

Changing social norms: Land titling and child labour in rural Vietnam

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Abstract

The aim of this paper is to investigate the relationship between laws strengthening women's rights and child labour. We analyse how legal reforms are transformed and adopted by social norms and examine the effects of a land reform that was introduced in Vietnam with the objective of reinforcing women's land rights. We use a longitudinal household survey that permits detailed investigation of property

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rights at the plot level and allows us to control for unobserved heterogeneity across households. We show that the reform contributed to reducing girls' work in agricultural household production but do not find comparable effects for boys.

Key words: Land titling, social norms, child labour, Vietnam

JEL classification: D13, O18, R20, R52

1 Introduction

“As a co-owner of our land, I feel more involved in the decision making of the family. I want to make sure we earn and save enough money to have a good house, and to give our children a good education. Ever since my name has been on the LURC [Land Use Right Certificate], I feel more secure about the future.”

- Nguyen Thi Ha, a 42-year old mother from Nghe An province (UN Volunteers 2004, p. 1)

Gender equality, female empowerment and the elimination of child labour are fundamental elements of economic development, as set out in the Millennium Development Goals (United Nations 2009). According to the International Labour Organization (ILO), about 215 million children between the ages of 5 and 17 are engaged in child labour around the world. Approximately two thirds of child workers are unpaid family labourers, while agriculture represents the largest sector employing roughly 60% of the child workforce. Girls in particular face the burden of being involved both in agricultural child labour and domestic work, which is generally not accounted for in official statistics (International Labour Organization 1999; Diallo et al. 2010).

The aim of this paper is to investigate the relationship between laws intended to strengthen women's rights and the intensity of child labour. We

analyse the effects of a land reform which was introduced in Vietnam in 2003 and which constitutes a step to strengthen women’s land rights within the household (UN Volunteers 2004). The land reform was indeed ratified in response to the pressure of Vietnamese women’s groups (Akram-Lodhi 2005). We provide evidence that the land reform contributed to shaping social norms and reducing girls’ involvement in agricultural labour. We find no effect for boys.

The general notion that women in low-income countries often have a lower share of power in household decision-making than women in developed countries (Pitt and Khandker 1998) also holds in Vietnam, according to a report by the World Bank (1999). In all of the four provinces investigated by the World Bank, gender inequality exists and different levels of decision-making power within the household are reported over issues like the allocation of resources, workloads, and reproductive decisions. Furthermore, while child labour in Vietnam has declined substantially since the 1990s, significant heterogeneity in child work rates is still observed.¹ Edmonds and Turk (2002) provide evidence that the decrease in child workers has been the smallest in urban areas, the Central Highlands and the South Central coast. Moreover, girls are found to be more likely to work in the household and in the family’s businesses, and their work rates have declined to a smaller extent than those of boys during the 1990s. They attribute the difference in work rates between boys and girls to different levels of decision-making power within the household and to the gender division of labour (Edmonds and Turk 2002).

Following the land decollectivization introduced by the *Doi Moi*² reform program towards the end of the 1980s, the 1993 Land Law launched the issuance of land use certificates (LUCs), which assign land use rights to households’ land holdings. According to the 1993 Land Law, a household’s

¹Edmonds and Pavcnik (2005) demonstrate that an increase in the real price of rice associated with trade liberalization can account for almost half of the reduction in child labour in Vietnam in the 1990s.

²*Doi Moi* is translated as ‘change and newness’ (Do and Iyer 2008).

LUC lists all plots the household has rights to and is (re)issued every time an additional plot is registered with the local government. Until 2003 land use certificates usually reported the name of the household head only, i.e. customarily the husband's name in the case of married couples. In compliance with the recent Vietnamese 2003 Land Law, land use certificates must report the names of *both* spouses for jointly owned plots if the LUC is (re)issued after 2003 (The National Assembly of The Socialist Republic of Viet Nam 2003).

The 2003 Land Law constitutes a change of form rather than substance: the law does not affect land ownership with respect to inheritance or land allocation in the case of divorce. Both spouses were entitled to equal land rights of jointly owned plots, regardless of whether one or both names were reported on the land use certificate, even before the introduction of the 2003 Land Law. Visible joint ownership may still lead to a shift of bargaining power within the household towards the wife because she does not need to prove being a co-owner in the case of divorce, which improves and expedites access to her share of the family's land holdings. Her outside options and, thus, her threat point are therefore increased due to the facilitated separation of land holdings and her faster access to these in the case of divorce.

By restating women's rights to land holdings, the 2003 Land Law allows us to analyse how legal reforms are transformed and adopted by custom and social norms, especially in light of an investigation of the introduction rather than the implementation of the law. If women had preferences for girls or wished to mitigate existing gender inequalities favoring boys, increased female bargaining power within the household would be reflected in a reduction of child labour among girls.

Identification of the effect of the law on children's outcomes is complicated by the fact that implementation of the 2003 Land Law at the household level may be endogenous due to evidence of households having to explicitly demand for both spouses' names to be stated on the LUC. We exploit the

introduction of the land law rather than its actual implementation and take into account unobserved heterogeneity across households, for example with respect to time invariant characteristics or preferences. This means that we investigate the effect of becoming part of the population that is targeted by the land law, irrespective of whether or not the law is implemented at the household level. By using a longitudinal household panel dataset that allows inspection of the ownership of land rights at the individual plot level, we show that reinforcing existing land rights of female spouses has positive effects on girls' outcomes by reducing the intensity of their participation in agricultural household production. We argue that the lack of findings for boys partly reflects women's preferences for girls and an attempt to equalise workloads in recognition of the higher involvement of girls in performing domestic chores. A series of robustness checks gives us confidence in our findings. We disentangle the effects of possible concurrent driving factors such as exclusive pre-marriage ownership by one spouse, land acquisition, and plot registration *per se*.

Several features make our findings particularly interesting. First, no change regarding inheritance and separation of assets in case of divorce is brought about by the land law, which is simply restating existing rights. Second, we study the effect of being *de jure* subject to the 2003 Land Law rather than of *de facto* implementing it at the household level. Therefore, our findings are likely to reflect a change in customs and social norms driven by formal institutions towards more gender equality.³

The remainder of the paper is structured as follows. Section 2 provides background information regarding legal aspects of Vietnam's land law sys-

³A gender equality law was also implemented in Vietnam in 2007. Note that it does not impact on our identification strategy as the scope of the law is to ensure equal rights of women "in the fields of labour, employment, education and health care; to improve the quality of women's participation in economic, political and social fields; and to enhance the capacity of national machinery for the advancement of women" (United Nations 2007, p. 1) and as spouses have been entitled to equal land use rights even before the introduction of the 2003 Land Law.

tem and relates the study to the existing literature. Section 3 discusses the household survey data employed in the analysis and introduces the estimation strategy. Section 4 presents the main results. Section 5 explores the robustness checks, Section 6 concludes.

2 Background and context

2.1 Land reforms in Vietnam

In 1988 the Vietnamese government implemented the *Doi Moi* reform program, the first move towards a market economy.⁴ Local governments privatised land use rights and allocated the land, which until 1988 had been farmed collectively, to households and individuals. Although land allocation was relatively slow, it achieved an equitable assignment of land use rights across households, a notion supported by Ravallion and van de Walle (2004) who do not find any evidence of the land allocation favoring households with government jobs.

