929	0.351	0.000***
HH_Size	1.093	0.017	0.000***
HH_NumOfChild	1.492	0.044	0.000***
HH_ST	2.450	0.301	0.000***
HH_SC	1.746	0.176	0.000***
HH_OBC	1.365	0.117	0.000***
HH_Islam	2.879	0.223	0.000***
Ln30DayCons	0.376	0.028	0.000***
HH_BankPost	1.111	0.089	0.187
Constant	38.049	24.126	0.000***

Table 18: Regression results, coefficients, for the impact on children's educational attendance. Number of observations: 16,385. Note: *p>0.1, **p>0.05 ***p>0.01