

# Adaptive capacity and subsequent droughts: evidence from Ethiopia

Utsoree Das\*      Salvatore Di Falco<sup>†</sup>      Avichal Mahajan<sup>‡</sup>

## ONLINE APPENDIX

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\*Institute of Economics and Econometrics, GSEM, University of Geneva, Switzerland

<sup>†</sup>Corresponding author: Institute of Economics and Econometrics, GSEM, University of Geneva,  
Salvatore.DiFalco@unige.ch

<sup>‡</sup>Institute of Economics and Econometrics, GSEM, University of Geneva, Switzerland

# Appendix

Table A1: Variable definition

Variable Name	Definition
Log(Revenue)	Log of revenue per hectare (ETB/hectare).
Drought	Dummy = 1 if the household received a drought, 0 otherwise.
<i>Household Characteristics</i>	
Household size	Number of members in the household.
Age	Age of the household head.
Male	Dummy = 1 if the household head is male, 0 otherwise.
Married	Dummy = 1 if the household head is married, 0 otherwise.
Literacy	Dummy = 1 if the household head is literate, 0 otherwise.
Log(Wealth)	Log of wealth constructed using the assets of the household.
<i>Inputs</i>	
Fertilizers	Fertilizer(Includes DAP, UREA, blended fertilizers and compost) use per hectare (kg/hectare).
Manure	Manure use per hectare (kg/hectare).
Temperature	Average temperature during the <i>Meher</i> (June, July, and August) season.
Seed	Seed use per hectare (kg/hectare)
Male labor	Male labor use per hectare (adult days/hectare).
Female labor	Female labor use per hectare (adult data/hectare).
<i>Information Sources</i>	
Extension Workers	Dummy = 1 if household head received information from extension officers, 0 otherwise.
Radio and tv information	Dummy = 1 if household head received information from radio and television, 0 otherwise.
Climate information	Dummy = 1 if household head received information about rainfall and temperature forecast, 0 otherwise.
<i>Soil Variables</i>	
Soil erosion	Soil erosion of the household, 1 = no erosion, 2 = mild erosion and 3 = severe erosion.
Soil fertility	Soil fertility of the household, 1 = highly fertile, 2 = moderately fertile and 3 = infertile.
<i>Other Variables</i>	
Livestock	An index for livestock using the Regional Livestock units (LSU) coefficients prepared by FAO, to aggregate information for different types of livestock.
Crop Variety	Dummy =1 if household changes crop variety as an adaptation strategy.
Water and soil conservation	Dummy =1 if household implements water and soil conservation measures.
Access Credit	Dummy =1 if household borrowed or has an option to borrow.

Notes: This table provides definition for variables used in the analysis.

Table A2: Comparison of the households which experienced a drought vs the ones which did not experience one

	2014		2015	
	Coeff.	p-value.	Coeff.	p-value.
<i>Household Characteristics</i>				
Household size	0.642	0.007	-0.063	0.841
Age	1.933	0.291	5.086	0.000
Male	0.056	0.099	-0.026	0.460
Married	0.026	0.409	-0.001	0.982
Literacy	-0.016	0.793	-0.191	0.003
Log(Wealth)	0.144	0.706	0.308	0.369
<i>Inputs</i>				
Fertilizers	-295.7	0.129	313.1	0.012
Manure	-236.1	0.074	164.8	0.060
Seed	0.489	0.991	85.38	0.014
Male labor	4.071	0.935	122.4	0.010
Female labor	-19.72	0.006	42.98	0.015
Temperature	-2.441	0.003	-2.167	0.017
<i>Information Sources</i>				
Extension Workers	-0.012	0.880	0.031	0.508
Radio and tv information	-0.011	0.910	-0.048	0.520
Climate information	-0.012	0.854	0.031	0.573
<i>Soil Variables</i>				
Soil erosion	0.090	0.146	0.057	0.421
Soil fertility	-0.078	0.343	0.111	0.040
<i>Other Variables</i>				
Livestock	0.511	0.207	0.256	0.454
Access to credit	-0.019	0.561	-0.027	0.409
Change crop variety	0.147	0.004	0.153	0.004
Water and soil conservation	0.088	0.044	0.066	0.103

*Notes:* Standard errors are clustered on the level at which we measure the rainfall, resulting in 65 clusters. We regress various characteristics of our sample on the drought indicator for 2014 and 2015.