As a next step in the land reform, the 1993 Land Law prescribed the issuance of land use certificates (LUCs), and made land use rights tradeable. Although land is still not owned by individuals, land use rights can be transferred, exchanged, inherited, and used as collateral since the introduction of the Law.⁵ LUCs grant the right to use the assigned plot for 20 years in the case of annual crops land and for 50 years in the case of perennial crops land. Local authorities issue LUCs that list the plots which the household has use rights to. However, these rights are conditional on compliance with

⁴See Ravallion and van de Walle (2004, 2006, 2008) and Kirk and Tuan (2009) for a thorough analysis of Vietnam's agrarian transition.

⁵In Vietnam land is owned by the entire Vietnamese people with the State being the exclusive representative unit of the people regarding management of the land. The LUC gives the right to transfer and rent out the land but not necessarily to determine the choice of crops to cultivate on that land (The National Assembly of The Socialist Republic of Viet Nam 2003). Markussen, Tarp, and van den Broeck (2009) find that 52% of the plots in their sample are restricted regarding crop choice.

the land law and on the individual using it for the designated purpose and in an effective and environmentally friendly fashion without harming adjacent land users (The National Assembly of The Socialist Republic of Viet Nam 2003). Investments in the land in order to cultivate it and increase its value are encouraged as implied by the long-term nature of the land use right. The 1993 Land Law was perceived as a further commitment by the government to secure property rights and led to an increase in the willingness to undertake long-term investments, for example in irrigation and multi-year crops (Do and Iyer 2008).

The issuance of LUCs involves both pecuniary and non-pecuniary costs. Several actions of local bureaucracy are necessary in the process of granting land use rights so as to determine whether the farmer is eligible to the land, whether the transfer is legal, to settle existing disputes over the plot and to issue the actual LUC. In order to have a LUC issued, farmers have to pay a fee, which is around 20,000 Vietnamese Dong (approximately 1.29 US-Dollars at the time the law was passed). However, fee exemptions are often granted to boost land registration rates in more remote regions and especially in mountainous areas (Do and Iyer 2008). Land may be used as collateral when applying for credit and may also be leased out with the permission of the authorities. Should the LUC holder die, the land use right is transferred to heirs like an asset (The National Assembly of The Socialist Republic of Viet Nam 2003).

According to the 2000 Marriage and Family Law, all land holdings that were acquired during marriage must be divided equally between spouses in the case of divorce.⁶ They must be divided in recognition of the situation and property of each spouse, of his/her investment and effort on the land, and of other contributions to family income, where housework has to be treated in the same fashion as income-generating labour (The National Assembly of

⁶The acquisition of land is legally not possible due to communal ownership in Vietnam. Note that we use the term ‘plot acquisition’ for the act of buying use rights to land for the remainder of this paper.

the Socialist Republic of Viet Nam 2000).

The 2003 Land Law brought about a significant change in the titling of land use certificates as LUCs usually only reported the household head's name until 2003 (UN Volunteers 2004). Article 48 of the 2003 Land Law explicitly mentions that “[i]n case[s] where the land use rights are under joint ownership of the husband and wife, the certificate of such land use rights must include full names of the husband and full names of the wife” (The National Assembly of The Socialist Republic of Viet Nam 2003, p. 29). In practical terms, the inclusion of the spouse's name on the LUC should automatically happen when the household requests having the LUC (re)issued in order to include an additional plot. Following the 2000 Marriage and Family Law spouses are officially entitled to equal rights to land holdings acquired during the marriage, irrespective of which names are stated on the LUC. Thus, the scope of the 2003 Land Law only extends to reaffirming women's equal rights to land holdings, rather than to altering existing use rights.

2.2 Relation of the paper to the existing literature

Our study is related to the literature documenting that the gender of the income recipient matters for the outcomes of children. Specifically, this paper proposes that an improved bargaining position of female spouses, brought about by a law reaffirming existing equal rights to land of husband and wife, lowers the incidence of child work. As women possibly value the wellbeing and gender equality of their children more highly or may favor daughters, an increase in female bargaining power is expected to decrease child labour, especially among female children.

There is much empirical evidence supporting this. Pitt and Khandker (1998), for example, test for differences in the effects of parental participation in micro credit programs on children's schooling in Bangladesh. Mothers' participation is found to have robust positive effects on schooling rates, both for sons and daughters, with differences depending on the type of credit pro-

gram, while participation of the father only impacts on schooling rates of boys. In her seminal paper, Duflo (2003) investigates the relationship between an old-age social pension program and the health status of children living with a recipient of the pension. She finds a positive effect of the pension on girls and no effect on boys living with female pension receivers. Moreover, no effect is found for children living with male pension receivers. Qian (2008) investigates the effects of increases in sex-specific income on children in China: a rise in female income, while keeping male income constant, lowers child mortality among daughters and has positive effects on educational measures for all children. On the other hand, an increase in male income, while keeping female income constant, raises child mortality among daughters and worsens their educational attainment, with no effect on boys.

Our paper also adds to the growing literature on the effects of laws and reforms aiming to ensure equal rights of men and women. Field (2003) investigates a nationwide land titling program in which joint land rights were assigned to spouses in order to reduce gender inequality in Peru. She proposes that a reallocation of property rights affects the relative bargaining power of the wife by altering her divorce threat point and finds that fertility decreased in the part of the population targeted by the program. Bezabih and Holden (2010) investigate a land reform in Ethiopia that attempts to increase land certification in general but also involves visibly assigning joint land ownership to both spouses by means of stating the names of both the husband and the wife on the land certificate. While the authors do not investigate this particular aspect of the reform, they find evidence of the latter narrowing the agricultural productivity gap between male- and female-headed households that is reportedly due to higher tenure insecurity among female-headed households. Similarly, Newman, Tarp, and van den Broeck (2012) find a positive association between land certification and productivity in Vietnam. They also find that joint titling in the names of both the household head and his spouse enhances productivity in certain circumstances.

Other empirical work has investigated the impacts of the Hindu Succession Amendment Act, the aim of which was to equalise inheritance rights across male and female heirs in India. Deininger, Goyal, and Nagarajan (2013) find that the reform had positive implications on the educational attainment of female heirs and on their age at marriage and likelihood of inheriting land, even if the increase was not sufficient to attain gender equality with respect to inheritance. Roy (2011) also finds that the Act increased the educational attainment of women that were subject to the reform at schooling age. In addition, Brulé (2010) finds that the law led to increases in perceived land ownership and in the self-reported bargaining power of women when making decisions jointly with their husbands.

Our study also contributes to the emerging literature on the relationship between formal and informal institutions as it aims to enhance our understanding of how legal reforms are transformed and adopted by custom and social norms. Aldashev et al. (2012a) study how a formal law implemented by the state can “defend the rights of disadvantaged groups when customary norms favor the interests of traditional elites” (Aldashev et al. 2012a, p. 797). Using a model of legal dualism, the authors show how the formal law can act as a ‘magnet’ in shaping customary norms and protect minorities or marginal groups (Aldashev et al. 2012a,b).

