The Effect of Land Inheritance on Youth Employment and Migration Decisions: Evidence from Rural Ethiopia

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Research Question

How does the amount of land youth expect to inherit affect their migration and employment decisions?
What is the differential impact of expected inhertance on youth:

- with various age and gender groups?
- with versus without access to functioning land rental markets?
- based on their residential proximity to major urban centers?

Overall, youth (aged 15–34) are likely to make decisions based on inheritance expectations, but we know little about how inheritance impacts decisions

Focus: Rural Ethiopia

- In Ethiopia, land is formally owned by the government, with formal land markets (sales) outlawed and major land access via administrative redistribution
- Due to it's adverse tenure security effect, redistribution has long been abandoned
- The country now facing acute problems of land scarcity - especially in the highlands
- Household farm sizes are dwindling; In 2011–12, more than half of rural households cultivated less than one hectare of land
- Youth rely on periodic land redistributions, inheritance, and/or small rental markets to access land

Preview of the Results

Approach:

- Use panel data from from 2010 and 2014 from 1,748 households in 27 woredas (districts) of rural Amhara and Oromia regions of Ethiopia
- Focus on youth aged 15–34; estimate a household fixed effects model
- Exploit exogenous variation in the timing of land redistributions to overcome endogenous household decisions about inheritance size

Findings:

- Larger expected land inheritances:
  - Lower the likelihood of long-distance and rural-to-urban permanent migration during 2010–14
  - Increase the likelihood of employment in agriculture in 2014
  - Reduce the likelihood of employment in the non-agricultural sector
  - Do not affect the decision to study
- Results appear to be driven by males and older youth
- Inheritance plays a more pronounced role in areas with less-vibrant land markets and in more remote areas

Access to Land in Ethiopia

- Land formally owned by government, with formal land markets (sales) outlawed
- Individual land users have the legal right to transfer their land use rights to their children or other family members
- Individuals can also rent their land use rights to any person
- Several land redistributions have occurred since 1991, usually based on household size at the time (with extra weight placed on adult males)
- Sometimes involved land previously utilized by state farms
- In our study regions of Amhara and Oromia, 20 of our 27 sample woredas experienced such a land redistribution, though there is substantial variation in the timing of the redistributions

Year of Most Recent Land Redistribution

Year	Share of observations (N = 1,989)
1992	3.4
1993	9.5
1997	21.8
2003	6.5
2004	4.4
2005	9.5
2006	9.2
2010	4.0
2012	1.7
2013	3.6
none	26.6

Notes: An observations is an individual. Median year is 2003.
Source: Authors' calculations based on IFPRI's Watershed Survey of 2014.

Norms of Inheritance

- Land inheritances in Ethiopia are not uniform across descendants of the head—both due to cultural factors like norms associated with gender and birth order and restrictions on land fragmentation
- Customary norms favor men (Fafchamps and Quisumbing, 2005):
  - Sons (especially first born) traditionally care for parents in old age (Kumar and Quisumbing, 2012)
  - Customary beliefs limit the type of agricultural labor in which females can engage, necessitating male labor participation on any plot
- Siblings (co-descendants) matter as well:
  - A groom's number of brothers (but not sisters) negatively affects land inheritance (Fafchamps and Quisumbing 2005)
  - Having more older brothers diminishes agricultural productivity (inherit less productive land) (Gibson and Gurmu 2011)
  - Younger siblings also affect youth decisions to work outside of agriculture (Gibson and Gurmu 2012)

Migration and Employment in Rural Ethiopia

- Migrants are predominantly 'pushed' from their homes rather than attracted by an urban 'pull' of higher returns on human capital investments (World Bank, 2010; Zeleke et al., 2008; Dorosh et al., 2012; de Brauw, 2014; Lee and Mueller, 2016)
- Both employment diversification (via non-agricultural employment and/or migration) and the pursuit of educational opportunities represent potential strategies of risk diversification
- A variety of factors may lead youth to pursue these strategies:
  - Lack of sufficient means of subsistence (poverty)
  - Agricultural shocks (e.g., droughts or floods)
  - Declining agricultural productivity
  - Shortage of land/ sibling competition for inheritable assets like agricultural plots
  - Shortage of employment opportunities in rural areas

Data

- Panel survey conducted in 2010 (round 1) and 2014 (round 2)
- Sample includes 27 kebeles in 9 woredas in 2 regions, with approximately 200 households per woreda
- 1,810 households in round 1 and 1,748 in round 2 (3.4 percent household attrition over 4 years)
- We construct a **cross-sectional** dataset consisting of all round 1 household members aged 15–34; we then observe their spatial location and employment decisions in 2014
- Round 2 importantly collects this information not only for household members, but all direct descendants of the head or their spouse
- Permits us to analyze expected inheritances as well as migration and employment decisions made between 2010 and 2014 of all descendants

