Land Certification and Schooling in Rural Ethiopia

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- Grade progress is unaffected in general as a result of the program, except in the case of oldest sons.
    - There is a significant negative effect on grade progress of oldest sons.

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- Findings on the success of individual programs can differ depending on which aspect is under investigation.
  - In many cases depends on both the quality of pre-existing informal institutions, and the specific details of the individual programs.
- To the best of our knowledge, there is no previous research into the effect of such programs on schooling (or child work) in a rural setting.

Related literature

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  - Field (2007) in Peru and Moura et al (2009) in Brazil find decreased child work and increased adult labour supply.
  - Galiani and Schargrodsky (2010) in Argentina find that schooling increases as a result of the program.

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  - Land certification may increase the marginal productivity of child labor (via e.g. investments) - this may be a more medium-run effect.

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- Periodic land redistributions, most recently in 1997.
- The 1995 Constitution and 1997 Federal Land Law allows land lease, inheritance, sharecropping etc. which was previously illegal.
- The certificates are legally binding documents of land use rights.
- Expanded to the whole region, but due to limited capacity the program went from one kebele (village) to the next.

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- We choose to focus primarily on the inheritance channel.
- Land certification makes it easier for children to inherit land from their parents, particularly oldest sons (Fafchamps & Quisumbing, 2002; Gibson and Gurmu, 2011).

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- We do not, however, expect this effect to be very large for a number of reasons:
  - schooling does have a significant positive impact on agricultural productivity, even in the case of traditional farming (Krishnan, 1996).
  - children can combine school and work without a significant negative impact on schooling outcomes (Ravallion and Wodon, 2000; Ridao-Cano, 2001; Ray and Lancaster, 2003; Khanam, 2008; Dumas, 2012; De Hoop and Rosati, 2014).

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- This allows children to devote more time to productive activities; schooling or child labor.

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  - Two different climatic zones (East Gojjam more fertile, South Wollo drier).
  - South Wollo experienced forced resettlement in the 1980s; voluntary resettlement programs today.
- 14 kebeles in total: 7 in East Gojjam and 7 in South Wollo.

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  - we estimate an impact which is immediate, and remains constant once it has occurred.
  - households are likely to adjust behavior in response to the program before receiving their certificate.
  - we argue that the timing of the arrival of the program to the kebele was as good as random, conditional on time-constant urbanity and accessibility.

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- We use household fixed effects to control for time-constant differences between households and the kebeles in which they live.
- As there are only 14 kebeles, we have few clusters.
- A linear probability model allows most readily for the incorporation of both fixed effects and methods of inference with few clusters.

Results

Table 4: The impact of the land certification program on children's school enrolment – coefficients of the within-household linear probability model.

	Boys			Girls		
	All kebeles	East Gojjam	South Wollo	All kebeles	East Gojjam	South Wollo
Land certification	0.042**	0.064**	0.018	0.040***	0.055***	0.036**
	(0.015)	(0.020)	(0.022)	(0.008)	(0.006)	(0.014)
*Oldest son	0.017	-0.029	0.072**			
	(0.025)	(0.025)	(0.030)			
Oldest son	-0.094***	-0.116**	-0.072			
	(0.027)	(0.039)	(0.038)			
*Oldest daughter				0.022	-0.028	0.064
				(0.025)	(0.029)	(0.034)
Oldest daughter				-0.029	0.011	-0.062*
				(0.023)	(0.031)	(0.032)
N	11,982	5,953	6,029	10,821	5,004	5,817
Children	2,526	1,265	1,261	2,258	1,068	1,190
Households	1,323	650	673	1,315	630	685

* $p<0.1$; ** $p<0.05$; *** $p<0.01$. All models also include age dummies, zone-specific year dummies and a constant. Standard errors are in parentheses and clustered at the kebele level using the few clusters procedure in Brewer, Crossley and Joyce (2013).

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Table 5: The impact of the land certification program on children's grade progress – coefficients of the within-household linear probability model.

	Boys			Girls		
	All kebeles	East Gojjam	South Wollo	All kebeles	East Gojjam	South Wollo
Land certification	0.006	0.029	-0.010	0.001	0.005	-0.002
	(0.013)	(0.017)	(0.015)	(0.013)	(0.022)	(0.019)
*Oldest son	-0.041***	-0.064***	-0.023**			
	(0.013)	(0.017)	(0.008)			
Oldest son	0.031**	0.025*	0.036**			
	(0.011)	(0.012)	(0.014)			
*Oldest daughter				0.008	-0.021*	0.025
				(0.020)	(0.011)	(0.029)
Oldest daughter				-0.016	0.011	-0.029
				(0.016)	(0.009)	(0.020)
N	4,006	1,781	2,225	3,957	1,491	2,466
Children	1,101	511	590	1,043	441	602
Households	777	363	414	770	347	423

* $p<0.1$; ** $p<0.05$; *** $p<0.01$. All models also include age dummies, zone-specific year dummies and a constant. Standard errors are in parentheses and clustered at the kebele level using the few clusters procedure in Brewer, Crossley and Joyce (2013).

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Table 6: Land certification and child labor supply

	Boys & Girls		Boys		Girls	
	mean	effect	mean	effect	mean	effect
Panel A: East Gojjam						
Year						
- 2002 (placebo)	6.384	0.133	4.310	-0.448	2.097	0.531
		(1.857)		(1.422)		(0.775)
- 2005 (treatment effect)	8.511	-2.594*	5.292	-1.581*	3.231	-1.046**
		(1.017)		(0.702)		(0.399)
Households	669		669		669	
Panel B: South Wollo						
Year						
- 2002 (placebo)	15.150	-3.633	10.543	-2.564	4.799	-0.984**
		(2.374)		(2.233)		(0.249)
- 2005 (treatment effect)	15.328	7.882**	8.031	6.073***	7.657	1.860
		(2.643)		(1.281)		(1.564)
Households	747		747		747	

* p<0.10, ** p<0.05, *** p<0.01. The effect is estimated using a difference-in-difference approach with a linear specification as described in Section 5. The model includes the following demeaned control variables: the gender and age of the household head, number of children and adults in the household, land size, land quality proxied by slope of the landholding, existence of pair of oxen owned by the household, walking distance to the nearest town, and quality of the roof top of the homestead. Standard errors are in parentheses and clustered at the kebele level using the few clusters procedure in Brewer, Crossley and Joyce (2013).

Results - robustness checks

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- A fixed effects logit specification.

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- However, in South Wollo this seems to apply in particular to the oldest son.
    - We believe that this difference between the zones is related to the difference in land rights history as well as the difference in agro-climatic conditions.

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- Children in East Gojjam are found to engage in less child labor as a result of the program, while the opposite is true for South Wollo.
- Therefore, these negative effects in terms of progress in East Gojjam appear to be the result of an optimization of children's time use, rather than for example an incentive for parents to increase child farm work.

Thank you!

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  - The permanent certificate includes exact geographical coordinates, and permanent corner stones mark the land boundaries.

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