This is also the case with the Vietnamese 2003 Land Law. Firstly, the law did not actually change the spouses’ statutory rights in terms of inheritance or in the case of divorce. Secondly, the implementation of the law was delayed by local officials. According to anecdotal evidence “[t]he all-important local officials who administer and interpret the law often revert to age-old traditions and customary practices, which favor men, and thus failed to deliver on the law’s promises” (UN Volunteers 2004, p. 1). Notwithstanding the delays in the implementation of the law, in this paper we find that the introduction of the 2003 Land Law has a positive impact on girls’ outcomes with respect to child labour. The 2003 Land Law therefore appears to act as

an application of the legal dualism discussed by Aldashev et al. (2012a,b): On one hand, the formal institution reaffirms women’s rights to land; On the other, customary practices are ultimately shaped by the law itself.

3 Data and empirical approach

The main source of data employed in this study is three rounds of the Vietnam Access to Resources Household Survey (VARHS) panel dataset, conducted in 2006, 2008, and 2010 in twelve provinces of Vietnam, surveying over 3,000 households in each round.⁷

The purpose of the VARHS is to gain quantitative information on opportunities and constraints facing the rural population of Vietnam in accessing resources and markets. The VARHS contains general demographic characteristics of household members and more specific information on agricultural production, access to markets, and sources of income. In particular, the survey includes extensive information on agricultural land, its acquisition and use rights at the plot level, which enables detailed investigation of the effects of the 2003 Land Law on the outcomes of children. The data collected in 2008 and 2010 are the main source of information for this investigation, while the 2006 round is used for robustness checks. The second source of data is the 2004 Vietnam Household Living Standards Survey (VHLSS), conducted by the General Statistics Office (GSO). The VHLSS sample overlaps with the VARHS sample, thus allowing the construction of a combined dataset.

Table 1 presents summary statistics for the unbalanced panel of children

⁷The Vietnam Access to Resources Household Survey was developed in collaboration between the Development Economics Research Group (DERG), Department of Economics, University of Copenhagen, and the Central Institute of Economic Management (CIEM), the Institute for Labour Studies and Social Affairs (ILSSA), and the Institute of Policy and Strategy for Agriculture and Rural Development (IPSARD), Hanoi, Vietnam. The twelve surveyed provinces are: Ha Tay, Nghe An, Khanh Hoa, Lam Dong, Dac Lac, Dac Nong, Lao Cai, Dien Bien, Lai Chau, Phu Tho, Quang Nam and Long An (CIEM et al. 2007).

between the ages of 6 and 14 years living in a household whose head is married in 2008 and 2010, while Table 2 presents the analogous information for the balanced panel of these children.⁸ These samples are both used in our assessment of the effects of the 2003 Land Law on child work, which we measure in terms of the extent of children’s participation in household production comprising agriculture, forestry and aquaculture.⁹ This measure is an applicable definition of child labour for our purposes as agricultural household production is an important source of income in the rural areas that form our sample. The International Labour Organization rates agriculture as one of the three most dangerous sectors for children’s health and safety and recognises agriculture as a priority sector for the elimination of child work (International Labour Organization 2006).

Table 1: Summary statistics – Individual level, unbalanced panel

	mean	difference	min	p50	max	sd	N
age_boys	10.9949	-0.0068	6	11	14	2.3019	1179
age_girls	11.0017		6	11	14	2.2947	1194
first_born_boys	0.2180	-0.0249	0	0	1	0.4130	1179
first_born_girls	0.2429		0	0	1	0.4290	1194
work_days_boys	14.3070	-1.0196	0	0	340	35.9785	1179
work_days_girls	15.3266		0	0	334	36.1002	1194
HH_prod_boys	0.2748	-0.0175	0	0	1	0.4466	1179
HH_prod_girls	0.2923		0	0	1	0.4550	1194
housework_boys	0.4962	-0.0683***	0	0	1	0.5002	1179
housework_girls	0.5645		0	1	1	0.4960	1194

Note: Two-sample t-tests for equality of the means for unpaired data with unequal variances in all cases.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

⁸The children in the unbalanced panel represent 11.81% of the total sample of individuals, while the balanced sample is a fraction of 8.28% of the total sample.

⁹Note that we refer to this type of work, i.e. work in the household’s production related to agriculture, forestry, and aquaculture, as an involvement in ‘agricultural household production’ for the remainder of the paper.

Tables 1 and 2 also include mean-comparison tests of variables for boys (*_boys*) and girls (*_girls*). Girls constitute just over 50% of the sample and are slightly younger (*age*) but more likely to be the first-born child (*first_born*) than boys.¹⁰ Girls perform more days of labour in agricultural household production (*work_days*) and are in general more likely to be involved in this type of activity (*HH_production* takes a value of one if the child works in agricultural household production and zero otherwise), although these differences between boys and girls are not statistically significant. The only statistically significant difference is the one relating to whether children are active in housework or not (*housework* is a binary variable) in the unbalanced panel, with a considerably larger share of girls performing domestic chores than boys. Measures of education are not presented here due to all children in our sample being required to attend primary school according to the Vietnamese Constitution of 1992.

Tables A1 and A2 in the appendix display summary statistics at the household level for the unbalanced and balanced panel, respectively. The household head is female in 5% of the households (*fem_head*) with an average age of approximately 44 years (*age_head*). Household heads have received an average of 7 years of education (*head_years_edu*). On average, households have rights to almost 5 plots (*plots*), and most households have at least one plot on which rice was planted in one of the previous three seasons (*rice* takes a value of one if this is the case and zero otherwise). The total area of plots varies greatly, from as small as 36 square meters to as large as 326,000 square meters (*area_plots*).¹¹

Self-reported knowledge about the contents of the 2003 Land Law ex-

¹⁰Note that the restriction on the sample in terms of age is 6-14 years. With the further conditions on the sample, i.e. living in a household whose head is married and no missing data for the variables used in the analysis in Section 4, all children at the age of 6 years are lost in the balanced panel.

¹¹This includes the total size of all plots the family gets some utility from, i.e. those the family has rights to and operates, those it does not have rights to but rents in to operate, and those it has rights to but rents out.

Table 2: Summary statistics – Individual level, balanced panel

	mean	difference	min	p50	max	sd	N
age_boys	10.6990	0.0336	7	11	14	2.0180	824
age_girls	10.6655		7	11	14	2.0457	840
first_born_boys	0.1978	-0.0534***	0	0	1	0.3986	824
first_born_girls	0.2512		0	0	1	0.4340	840
work_days_boys	13.8956	0.2980	0	0	340	34.8964	824
work_days_girls	13.5976		0	0	334	34.6501	840
HH_prod_boys	0.2731	0.0004	0	0	1	0.4458	824
HH_prod_girls	0.2726		0	0	1	0.4456	840
housework_boys	0.4976	-0.0393	0	0	1	0.5003	824
housework_girls	0.5369		0	1	1	0.4989	840

Note: Two-sample t-tests for equality of the means for unpaired data with unequal variances in all cases.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

ists in 24% of the households (*know_law*). Participation in the Women’s Union is relatively widespread in Vietnam and may be an indicator of female bargaining power but also a proxy for whether the household receives information specifically targeted at women, for example regarding the 2003 Land Law, so we control for whether someone in the household is a member or not (*womens_union*).