Table A2 depicts regression coefficients and p-values of linear regressions on different dependent variables, with “Drought” as the independent variable

For example, the first row “Household size” gives the regression coefficients and p-values of a linear regression done on the “Household size” with “Drought” as the independent variable for two years, 2014 and 2015.

$$HouseholdSize_{2014} = \alpha + \beta_{2014}Drought_{2014} + \epsilon_{2014}$$

$$HouseholdSize_{2015} = \alpha + \beta_{2015}Drought_{2015} + \epsilon_{2015}$$

And so forth for the other variables.

Table A3: Statistical difference test on regression coefficients

Controls	$t_{notemp}$	$t_{temp}$
Inputs	3.032775	1.985664
Inputs, HHChar	3.200858	2.173762
Inputs, HHChar, Info	3.17944	2.120476
Inputs, HHChar, Info, Soil	3.190446	2.115263
None	1.839796	1.839796

Most of the t values are significant ( $> 1.96$ ; 5% level of significance) except the one with no controls. First column is our original study, when temperature is not considered a part of the inputs, and the second column is when we use temperature as part of the inputs. This shows that the two regression coefficients are not the same across years even with just one control. P.S. Assumption, betas are unrelated, covariances zero, t-test implemented.

Table A4: Robustness check: temperature added as a control variable

	(1)	(2)	(3)	(4)	(5)
<i>Panel a</i>					
<i>Drought</i> <sub>2014</sub>	-0.300 (0.339)	-0.276 (0.332)	-0.283 (0.338)	-0.253 (0.358)	-0.229 (0.351)
<i>Drought</i> <sub>2014</sub> * <i>Log(Wealth</i> <sub>2014</sub> )	0.013 (0.029)	0.016 (0.029)	0.017 (0.029)	0.014 (0.030)	0.011 (0.029)
Observations	811	811	811	811	811
<i>Panel b</i>					
<i>Drought</i> <sub>2015</sub>	-1.329 (0.391)	-1.217 (0.356)	-1.162 (0.349)	-1.133 (0.355)	-1.132 (0.361)
<i>Drought</i> <sub>2015</sub> * <i>Log(Wealth</i> <sub>2015</sub> )	0.142 (0.037)	0.125 (0.034)	0.121 (0.034)	0.120 (0.034)	0.118 (0.035)
Observations	794	794	794	794	794
Temperature	Yes	Yes	Yes	Yes	Yes
Inputs	No	Yes	Yes	Yes	Yes
Household Characteristics	No	No	Yes	Yes	Yes
Information Sources	No	No	No	Yes	Yes
Soil Variables	No	No	No	No	Yes

Standard errors are clustered on the level at which we measure the rainfall, resulting in 65 clusters. Households characteristics include household size, age and gender of the household's head, whether the household's head is literate and married. Inputs include seeds, fertilizers, temperature and manure in kgs per hectare, and male and female labor in person days per hectare. Information sources include government extension officers, information from radio and television and climate information. Soil variables include average soil erosion and soil fertility of the farms. We control for change in log of wealth in all our specifications. Drought is interacted with log of wealth to explore the heterogeneous impact of drought. Dependent variable in all the columns is the change in log of revenue per hectare between the base year, 2004 and comparison years, 2015 and 2014.

Table A5: Robustness check: revenue constructed using 2002 prices

	(1)	(2)	(3)	(4)	(5)
<i>Panel a</i>					
<i>Drought</i> <sub>2014</sub>	-0.223 (0.329)	-0.392 (0.308)	-0.405 (0.314)	-0.372 (0.334)	-0.354 (0.327)
<i>Drought</i> <sub>2014</sub> * <i>Log(Wealth</i> <sub>2014</sub> )	0.009 (0.029)	0.027 (0.027)	0.028 (0.028)	0.025 (0.029)	0.023 (0.028)
Observations	811	811	811	811	811
<i>Panel b</i>					
<i>Drought</i> <sub>2015</sub>	-1.518 (0.411)	-1.496 (0.390)	-1.461 (0.396)	-1.447 (0.405)	-1.429 (0.401)
<i>Drought</i> <sub>2015</sub> * <i>Log(Wealth</i> <sub>2015</sub> )	0.124 (0.040)	0.125 (0.037)	0.121 (0.038)	0.120 (0.039)	0.118 (0.039)
Observations	794	794	794	794	794
Inputs	No	Yes	Yes	Yes	Yes
Household Characteristics	No	No	Yes	Yes	Yes
Information Sources	No	No	No	Yes	Yes
Soil Variables	No	No	No	No	Yes