Variable Measurement: Outcomes

- Youths' expected land inheritance = amount head reports that the youth already received (from family) + amount head reports planning to give in the future
- Three indicator variables for migration:
  - Permanent migrant: Any youth who was a household member in 2010 but not 2014
  - Long distance permanent migrant: Permanent migrant who by 2014 lives outside of the woreda (district) in which they resided in 2010
  - Rural-to-urban permanent migrant: Permanent migrant who by 2014 lives in an urban area
- Employment outcomes (considers individual's primary occupation):
  - Agriculture
  - Non-agricultural sector
  - Studying

Descriptive Statistics

	Mean	S.D.
Dummy - permanent migrant	0.45	0.5
Dummy - permanent migrant out of woreda	0.21	0.41
Dummy - permanent migrant to urban area	0.28	0.45
Primary occupation is in:		
Agriculture	0.37	0.48
Non-agriculture	0.16	0.36
Student	0.29	0.45
Domestic	0.13	0.34
Unemployed	0.04	0.19
Land inheritance (hectares)	0.48	2.54
Log land inheritance	-1.36	0.92
Dummy - male	0.67	0.47
Age	19.9	4.09
Dummy - child of head	0.98	0.13
Dummy - married	0.05	0.23
Dummy - completed cycle 1 of primary school (grade 4)	0.68	0.47
Dummy - $>$ 1 male descendant immediately follows in birth order	0.25	0.43
Share of males 18+ at time of land redistribution	0.17	0.30

Source: Authors' calculations based on IFPRI's Watershed Surveys of 2010 and 2014.
Notes: N=1,170.

Econometric Specification

- We estimate the following linear probability model:

$$E_i = \beta_0 + \beta_1 L_i + \gamma \mathbf{X}_i + \alpha_j + \epsilon_i$$

- where
  - i indexes individuals
  - E_i are migration (during 2010–14) and employment (in 2014) outcomes
  - L_i is logged expected land inheritance
  - $\mathbf{X}_i$ is a vector of individual-level control variables (gender, oldest male indicator, age, marital status, child of head indicator, primary school completion indicator, over age 18 at time of most recent land redistribution indicator, fixed effects for exact permutation of older co-descendants, and indicator for having more than one male co-descendant immediately below one's self in the birth order)
  - α_j are household fixed effects
- Standard errors are clustered at the kebele level, the administrative unit in which land redistribution policies are executed

Identification Strategy

- Expected land inheritance is likely to be endogenous to migration, employment, and education decisions:
  - A household's land endowment, wealth, and income levels could influence both migration and employment decisions and expected inheritance
  - Within a household, parents may select descendants with particular unobserved characteristics that also influence migration and employment—such as a physical aptitude for agriculture—for larger inheritances
- We address the first concern by including household fixed effects
- We address the second concern using individual controls and employing an instrumental variables (IV) strategy

IV Strategy

- Leverage a unique feature of Ethiopia: given public ownership of land, land access is influenced by government efforts to redistribute land
- Interviews with kebele officials suggest that males over age 18 received priority in redistributions
- In our data, median male land inheritance (in terms of land area) is 60 percent greater than that of median female
- Suggests that HHs with a greater share of male descendants over age 18 at the time of the redistribution should have more land to allocate across descendants
- Household fixed effects capture average impacts of redistribution
- Within a household, we expect individuals at high risk of receiving a small inheritance to benefit most from having a greater share of male co-descendants be over age 18 at the time of redistribution
    - Data reveal one such "high risk" group: those with > 1 male descendant immediately below them in the birth order

Excluded Instrument

We use a single interaction term as an instrument for expected land inheritance:

- The share of male descendants in the household who were over age 18 at the time of the most recent land redistribution (call this r_i) interacted with a dummy for having more than one male descendant immediately follow the individual in birth order (call this m_i)

The first stage equation is:

$$L_i = \delta_0 + \delta_1 r_i \times m_i + \delta_2 m_i + \theta \mathbf{X}_i + \pi_j + \eta_i$$

where:

- π_j are household fixed effects
- r_i does not appear in its level form as it is collinear with household FE

Identifying Assumption

- The *difference* in the effect of having a larger share of male descendants be over age 18 at the time of land redistribution on those with versus without > 1 male descendant immediately below them in birth order only affects migration and employment decisions through its effect on expected land inheritance
- The individual components of the excluded instrument, m_i and r_i, are included in our main specification and we explicitly allow them both to directly impact our migration and employment outcomes
  - Thus, we need only believe that their *interaction* is a valid instrument—not that either of the two variables alone is

IV First Stage: Impact of Excluded Instrument on Log Land Inheritence

	(1)	(2)
Excluded instrument: Share of male descendants 18+ at time of land redistribution × Dummy for > 1 male descendant immediately following in birth order	2.501***	2.478***
	(0.460)	(0.480)
Dummy − > 1 male descendant immediately follows in birth order	-0.082	-0.079
	(0.061)	(0.065)
Observations	1,170	1,170
R-squared	0.902	0.902
Number of households	625	625
First stage F stat	29.59	26.63
Full set of individual-level controls?	No	Yes

Source: Authors' calculations based on IFPRI's Watershed Surveys of 2010 and 2014.