About 39% of the households receive private transfers (*transfer* is also binary) and the value of the total durable goods of the household (*value_durable*) is given in Vietnamese Dong.¹² The median number of children in a household is 2 or 3 (*number_children*) depending on whether the panel is bal-

¹²The value of durable goods is the total self-estimated value at the time of the 2008 VARHS for all of the household’s durable goods. These include color TVs, black and white TVs, satellite dishes, video or DVD players, stereo systems (CD and radio), radios, cassette players (mono), telephones (including mobile phones), refrigerators, air conditioners, washing machines, hot water heaters, motorcycles, bicycles, boats, feed grinding machines, rice milling machines, grain harvesting machines, pesticide sprayers, tractors, ploughs, carts, cars, and personal computers.

anced or not, which is at least in part a result of Vietnam’s history regarding the two-child policy introduced in the late 1980s.¹³ Further descriptives include the distances to the nearest primary (*dist_primary*), lower (*dist_secondary_lower*), and upper secondary schools (*dist_secondary_upper*). The majority of households belongs to the ethnic group *Kinh*, denoted by the binary variable *kinh*.

Over 20% of the households in this sample have had their land use certificate (re)issued after 2003, i.e. after the Law was introduced (*LUC_after2003* takes a value of one if the LUC was (re)issued after 2003 and zero otherwise).¹⁴ Furthermore, approximately 15% of the households hold a LUC that reports the names of both spouses (*both_names_LUC*) and about 24% of households have acquired an additional plot after the introduction of the law (*plot_after2003*). Both of the latter variables are binary.

According to the 2003 Land Law, land use certificates on land owned by married couples should report both names if the couple was married before the last plot was registered on the household’s LUC and if registration occurred after 2003 (The National Assembly of The Socialist Republic of Viet Nam 2003). Only just over one third of the couples in our sample that fulfill these criteria have the names of both the husband and wife stated on their LUC. Moreover, a regression model of the relationship between registration of the two names and observable household characteristics such as education of the head, his age, or wealth measured by the value of durable goods shows no statistically significant relationship (see columns 1 and 2 of Table A3 in the appendix). We do find some evidence that families who have planted rice in one of the previous three seasons are less likely to have both names stated on the LUC even if they have registered at least one plot after the law

¹³Implementation of the two-child policy and fines in the case of having additional children were heterogeneous across households and influenced by the geographical location and extent of political involvement of household members (Bélanger et al. 2003).

¹⁴The percentage of children in our sample living in a household that is *de jure* subject to the 2003 Land Law is 21.8% or 23.1% in the unbalanced and balanced panel, respectively.

came into effect. Surprisingly, neither knowledge of the law nor membership in the Women’s Union are related to law implementation in a statistically significant way.

The weak implementation of the 2003 Land Law and its lack of association with many of the key household characteristics is the foundation of our estimation strategy in which we exploit the effects of its introduction on children living in households that are *de jure* subject to the Law rather than *de facto*. Households are *de jure* subject to the land law if the household head is married and if the LUC has been (re)issued after 2003 for the purpose of registering an additional plot. Households are *de facto* subject to the law in the presence of law implementation at the household level, i.e. if the household head is married, if the LUC has been (re)issued after 2003 *and* if it states the names of both the household head and his spouse.

The anecdotal evidence reported in the introduction suggests that implementation of the law at the household level may have been delayed. As such, households with both names on the land use certificate are already characterised by a relatively high degree of female empowerment to begin with. Moreover, in line with Aldashev et al. (2012a,b), women that are *de jure* subject to the 2003 Land Law are empowered by a reassurance of rights to the land in knowing that her name should also be on the LUC, thus increasing her bargaining position within the household as argued by Akram-Lodhi (2005).¹⁵ The possible endogeneity of law implementation at the household level not captured by observable characteristics complicates the identification of the effects of the implementation of the land law. Our estimation strategy therefore relies on a comparison of the effects of plot registration before and after 2003 on children’s outcomes, irrespective of whether or not

¹⁵It may also be the case that some women did not know that they had equal land use rights before the introduction of the law. Therefore, the introduction of the law, even if not implemented in a specific household, may have induced a shift in bargaining power as women now know (if they were informed about the law) that they hold the same rights as their husbands and that, from a legal perspective, their names should also be stated on the LUC if registration occurred after 2003.

the LUC bears both names, controlling for unobserved heterogeneity across households.

It is worth noting that, conditional on having acquired a plot after the introduction of the law, we do not find any evidence of a statistically significant relationship between mere plot registration after 2003 and observable indicators such as knowledge about the law and whether at least one member is in the Women’s Union. This suggests that households do not purposefully delay registration in an attempt to circumvent the possible empowering effect of the law (see Table A3 in the appendix).¹⁶ Very important for the validity of our identification strategy is the fact that neither knowledge about the law nor membership in the Women’s Union exhibits a statistically significant relationship with registration after 2003. This reassures us that the decision to register an additional plot after the introduction of the 2003 Land Law is not related to the implications of the law and is therefore exogenous.

In the main specification we investigate the effects of a household having registered at least one plot on the LUC after 2003 on the intensity of child labour, measured by the total number of days children are reported to have been involved in activities related to the cultivation of rice, maize and other crops, livestock, aquaculture, or forestry. Our econometric specification is given in equation (1):

$$W_{iht} = \varrho_1 LUC_after2003_{ht} + \varrho_2 fem_{iht} + \varrho_3 LUC_after2003_{ht} * fem_{iht} + \mathbf{X}_{iht}\boldsymbol{\varpi} + \mathbf{H}_{ht}\boldsymbol{\varphi} + \boldsymbol{\Phi}_h + \epsilon_{iht} \quad (1)$$

where W_{iht} denotes the outcome variable: the logarithmic value of the number of activity days in agricultural household production during the past 12

¹⁶Furthermore, there is no evidence for a statistically significant relationship with the age and education of the head, or the number of total land holdings (see columns 3 and 4 of Table A3 in the appendix). There is, however, some evidence that plot registration after 2003 is negatively correlated with the head being female. Furthermore, registration after 2003 is positively correlated with the head belonging to the ethnic majority group *Kinh* and the receipt of transfers, although the latter results are not robust and depend on the specification.

months ($work_days + 1$) of child i in household h in time period t , where $t = 2008, 2010$. $LUC_after2003$ is the main explanatory variable which takes a value of one if the household has registered at least one plot on its land use certificate after 2003 and zero otherwise; fem is a dummy for the gender of the child, taking value one if the child is female and zero otherwise. In the presence of gender equality we would expect the coefficient on fem to be statistically insignificant. If women have a preference for girls or wish to reduce existing gender inequalities, we would expect the increased bargaining power within the household brought about by the 2003 Land Law to be reflected in a lower level of child labour by girls relative to boys. This means that the estimated marginal effect for girls, which is the sum of the coefficients on $LUC_after2003$ and on the interaction term, would be statistically significant and negative. On the other hand, the expected sign of the marginal effects for boys, given by the coefficient on $LUC_after2003$, is not known *a priori*.