Standard errors are clustered on the level at which we measure the rainfall, resulting in 65 clusters. Households characteristics include household size, age and gender of the household's head, whether the household's head is literate and married. Inputs include seeds, fertilizers, temperature and manure in kgs per hectare, and male and female labor in person days per hectare. Information sources include government extension officers, information from radio and television and climate information. Soil variables include average soil erosion and soil fertility of the farms. We control for change in log of wealth in all our specifications. Drought is interacted with log of wealth to explore the heterogeneous impact of drought. Dependent variable in all the columns is the change in log of revenue per hectare between the base year, 2004 and comparison years, 2015 and 2014.

Table A6: Robustness check: Revenue constructed using 2003 prices

	(1)	(2)	(3)	(4)	(5)
<i>Panel a</i>					
<i>Drought</i> <sub>2014</sub>	-0.230 (0.330)	-0.412 (0.306)	-0.425 (0.311)	-0.391 (0.331)	-0.374 (0.325)
<i>Drought</i> <sub>2014</sub> * <i>Log(Wealth</i> <sub>2014</sub> )	0.009 (0.030)	0.028 (0.027)	0.029 (0.028)	0.026 (0.029)	0.024 (0.028)
Observations	811	811	811	811	811
<i>Panel b</i>					
<i>Drought</i> <sub>2015</sub>	-1.543 (0.406)	-1.526 (0.385)	-1.493 (0.391)	-1.478 (0.400)	-1.460 (0.397)
<i>Drought</i> <sub>2015</sub> * <i>Log(Wealth</i> <sub>2015</sub> )	0.124 (0.040)	0.126 (0.037)	0.121 (0.038)	0.120 (0.039)	0.118 (0.039)
Observations	794	794	794	794	794
Inputs	No	Yes	Yes	Yes	Yes
Household Characteristics	No	No	Yes	Yes	Yes
Information Sources	No	No	No	Yes	Yes
Soil Variables	No	No	No	No	Yes

Standard errors are clustered on the level at which we measure the rainfall, resulting in 65 clusters. Households characteristics include household size, age and gender of the household's head, whether the household's head is literate and married. Inputs include seeds, fertilizers, temperature and manure in kgs per hectare, and male and female labor in person days per hectare. Information sources include government extension officers, information from radio and television and climate information. Soil variables include average soil erosion and soil fertility of the farms. We control for change in log of wealth in all our specifications. Drought is interacted with log of wealth to explore the heterogeneous impact of drought. Dependent variable in all the columns is the change in log of revenue per hectare between the base year, 2004 and comparison years, 2015 and 2014.

Table A7: Robustness check: revenue constructed using current prices

	(1)	(2)	(3)	(4)	(5)
<i>Panel a</i>					
<i>Drought</i> <sub>2014</sub>	-0.010 (0.351)	-0.179 (0.335)	-0.192 (0.338)	-0.167 (0.354)	-0.151 (0.346)
<i>Drought</i> <sub>2014</sub> * <i>Log(Wealth</i> <sub>2014</sub> )	-0.003 (0.030)	0.015 (0.028)	0.016 (0.029)	0.014 (0.030)	0.012 (0.029)
Observations	811	811	811	811	811
<i>Panel b</i>					
<i>Drought</i> <sub>2015</sub>	-1.519 (0.457)	-1.507 (0.431)	-1.464 (0.439)	-1.432 (0.449)	-1.423 (0.445)
<i>Drought</i> <sub>2015</sub> * <i>Log(Wealth</i> <sub>2015</sub> )	0.119 (0.045)	0.121 (0.042)	0.116 (0.042)	0.115 (0.043)	0.114 (0.043)
Observations	794	794	794	794	794
Inputs	No	Yes	Yes	Yes	Yes
Household Characteristics	No	No	Yes	Yes	Yes
Information Sources	No	No	No	Yes	Yes
Soil Variables	No	No	No	No	Yes

Standard errors are clustered on the level at which we measure the rainfall, resulting in 65 clusters. Households characteristics include household size, age and gender of the household's head, whether the household's head is literate and married. Inputs include seeds, fertilizers, temperature and manure in kgs per hectare, and male and female labor in person days per hectare. Information sources include government extension officers, information from radio and television and climate information. Soil variables include average soil erosion and soil fertility of the farms. We control for change in log of wealth in all our specifications. Drought is interacted with log of wealth to explore the heterogeneous impact of drought. Dependent variable in all the columns is the change in log of revenue per hectare between the base year, 2004 and comparison years, 2015 and 2014.