Notes: Standard errors are in parentheses and clustered at the kebele level. ∗ ∗ ∗ indicates significance at the 0.01 level.

Impacts on Permanent Migration: OLS Estimates

	Anywhere		Out of woreda		To urban area	
Log land inheritance	0.025	-0.165**	-0.085**	-0.252**	-0.128***	-0.283***
	(0.051)	(0.076)	(0.037)	(0.094)	(0.043)	(0.081)
Additional controls	No	Yes	No	Yes	No	Yes
Observations	1,170	1,170	1,167	1,167	1,167	1,167
R-squared	0.001	0.783	0.011	0.788	0.024	0.800
Number of households	625	625	624	624	624	624

Source: Authors' calculations based on IFPRI's Watershed Surveys of 2010 and 2014.
Notes: Standard errors are in parentheses and clustered at the kebele level. $***$, $**$, and $*$ indicate significance at the 0.01, 0.05, and 0.10 levels, respectively.

Impacts on Sector of Primary Employment: OLS Estimates

	Agriculture		Non-agriculture		Study	
Log land inheritance	0.309***	0.262**	-0.059	-0.180	-0.142***	-0.050
	(0.044)	(0.109)	(0.042)	(0.126)	(0.042)	(0.201)
Additional controls	No	Yes	No	Yes	No	Yes
Observations	1,167	1,167	1,167	1,167	1,167	1,167
R-squared	0.095	0.815	0.006	0.753	0.021	0.778
Number of households	625	625	625	625	625	625

Source: Authors' calculations based on IFPRI's Watershed Surveys of 2010 and 2014.
Notes: Standard errors are in parentheses and clustered at the kebele level. $***$, $**$, and $*$ indicate significance at the 0.01, 0.05, and 0.10 levels, respectively.

Impacts on Permanent Migration: IV Estimates

	OLS			IV		
	(1)	(2)	(3)	(4)	(5)	(6)
	Dummy - migrated ...					
	Anywhere	Out of woreda	To urban area	Anywhere	Out of woreda	To urban area
Ln land inheritance	-0.165**	-0.252**	-0.283***	-0.198	-0.855***	-0.508***
	(0.076)	(0.094)	(0.081)	(0.199)	(0.173)	(0.173)
Observations	1,170	1,167	1,167	1,170	1,167	1,167
R-squared	0.783	0.788	0.800	0.783	0.727	0.791
# of households	625	624	624	625	624	624
First Stage F-Stat				21.73	21.73	21.73

Source: Authors' calculations based on IFPRI's Watershed Surveys of 2010 and 2014.
Notes: Standard errors are in parentheses and clustered at the kebele level. $***$, $**$, and $*$ indicate significance at the 0.01, 0.05, and 0.10 levels, respectively.

Impacts on Sector of Primary Employment: IV Estimates

	OLS			IV		
	(1)	(2)	(3)	(4)	(5)	(6)
	Dummy - primarily employed in ...					
	Agriculture	Non-agric.	Study	Agriculture	Non-agric.	Study
Ln land inheritance	0.262**	-0.180	-0.050	0.655***	-0.427***	-0.171
	(0.109)	(0.126)	(0.201)	(0.168)	(0.095)	(0.140)
Observations	1,167	1,167	1,167	1,167	1,167	1,167
R-squared	0.815	0.753	0.778	0.799	0.742	0.776
# of households	625	625	625	625	625	625
First Stage F-Stat				22.61	22.61	22.61

Source: Authors' calculations based on IFPRI's Watershed Surveys of 2010 and 2014.
Notes: Standard errors are in parentheses and clustered at the kebele level. $***$, $**$, and $*$ indicate significance at the 0.01, 0.05, and 0.10 levels, respectively.