We also control for household fixed effects, Φ , time-varying household characteristics, \mathbf{H} , and children's characteristics, \mathbf{X} . Regarding time-varying household characteristics, we control for knowledge of the 2003 Land Law, whether a member of the household is active in the Women's Union and for whether the family receives private transfers. Furthermore, we control for the natural logarithms of the value of durable goods and of the number of plots.¹⁷ With respect to individual characteristics, we control for age and its square ($age2$), and for whether the child is the first-born child. ϵ is a statistical error term.

¹⁷Substituting in the logarithmic value of the total size of land holdings the family has rights to does not alter the main findings. Furthermore, the main results are robust to excluding the top and bottom percentile of the value of durables, the number, or the size of land holdings. The results of this exercise are not presented but available from the authors upon request.

4 Empirical results

Table 3 reports the key results of our empirical analysis as described in equation (1). The dependent variable, child labour, is measured as the number of days or day equivalents of work in the past 12 months.¹⁸ Columns 1 and 4 report the results of estimating equation (1) with district rather than household fixed effects, columns 2 and 5 estimate equation (1) without time variant household controls, and columns 3 and 6 display the main results, i.e. the results of estimating equation (1) as presented above. The regressions are performed on the unbalanced panel for columns 1 through 3 and on the balanced panel in columns 4 through 6.

Living in a household that *de jure* is subject to the 2003 Land Law does not have any effect on the intensity of boys' participation in agricultural household production, as the estimated coefficient on *LUC_after2003* is not statistically significant in any column. The estimated coefficients on the dummy variable *fem* are statistically insignificant in all but the first column, which suggests that girls are not more likely to participate in agricultural household production than boys in the absence of the law if unobserved heterogeneity across households is controlled for. The coefficients on the interaction term *LUC_after2003*fem* are negative and statistically significant in all columns.

The lower panel of Table 3 reports the marginal effects of becoming *de jure* subject to the land law for girls, i.e. the sums of the estimated coefficients on *LUC_after2003* and on the interaction term, and the respective test statistics and p-values of the Wald test. The marginal effects for girls are negative and statistically significant in all columns, indicating that the 2003 Land Law reduces the participation of girls in agricultural household production. This

¹⁸Table A4 in the appendix includes more detail regarding the control variables in the main specifications. The main results are supported when a binary outcome variable indicating an active role in agricultural household production is employed and time variant household controls included (see columns 3 and 6 of Table A5 in the appendix).

Table 3: Main results for days of work

	(1)	(2)	(3)	(4)	(5)	(6)
	ln_work_days					
LUC_after2003	0.0363 [0.119]	0.0899 [0.207]	0.0438 [0.206]	0.0991 [0.150]	0.164 [0.217]	0.133 [0.217]
fem	0.136* [0.0749]	0.0543 [0.0867]	0.0601 [0.0865]	0.131 [0.0923]	0.0526 [0.116]	0.0496 [0.115]
LUC_after2003*fem	-0.394*** [0.120]	-0.446*** [0.162]	-0.462*** [0.161]	-0.426*** [0.162]	-0.602*** [0.193]	-0.601*** [0.189]
Marginal effect for girls	-0.3582	-0.3563	-0.4181	-0.3269	-0.4371	-0.4683
F-statistic	11.87	2.87	4.06	6.37	3.87	4.75
p-value	0.0008	0.0904	0.0442	0.0129	0.0496	0.0297
Panel	Unbalanced	Unbalanced	Unbalanced	Balanced	Balanced	Balanced
Individual controls	Yes	Yes	Yes	Yes	Yes	Yes
Household controls	Yes	No	Yes	Yes	No	Yes
Household FE	No	Yes	Yes	No	Yes	Yes
District FE	Yes	No	No	Yes	No	No
N	2373	2373	2373	1664	1664	1664
R^2	0.150	0.143	0.159	0.148	0.159	0.176

Note: Robust standard errors in brackets. Results robust to clustering standard errors at the household level.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

result supports the idea that the introduction of the land law may have shifted the balance of power within the household, giving greater bargaining power to women who in turn want to improve the outcomes of girls. The land law, by reaffirming women’s land rights, decreases the number of days that girls participate in agricultural household production by between 33 and 46% depending on the specification, which is a considerably sized effect.

Interestingly, we do not find evidence for any effect of the 2003 Land Law on the likelihood that children perform housework as presented in Table A6 in the appendix even though we do find evidence of gender inequality in the absence of the land law for this outcome variable. As the coefficient on *fem* is positive and statistically significant, girls are more likely to perform domestic chores than boys. Similarly, no effect is found on the educational attainment of children above primary school age if they have finished their education (see Table A7 in the appendix). Table A8 in the appendix provides some weak evidence of a relationship between the 2003 Land Law and school enrollment for those above primary school age for both sexes. This holds only when district rather than household fixed effects are included, which is rather weak evidence considering that controlling for unobserved heterogeneity across households is elementary in this setting.

5 Robustness Checks

We conduct three types of robustness checks to rule out the possibility that concurrent factors are driving our results. First, given that the 2003 Land Law reinforces equal rights for both spouses on each plot acquired during marriage due to the existence of one LUC per household listing all plots with rights, we restrict the sample to couples who were with certainty married before registering at least one plot under the 2003 Land Law. Second, we disentangle the effects of plot acquisition from the effects of plot registration under the 2003 Land Law. Finally, we examine the effects of plot registration

in the absence of the 2003 Land Law. The robustness checks support the main findings: The 2003 Land Law lowers the intensity of girls' participation in agricultural household production.

5.1 Conservative sample

In the analysis presented in Section 4 we have focused on the effects of the 2003 Land Law on children living with a married household head and have assumed that the household head was married prior to registering the latest acquired plot. This assumption is reasonable considering that out of wedlock childbearing is uncommon in Vietnam (Friedman et al. 2003)¹⁹ and that the youngest children included in our sample were born in 2002, i.e. before the introduction of the Land Law.²⁰ The Vietnam Access to Resources Household Survey (VARHS) as well as the Vietnamese Household Living Standards Survey (VHLSS) contain information regarding current marital status, but not on marital history. Given the overlap in the samples of the VHLSS and the VARHS, we combine the information contained in the 2004 VHLSS and the 2006, 2008, and 2010 VARHS to restrict the sample to children living in households whose head was with certainty married before having registered at least one plot on the land use certificate.²¹ By doing so, we adopt a

¹⁹The large majority of children in our sample are the biological children of the household head. Specifically, this is the case for 90% of the children in the unbalanced panel and for 91% of children in the balanced panel. Note that the main results do not qualitatively change if the sample is restricted to biological children of the household head. The results are available from the authors upon request.

²⁰According to the 2000 Marriage and Family Law land use rights acquired during marriage are generally considered jointly owned by the spouses (The National Assembly of the Socialist Republic of Viet Nam 2000).

²¹In other words, we restrict the sample to include households whose heads were married in 2004 according to the 2004 VHLSS and who registered at least one plot after 2004, to households whose heads were married in 2006 according to the 2006 VARHS and registered at least one plot after 2006 and to households who were married in 2008 according to the 2008 VARHS and acquired at least one plot after 2008 according to the 2010 VARHS. It is not possible to establish the sequence of events for all households due to the lack of information regarding the specific dates, which results in a loss of observations beyond those intended by the restriction criteria.