Table A8: Robustness check: log of profits as the dependent variable

	(1)	(2)	(3)	(4)
<i>Panel a</i>				
<i>Drought</i> <sub>2014</sub>	-0.052 (0.084)	-0.050 (0.086)	-0.049 (0.092)	-0.047 (0.092)
<i>Drought</i> <sub>2014</sub> * <i>Log(Wealth</i> <sub>2014</sub> )	0.005 (0.008)	0.005 (0.009)	0.005 (0.009)	0.005 (0.009)
Observations	811	811	811	811
<i>Panel b</i>				
<i>Drought</i> <sub>2015</sub>	-0.286 (0.115)	-0.283 (0.117)	-0.286 (0.117)	-0.281 (0.118)
<i>Drought</i> <sub>2015</sub> * <i>Log(Wealth</i> <sub>2015</sub> )	0.020 (0.013)	0.020 (0.013)	0.020 (0.013)	0.019 (0.013)
Observations	794	794	794	794
Household Characteristics	No	Yes	Yes	Yes
Information Sources	No	No	Yes	Yes
Soil Variables	No	No	No	Yes

Standard errors are clustered on the level at which we measure the rainfall, resulting in 65 clusters. Households characteristics include household size, age and gender of the household's head, whether the household's head is literate and married. Inputs include seeds, fertilizers, temperature and manure in kgs per hectare, and male and female labor in person days per hectare. Information sources include government extension officers, information from radio and television and climate information. Soil variables include average soil erosion and soil fertility of the farms. We control for change in log of wealth in all our specifications. Drought is interacted with log of wealth to explore the heterogeneous impact of drought. Dependent variable in all the columns is the change in log of profits per hectare between the base year, 2004 and comparison years, 2015 and 2014. We obtain some instances of negative profits. To construct the variable, log of profits, used in this table, we add a constant term to profits so that they become positive. We then take the log of this variable.

Table A9: Mechanism: coefficients associated with the interaction of drought and log of wealth

	(1)	(2)	(3)	(4)
<i>Panel a: 2014</i>				
<b>Dependent Variable</b>				
<i>Log(Fertilizers)</i>	-0.005 (0.087)	-0.008 (0.085)	-0.024 (0.080)	-0.026 (0.082)
<i>Log(Manure)</i>	0.007 (0.081)	0.018 (0.082)	0.020 (0.080)	0.021 (0.082)
<i>Log(Seed)</i>	0.014 (0.038)	0.014 (0.037)	0.013 (0.037)	0.010 (0.037)
<i>Water and soil conservation</i>	-0.002 (0.010)	-0.004 (0.010)	-0.005 (0.011)	-0.004 (0.011)
Observations	811	811	811	811
<i>Panel b: 2015</i>				
<b>Dependent Variable</b>				
<i>Log(Fertilizers)</i>	0.072 (0.104)	0.071 (0.100)	0.071 (0.099)	0.064 (0.098)
<i>Log(Manure)</i>	-0.085 (0.102)	-0.071 (0.103)	-0.070 (0.105)	-0.084 (0.104)
<i>Log(Seeds)</i>	0.043 (0.043)	0.043 (0.044)	0.043 (0.043)	0.041 (0.042)
<i>Water and soil conservation</i>	-0.015 (0.018)	-0.016 (0.019)	-0.016 (0.017)	-0.017 (0.018)
Observations	794	794	794	794
Household Characteristics	No	Yes	Yes	Yes
Information Sources	No	No	Yes	Yes
Soil Variables	No	No	No	Yes

Standard errors are clustered on the level at which we measure the rainfall, resulting in 65 clusters. Households characteristics include household size, age and gender of the household's head, whether the household's head is literate and married. Information sources include government extension officers, information from radio and television and climate information. Soil variables include average soil erosion and soil fertility of the farms. We control for change in log of wealth in all our specifications. Drought is interacted with log of wealth to explore the heterogeneous impact of drought. Dependent variables used are change in, log of fertilizers, manure, seed in kgs per hectare and a binary variable representing whether a household implements water and soil conservation methods as an adaptation strategy.