Results by Gender

	(1)	(2)	(3)	(4)	(5)	(6)
	Dummy - migrated ...			Dummy - employed in ...		
	Any-where	Out of woreda	Urban area	Agric.	Non-agric.	Study
Ln inheritance (women)	0.097	0.024	-0.022	0.154***	-0.078	-0.082
	(0.073)	(0.044)	(0.053)	(0.047)	(0.047)	(0.065)
Ln inheritance (men)	-0.003	-0.155***	-0.188***	0.226***	-0.163***	-0.058
	(0.062)	(0.047)	(0.051)	(0.047)	(0.042)	(0.061)
Observations	1,170	1,167	1,167	1,167	1,167	1,167
R-squared	0.418	0.449	0.415	0.563	0.436	0.525
# of households	625	624	624	625	625	625
P-value of difference	0.11	0.002	0.004	0.093	0.022	0.614

Source: Authors' calculations based on IFPRI's Watershed Surveys of 2010 and 2014.
Notes: Standard errors are in parentheses and clustered at the kebele level. $***$, $**$, and $*$ indicate significance at the 0.01, 0.05, and 0.10 levels, respectively.

Results by Age

	(1)	(2)	(3)	(4)	(5)	(6)
	Dummy - migrated ...			Dummy - employed in ...		
	Any-where	Out of woreda	Urban area	Agric.	Non-agric.	Study
Ln inheritance (20-34)	-0.010	-0.104*	-0.149**	0.220***	-0.139***	-0.011
	(0.068)	(0.055)	(0.058)	(0.053)	(0.040)	(0.058)
Ln inheritance (15-19)	-0.024	-0.028	-0.107	0.221***	-0.061	-0.082
	(0.09)	(0.056)	(0.066)	(0.046)	(0.048)	(0.077)
Observations	1,170	1,167	1,167	1,167	1,167	1,167
R-squared	0.407	0.425	0.393	0.542	0.424	0.501
# of households	625	624	624	625	625	625
P-value of difference	0.799	0.096	0.317	0.984	0.069	0.181

Source: Authors' calculations based on IFPRI's Watershed Surveys of 2010 and 2014.
Notes: Standard errors are in parentheses and clustered at the kebele level. $***$, $**$, and $*$ indicate significance at the 0.01, 0.05, and 0.10 levels, respectively.

Results by Land Rental Market Activity (Low vs. High)

	(1)	(2)	(3)	(4)	(5)	(6)
	Dummy - migrated ...			Dummy - employed in ...		
	Any-where	Out of woreda	Urban area	Agric.	Non-agric.	Study
Ln inheritance (low)	-0.337***	-0.181*	-0.514***	0.410***	-0.661***	0.418**
	(0.108)	(0.094)	(0.080)	(0.099)	(0.120)	(0.196)
Ln inheritance (high)	-0.179	-0.378**	-0.267***	0.443***	0.006	-0.361**
	(0.119)	(0.151)	(0.077)	(0.143)	(0.143)	(0.155)
Observations	1,170	1,167	1,167	1,167	1,167	1,167
R-squared	0.830	0.848	0.850	0.869	0.826	0.850
# of households	625	624	624	625	625	625
P-value of difference	0.335	0.280	0.035	0.853	0.001	0.004

Source: Authors' calculations based on IFPRI's Watershed Surveys of 2010 and 2014.
Notes: Standard errors are in parentheses and clustered at the kebele level. $***$, $**$, and $*$ indicate significance at the 0.01, 0.05, and 0.10 levels, respectively.

Results by Proximity to Urban Center (Close vs. Far)

	(1)	(2)	(3)	(4)	(5)	(6)
	Dummy - migrated ...			Dummy - employed in ...		
	Any-where	Out of woreda	Urban area	Agric.	Non-agric.	Study
Ln inheritance (close)	0.430***	0.173	-0.071	0.473**	0.090	-0.610***
	(0.079)	(0.131)	(0.064)	(0.204)	(0.121)	(0.104)
Ln inheritance (far)	-0.126	-0.330**	-0.317***	0.234*	-0.319**	0.116
	(0.100)	(0.158)	(0.073)	(0.125)	(0.148)	(0.289)
Observations	1,170	1,167	1,167	1,167	1,167	1,167
R-squared	0.841	0.849	0.871	0.892	0.828	0.849
# of households	625	624	624	625	625	625
P-value of difference	0.000	0.021	0.018	0.327	0.042	0.026

Source: Authors' calculations based on IFPRI's Watershed Surveys of 2010 and 2014.
Notes: Standard errors are in parentheses and clustered at the kebele level. $***$, $**$, and $*$ indicate significance at the 0.01, 0.05, and 0.10 levels, respectively.

Conclusion

Approach:

- Use panel data from from 2010 and 2014 from 1,748 households in 27 woredas (districts) of rural Amhara and Oromia regions of Ethiopia
- Focus on youth aged 15–34; estimate a household fixed effects model
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  - Do not affect the decision to study
- Results appear to be driven by males and older youth
- Inheritance plays a more pronounced role in areas with less-vibrant land markets and in more remote areas