Table 4: Days of work - Conservative sample

	(1)	(2)	(3)	(4)	(5)	(6)
	ln_work_days					
LUC_after2003	-0.0109 [0.196]	-0.0729 [0.257]	-0.148 [0.263]	0.0607 [0.224]	0.0725 [0.269]	0.0242 [0.278]
fem	0.154 [0.124]	0.198 [0.156]	0.202 [0.154]	0.168 [0.158]	0.287 [0.198]	0.295 [0.198]
LUC_after2003*fem	-0.534*** [0.192]	-0.477** [0.214]	-0.451** [0.222]	-0.626** [0.248]	-0.663*** [0.243]	-0.655** [0.253]
Marginal effect for girls	-0.5449	-0.5499	-0.5987	-0.5653	-0.5904	-0.6308
F-statistic	8.67	5.18	6.19	7.67	5.32	6.18
p-value	0.0040	0.0234	0.0133	0.0067	0.0219	0.0136
Panel	Unbalanced	Unbalanced	Unbalanced	Balanced	Balanced	Balanced
Individual controls	Yes	Yes	Yes	Yes	Yes	Yes
Household controls	Yes	No	Yes	Yes	No	Yes
Household FE	No	Yes	Yes	No	Yes	Yes
District FE	Yes	No	No	Yes	No	No
N	882	882	882	665	665	665
R^2	0.146	0.123	0.172	0.149	0.136	0.181

Note: Robust standard errors in brackets.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

conservative approach and exclude children living in a household that is not with certainty subject to the 2003 Land Law because of the possibility of exclusive ownership of all plots by one spouse.

Table 4 presents the results for the reduced sample. In line with our previous findings, becoming *de jure* subject to the 2003 Land Law reduces the intensity of girls' work in agricultural household production. The lower panel of Table 4 presents the marginal effects for girls and shows that the negative effect of the 2003 Land Law on girls' work rates is statistically significant in all cases. Again, we find no evidence of gender inequality among children in the absence of the law with respect to participation in agricultural household production.

5.2 Plot acquisition

Bar and Basu (2009) and Basu, Das, and Dutta (2010) show, both theoretically and empirically, that a relationship between child labour and plot acquisition exists. To eliminate the possibility that our result is driven by a wealth effect (i.e. the increase in the number of plots decreasing child labour), we disentangle the effects of the 2003 Land Law from the effects of plot acquisition. We introduce the variable *plot_after2003*, which takes a value of one if the household has acquired a plot after 2003, and zero otherwise. We amend equation (1) by replacing *LUC_after2003* with *plot_after2003*, also in the interaction term.

If plot acquisition is not the driving factor, the estimated marginal effects for girls should not be statistically significant. Table 5 reports the results of this exercise. None of the estimated coefficients are statistically significant for boys or girls, which indicates that there is no statistically significant impact of land acquisition on children's participation in agricultural household production. The results therefore rule out the possibility that plot acquisition is the driving force behind the effects of the 2003 Land Law on girls' child work found in Section 4.

Table 5: Days of work - Plot acquisition effects

	(1)	(2)	(3)	(4)	(5)	(6)
	ln_work_days					
plot_after2003	0.0733 [0.135]	-0.0265 [0.307]	-0.120 [0.308]	0.129 [0.160]	-0.0353 [0.327]	-0.0643 [0.328]
fem	0.102 [0.0817]	-0.0290 [0.0873]	-0.0178 [0.0870]	0.104 [0.0948]	-0.0340 [0.108]	-0.0307 [0.108]
plot_after2003*fem	-0.210 [0.154]	-0.0526 [0.181]	-0.0839 [0.181]	-0.282 [0.170]	-0.215 [0.234]	-0.238 [0.234]
Marginal effect for girls	-0.1363	-0.0791	-0.2043	-0.1525	-0.2503	-0.3018
F-statistic	1.40	0.07	0.49	1.13	0.64	0.98
p-value	0.2396	0.7891	0.4849	0.2894	0.4233	0.3220
Panel	Unbalanced	Unbalanced	Unbalanced	Balanced	Balanced	Balanced
Individual controls	Yes	Yes	Yes	Yes	Yes	Yes
Household controls	Yes	No	Yes	Yes	No	Yes
Household FE	No	Yes	Yes	No	Yes	Yes
District FE	Yes	No	No	Yes	No	No
N	2373	2373	2373	1664	1664	1664
R^2	0.147	0.139	0.155	0.145	0.154	0.171

Note: Robust standard errors in brackets.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

5.3 Plot registration

In order to isolate the effects of the 2003 Land Law from the effects of plot registration in general, we use the 2006 VARHS to “lag” the analysis so that the main explanatory variable indicates registration after an arbitrary point in time before the law was implemented. Using this “placebo specification” we consider the effect of land use certificates (re)issued after 2001 but before 2004 on child labour outcomes using the VARHS 2006 sample and compare this to the effects of plot registration after 2003 using the 2008 sample. We amend the econometric specification presented in equation (1) in the following way:

$$W_{ihd} = \varrho_1 LUC_after2001_{hd} + \varrho_2 fem_{ihd} + \varrho_3 LUC_after2001_{hd} * fem_{ihd} + \mathbf{X}_{ihd}\boldsymbol{\varpi} + \mathbf{H}_{hd}\boldsymbol{\varphi} + \boldsymbol{\Omega}_d + \epsilon_{ihd}. \quad (2)$$

The new variable *LUC_after2001* takes a value of one if at least one plot was registered after 2001 but none after 2003 and zero otherwise.²² The model includes household control variables and controls for unobserved heterogeneity across districts with the help of $\boldsymbol{\Omega}$. If the effect found for children’s outcomes is indeed related to the introduction of the 2003 Land Law, we should not observe any evidence of a statistically significant impact of the variable *LUC_after2001* on the intensity of child work for girls.

The marginal effects of registering a plot after 2001 and before 2004 on the likelihood of children participating in agricultural household production are statistically insignificant as shown in columns 1 and 2 of Table 6. This

²²Note that the results for the 2008 data in columns 3 and 4 of Table 6 are not qualitatively sensitive to using a comparable definition of the main explanatory variable, i.e. if *LUC_after2003* takes a value of one if at least one plot was registered after 2003 but none after 2005. This alternative specification furthermore ensures that our main findings can be attributed to the 2003 Land Law and are not driven by the gender equality law that was implemented in 2007. The results are not presented here but are available from the authors upon request. Furthermore, no statistically significant effect of registration before 2004 or 2002 is found for both boys or girls. The results are not presented but also available from the authors upon request.