Table A10: Impact of drought on revenue with changed drought indicator (non-Meher rainfall)

	(1)	(2)	(3)	(4)	(5)
<i>Panel a</i>					
<i>Drought</i> <sub>2014</sub>	-0.190 (0.124)	-0.154 (0.119)	-0.151 (0.118)	-0.142 (0.120)	-0.144 (0.119)
Observations	814	814	814	814	814
<i>Panel b</i>					
<i>Drought</i> <sub>2015</sub>	-0.024 (0.146)	-0.091 (0.125)	-0.084 (0.126)	-0.091 (0.137)	-0.110 (0.139)
Observations	796	796	796	796	796
Inputs	No	Yes	Yes	Yes	Yes
Household Characteristics	No	No	Yes	Yes	Yes
Information Sources	No	No	No	Yes	Yes
Soil Variables	No	No	No	No	Yes

Standard errors are clustered on the level at which we measure the rainfall, resulting in 65 clusters. Households characteristics include household size, age and gender of the household's head, whether the household's head is literate and married. Inputs include temperature, seeds, fertilizers and manure in kgs per hectare, and male and female labor in person days per hectare. Information sources include government extension officers, information from radio and television and climate information. Soil variables include average soil erosion and soil fertility of the farms. Dependent variable in all the columns is the change in log of revenue per hectare between the base year, 2004 and comparison years, 2014 and 2015.

Table A11: Robusness check: past shocks added as a control variable with more interactions (1)

	(1)	(2)	(3)	(4)	(5)
<i>Panel a</i>					
<i>Drought</i> <sub>2014</sub>	-0.839 (0.522)	-0.873 (0.498)	-0.853 (0.502)	-0.820 (0.528)	-0.851 (0.509)
<i>Log(Wealth)</i> <sub>2014</sub> )	-0.079 (0.039)	-0.068 (0.037)	-0.066 (0.037)	-0.066 (0.039)	-0.072 (0.037)
<i>PastShocks</i> <sub>2014</sub>	-0.281 (0.189)	-0.274 (0.177)	-0.277 (0.175)	-0.276 (0.181)	-0.277 (0.181)
<i>Drought</i> <sub>2014</sub> * <i>Log(Wealth)</i> <sub>2014</sub> )	0.090 (0.048)	0.093 (0.046)	0.091 (0.047)	0.088 (0.049)	0.091 (0.047)
<i>Drought</i> <sub>2014</sub> * <i>PastShocks</i> <sub>2014</sub>	0.244 (0.193)	0.252 (0.181)	0.258 (0.177)	0.258 (0.182)	0.257 (0.181)
Observations	811	811	811	811	811
<i>Panel b</i>					
<i>Drought</i> <sub>2015</sub>	-2.811 (0.844)	-2.669 (0.782)	-2.603 (0.752)	-2.536 (0.756)	-2.574 (0.723)
<i>Log(Wealth)</i> <sub>2015</sub> )	-0.148 (0.071)	-0.136 (0.065)	-0.133 (0.062)	-0.129 (0.061)	-0.134 (0.058)
<i>PastShocks</i> <sub>2015</sub>	0.061 (0.077)	0.054 (0.076)	0.059 (0.077)	0.050 (0.079)	0.066 (0.079)
<i>Drought</i> <sub>2015</sub> * <i>Log(Wealth)</i> <sub>2015</sub> )	0.274 (0.081)	0.262 (0.076)	0.254 (0.073)	0.249 (0.073)	0.252 (0.071)
<i>Drought</i> <sub>2015</sub> * <i>PastShocks</i> <sub>2015</sub>	-0.138 (0.111)	-0.133 (0.099)	-0.142 (0.103)	-0.144 (0.103)	-0.166 (0.102)
Observations	794	794	794	794	794
Past Shocks	Yes	Yes	Yes	Yes	Yes
Inputs	No	Yes	Yes	Yes	Yes
Household Characteristics	No	No	Yes	Yes	Yes
Information Sources	No	No	No	Yes	Yes
Soil Variables	No	No	No	No	Yes

Standard errors are clustered on the level at which we measure the rainfall, resulting in 65 clusters. Households characteristics include household size, age and gender of the household's head, whether the household's head is literate and married. Inputs include seeds, fertilizers, temperature and manure in kgs per hectare, and male and female labor in person days per hectare. Information sources include government extension officers, information from radio and television and climate information. Soil variables include average soil erosion and soil fertility of the farms. We control for change in log of wealth in all our specifications. Drought is interacted with log of wealth to explore the heterogeneous impact of drought. Dependent variable in all the columns is the change in log of revenue per hectare between the base year, 2004 and comparison years, 2015 and 2014.