Table 6: Days of work - Plot registration effects

	(1)	(2)	(3)	(4)
	ln_work_days			
LUC_after2001	0.104 [0.267]	0.0848 [0.270]		
LUC_after2001*fem	-0.264 [0.242]	-0.228 [0.242]		
fem	0.128 [0.0915]	0.123 [0.0907]	0.185* [0.0972]	0.182* [0.0955]
LUC_after2003			-0.143 [0.165]	-0.231 [0.168]
LUC_after2003*fem			-0.394** [0.171]	-0.386** [0.170]
Marginal effect for girls	-0.1601	-0.1437	-0.5367	-0.6177
F-statistic	0.76	0.53	15.13	17.97
p-value	0.3861	0.4661	0.0002	0.0000
Individual controls	Yes	Yes	Yes	Yes
Household controls	No	Yes	No	Yes
District FE	Yes	Yes	Yes	Yes
VARHS	2006	2006	2008	2008
N	1630	1630	1294	1294
R^2	0.245	0.259	0.128	0.165

Note: Robust standard errors in brackets. Data from the 2006 VARHS in columns (1) and (2), data from the 2008 VARHS in columns (3) and (4).

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

rules out that the effects found for girls in the main specification are driven by the mere registration of a plot rather than by registration under the 2003 Land Law.

For comparison purposes, columns 3 and 4 present a replication of the main results according to equation (2) on the 2008 data. The results confirm the main results in Table 3: Being *de jure* subject to the 2003 Land Law reduces the intensity of girls' child work.

6 Conclusions

A growing strand of literature on household economics has analysed the impact of the gender of income recipients on children's outcomes. Furthermore, the effects and implications of laws and reforms in developing countries aimed at strengthening women's rights have been the topic of recent studies. We study how reinforcing women's rights to land affects child labour. On the basis of a Vietnamese land law and with the help of household survey data, we demonstrate empirically that the introduction of a law that reinforces women's rights to land has positive effects on the outcomes of girls even if the law is not *de facto* implemented in the households these girls live in.

We provide robust evidence in favor of a negative association between legal exposure to the land law and the amount of labour girls provide to a household's agricultural production, taking into account unobservable heterogeneity across households. The 2003 Land Law decreases the number of work days of female children by approximately 40% according to our main results, while we do not find a comparable effect for boys.

The robustness checks support the main findings: the effects found for girls can be attributed to the 2003 Land Law, ruling out other concurrent driving factors. In particular, we use a sub-sample of children living in households that are with certainty part of the population targeted by the 2003 Land Law in order to exclude exclusive ownership of land use rights by one

spouse. Furthermore, we ensure that neither the acquisition nor the mere registration of an additional plot acts as the driving factor.

According to our findings, the introduction of laws aiming at strengthening the position of women within the household by visibly stating existing equal land use rights of spouses positively impacts on the outcomes of girls, specifically regarding their involvement in child labour. We argue that this is due to the impact of the law on customary rules as the 2003 Land Law does not actually change spouses' rights to land.

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Appendix

A Tables

Table A1: Summary statistics – Household level, unbalanced panel

	mean	min	p50	max	sd	count
LUC_after2003	0.2210	0	0	1	0.4151	1561
both_names_LUC	0.1499	0	0	1	0.3571	1561
plot_after2003	0.2434	0	0	1	0.4293	1561
fem_head	0.0487	0	0	1	0.2153	1561
age_head	44.3978	21	42	88	10.3267	1561
head_years_edu	6.9169	0	7	12	3.3770	1492
plots	4.7860	0	4	26	2.8434	1561
area_plots	10954.86	36	4636.001	326000	19493.89	1561
rice	0.7361	0	1	1	0.4409	1561
know_law	0.2396	0	0	1	0.4270	1561
womens_union	0.6451	0	1	1	0.4786	1561
transfer	0.3812	0	0	1	0.4858	1561
value_durable	39019.78	1	10000	2.02e+07	535993.1	1561
dist_prim	2.3006	0	1	1000	25.4572	1558
dist_sec_low	3.1887	0	1.6	1000	25.5775	1556
dist_sec_up	9.2075	0	5	98	10.7203	1550
kinh	0.6957	0	1	1	0.4603	1561
number_children	2.8649	0	3	10	1.2778	1554

Table A2: Summary statistics – Household level, balanced panel

	mean	min	p50	max	sd	count
LUC_after2003	0.2441	0	0	1	0.4298	938
both_names_LUC	0.1578	0	0	1	0.3647	938
plot_after2003	0.2399	0	0	1	0.4272	938
fem_head	0.0469	0	0	1	0.2116	938
age_head	43.8369	21	41	88	10.2496	938
head_years_edu	7.2421	0	8	12	3.2621	884
plots	4.7399	0	4	16	2.7220	938
area_plots	10476.99	36	4099.998	326000	18635.98	938
rice	0.7463	0	1	1	0.4354	938
know_law	0.2388	0	0	1	0.4266	938
womens_union	0.6716	0	1	1	0.4699	938
transfer	0.3998	0	0	1	0.4901	938
value_durable	29815.17	1	10700	5218702	200660.5	938
dist_prim	1.6501	0	1	98	3.4386	937
dist_sec_low	2.5780	0	1.5	98	4.5200	935
dist_sec_up	8.6063	0	5	98	9.8803	931
kinh	0.7122	0	1	1	0.4530	938
number_children	2.7105	0	2	9	1.1218	936

Table A3: Implementation of the Land Law and registration of plots

	(1)	(2)	(3)	(4)
	both_LUC		LUC_after	
know_law	-0.0712 [0.0802]	0.0121 [0.0753]	0.0508 [0.0872]	0.0480 [0.0586]
fem_head	-0.154 [0.0949]	-0.240*** [0.0689]	-0.0390 [0.124]	-0.158* [0.0851]
age_head	0.00167 [0.00215]	0.0000666 [0.00143]	-0.00190 [0.00229]	-0.00229 [0.00157]
head_years_edu	-0.0102 [0.0110]	-0.00672 [0.00801]	0.00131 [0.0105]	0.00290 [0.00873]
ln_plots	0.123** [0.0549]	-0.0429 [0.0545]	0.0459 [0.0783]	0.0607 [0.0619]
ln_value_durable	-0.0152 [0.0143]	0.00729 [0.0264]	-0.00146 [0.0135]	0.0146 [0.0115]
rice	-0.120* [0.0619]	-0.0729 [0.0422]	-0.128 [0.0771]	-0.0863 [0.0839]
womens_union	0.0604 [0.0663]	0.0629 [0.0623]	-0.0286 [0.0538]	-0.0171 [0.0297]
transfer	0.144* [0.0738]	0.0370 [0.114]	0.101** [0.0486]	0.0757** [0.0340]
kinh	0.160* [0.0809]	0.0524 [0.0565]	0.00578 [0.0966]	0.110* [0.0528]
round2008	-0.00718 [0.0831]	-0.0605 [0.116]	-0.148** [0.0578]	-0.128* [0.0621]
District FE	Yes	No	Yes	No
Province FE	No	Yes	No	Yes
<i>N</i>	334	334	356	356
<i>R</i> ²	0.073	0.038	0.081	0.080

Note: Robust standard errors in brackets. The observational unit is a household in which at least one plot has been registered on the LUC after the introduction of the 2003 Land Law.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A4: Days of work - Control variables

	(1)	(2)	(3)	(4)
		ln_work_days		
age	-0.240*	-0.243*	-0.348**	-0.353**
	[0.132]	[0.133]	[0.175]	[0.176]
age2	0.0229***	0.0230***	0.0331***	0.0333***
	[0.00631]	[0.00632]	[0.00833]	[0.00836]
first_born	0.0551	0.0519	-0.0622	-0.0766
	[0.107]	[0.107]	[0.141]	[0.140]
round2008	-0.0470	-0.0131	0.201*	0.221*
	[0.0862]	[0.0946]	[0.108]	[0.114]
ln_plots		0.291		-0.142
		[0.369]		[0.402]
transfer		0.419***		0.423***
		[0.108]		[0.115]
ln_value_durable		-0.00967		-0.0362
		[0.0488]		[0.0490]
know_law		-0.149		-0.165
		[0.193]		[0.192]
womens_union		0.134		0.0896
		[0.143]		[0.151]
Household FE	Yes	Yes	Yes	Yes
Sample	Full	Full	Full	Full
N	2373	2373	1664	1664
R^2	0.143	0.159	0.159	0.176

Note: Robust standard errors in brackets. Coefficients on $LUC_after2003$, fem , $LUC_after2003 * fem$ in columns 1 and 2 are identical to columns 2 and 3 of Table 3, the respective coefficients in columns 3 and 4 are identical to columns 5 and 6 of Table 3. They are not reported again due to space restrictions.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A5: Results for agricultural work

	(1)	(2)	(3)	(4)	(5)	(6)
			work			
LUC_after2003	0.0167 [0.0348]	0.0645 [0.0575]	0.0472 [0.0571]	0.0395 [0.0453]	0.0804 [0.0616]	0.0680 [0.0613]
fem	0.0417** [0.0202]	0.0102 [0.0235]	0.0119 [0.0235]	0.0405 [0.0248]	0.0105 [0.0328]	0.0101 [0.0328]
LUC_after2003*fem	-0.113*** [0.0346]	-0.137*** [0.0455]	-0.142*** [0.0456]	-0.120** [0.0485]	-0.169*** [0.0560]	-0.171*** [0.0556]
Marginal effect for girls	-0.0960	-0.0723	-0.0949	-0.0806	-0.0890	-0.1029
F-statistic	10.85	1.58	2.75	4.10	2.11	2.86
p-value	0.0013	0.2087	0.0976	0.0449	0.1465	0.0911
Panel	Unbalanced	Unbalanced	Unbalanced	Balanced	Balanced	Balanced
Individual controls	Yes	Yes	Yes	Yes	Yes	Yes
Household controls	Yes	No	Yes	Yes	No	Yes
Household FE	No	Yes	Yes	No	Yes	Yes
District FE	Yes	No	No	Yes	No	No
N	2373	2373	2373	1664	1664	1664
R^2	0.143	0.125	0.149	0.148	0.141	0.166

Note: Robust standard errors in brackets.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A6: Results for housework

	(1)	(2)	(3)	(4)	(5)	(6)
	housework					
LUC_after2003	-0.0209 [0.0364]	0.0714 [0.0692]	0.0512 [0.0663]	-0.0416 [0.0422]	0.0592 [0.0766]	0.0416 [0.0735]
fem	0.0666*** [0.0201]	0.0982*** [0.0258]	0.0985*** [0.0257]	0.0175 [0.0256]	0.0687* [0.0352]	0.0661* [0.0350]
LUC_after2003*fem	-0.0111 [0.0518]	-0.0139 [0.0598]	-0.0170 [0.0586]	0.0366 [0.0576]	-0.0139 [0.0710]	-0.0144 [0.0693]
Marginal effect for girls	-0.0319	0.0576	0.0342	-0.0050	0.0453	0.0273
F-statistic	0.75	0.76	0.30	0.01	0.38	0.15
p-value	0.3874	0.3834	0.5836	0.9114	0.5369	0.6946
Panel	Unbalanced	Unbalanced	Unbalanced	Balanced	Balanced	Balanced
Individual controls	Yes	Yes	Yes	Yes	Yes	Yes
Household controls	Yes	No	Yes	Yes	No	Yes
Household FE	No	Yes	Yes	No	Yes	Yes
District FE	Yes	No	No	Yes	No	No
N	2373	2373	2373	1664	1664	1664
R^2	0.137	0.149	0.173	0.140	0.143	0.173

Note: Robust standard errors in brackets.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A7: Results for years of education

	(1)	(2)	(3)	(4)	(5)	(6)
	years_edu					
LUC_after2003	-0.179 [0.450]	-0.423 [0.434]	-0.536 [0.452]	0.123 [0.588]	-0.345 [0.507]	-0.397 [0.591]
fem	-0.136 [0.299]	-0.858** [0.358]	-0.889** [0.346]	-0.197 [0.390]	-0.836 [0.683]	-0.919 [0.670]
LUC_after2003*fem	0.316 [0.499]	1.082 [0.748]	1.103 [0.746]	-0.0237 [0.753]	1.174 [0.788]	1.271 [0.811]
Marginal effect for girls	0.1375	0.6595	0.5666	0.0993	0.8295	0.8736
F-statistic	0.23	0.80	0.64	0.03	1.34	1.30
p-value	0.6355	0.3716	0.4232	0.8593	0.2483	0.2560
Panel	Unbalanced	Unbalanced	Unbalanced	Balanced	Balanced	Balanced
Individual controls	Yes	Yes	Yes	Yes	Yes	Yes
Household controls	Yes	No	Yes	Yes	No	Yes
Household FE	No	Yes	Yes	No	Yes	Yes
District FE	Yes	No	No	Yes	No	No
N	795	795	795	447	447	447
R^2	0.180	0.099	0.130	0.205	0.097	0.144

Note: Robust standard errors in brackets. The observational unit is a child above primary school age, i.e. aged 11-18 in the respective survey year, that is likely to have finished education and is not currently enrolled in school.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A8: Results for school enrolment

	(1)	(2)	(3)	(4)	(5)	(6)
			school			
LUC_after2003	0.0525** [0.0212]	-0.0210 [0.0316]	-0.0183 [0.0318]	0.0718*** [0.0240]	-0.0192 [0.0331]	-0.0176 [0.0333]
fem	0.00222 [0.0203]	-0.0124 [0.0210]	-0.0128 [0.0210]	0.0176 [0.0206]	0.00996 [0.0296]	0.00967 [0.0297]
LUC_after2003*fem	0.0128 [0.0341]	0.0425 [0.0341]	0.0435 [0.0339]	-0.00198 [0.0348]	0.0260 [0.0365]	0.0263 [0.0365]
Marginal effect for girls	0.0654	0.0214	0.0252	0.0698	0.0068	0.0087
F-statistic	5.71	0.56	0.74	7.35	0.05	0.08
p-value	0.0183	0.4550	0.3904	0.0076	0.8193	0.7749
Panel	Unbalanced	Unbalanced	Unbalanced	Balanced	Balanced	Balanced
Individual controls	Yes	Yes	Yes	Yes	Yes	Yes
Household controls	Yes	No	Yes	Yes	No	Yes
Household FE	No	Yes	Yes	No	Yes	Yes
District FE	Yes	No	No	Yes	No	No
N	3307	3307	3307	2281	2281	2281
R^2	0.190	0.198	0.202	0.147	0.167	0.169

Note: Robust standard errors in brackets. The observational unit is a child above primary school age, i.e. aged 11-18 in the respective survey year.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.