Table A12: Robusness check: past shocks added as a control variable with more interactions (2)

	(1)	(2)	(3)	(4)	(5)
<i>Panel a</i>					
<i>Drought</i> <sub>2014</sub>	0.020 (0.149)	0.020 (0.141)	0.025 (0.140)	0.029 (0.139)	0.026 (0.138)
<i>Log(Wealth)</i> <sub>2014</sub>	0.001 (0.027)	0.016 (0.025)	0.017 (0.025)	0.015 (0.026)	0.011 (0.025)
<i>PastShocks</i> <sub>2014</sub>	-1.109 (0.472)	-1.131 (0.432)	-1.143 (0.432)	-1.138 (0.445)	-1.113 (0.446)
<i>Drought</i> <sub>2014</sub> * <i>PastShocks</i> <sub>2014</sub>	1.363 (0.520)	1.273 (0.482)	1.289 (0.478)	1.285 (0.496)	1.259 (0.493)
<i>PastShocks</i> <sub>2014</sub> * <i>Log(Wealth)</i> <sub>2014</sub>	0.086 (0.040)	0.089 (0.036)	0.090 (0.037)	0.090 (0.039)	0.087 (0.038)
<i>Drought</i> <sub>2014</sub> * <i>PastShocks</i> <sub>2014</sub> * <i>Log(Wealth)</i> <sub>2014</sub>	-0.117 (0.046)	-0.107 (0.043)	-0.108 (0.043)	-0.108 (0.045)	-0.105 (0.044)
Observations	811	811	811	811	811
<i>Panel b</i>					
<i>Drought</i> <sub>2015</sub>	-0.206 (0.213)	-0.184 (0.199)	-0.196 (0.202)	-0.169 (0.200)	-0.179 (0.198)
<i>Log(Wealth)</i> <sub>2015</sub>	-0.061 (0.055)	-0.058 (0.053)	-0.057 (0.050)	-0.054 (0.049)	-0.060 (0.050)
<i>PastShocks</i> <sub>2015</sub>	-0.041 (0.570)	0.022 (0.554)	0.028 (0.538)	0.012 (0.527)	0.044 (0.529)
<i>Drought</i> <sub>2015</sub> * <i>PastShocks</i> <sub>2015</sub>	-1.278 (0.676)	-1.330 (0.699)	-1.303 (0.693)	-1.287 (0.669)	-1.345 (0.691)
<i>PastShocks</i> <sub>2015</sub> * <i>Log(Wealth)</i> <sub>2015</sub>	0.012 (0.057)	0.005 (0.056)	0.005 (0.054)	0.005 (0.053)	0.003 (0.053)
<i>Drought</i> <sub>2015</sub> * <i>PastShocks</i> <sub>2015</sub> * <i>Log(Wealth)</i> <sub>2015</sub>	0.116 (0.072)	0.123 (0.073)	0.119 (0.073)	0.117 (0.071)	0.121 (0.074)
Observations	794	794	794	794	794
Past Shocks	Yes	Yes	Yes	Yes	Yes
Inputs	No	Yes	Yes	Yes	Yes
Household Characteristics	No	No	Yes	Yes	Yes
Information Sources	No	No	No	Yes	Yes
Soil Variables	No	No	No	No	Yes

Standard errors are clustered on the level at which we measure the rainfall, resulting in 65 clusters. Households characteristics include household size, age and gender of the household's head, whether the household's head is literate and married. Inputs include seeds, fertilizers, temperature and manure in kgs per hectare, and male and female labor in person days per hectare. Information sources include government extension officers, information from radio and television and climate information. Soil variables include average soil erosion and soil fertility of the farms. We control for change in log of wealth in all our specifications. Drought is interacted with log of wealth to explore the heterogeneous impact of drought. Dependent variable in all the columns is the change in log of revenue per hectare between the base year, 2004 and comparison years, 2015 and 2014.

Table A13: Heterogeneous impact of drought on revenue

$Drought_{2015}$	-.275 (0.181)
$Drought_{2015} * Log(DemeanedWealth_{2015})$	0.118 ( 0.039 )
Inputs	Yes
Household Characteristics	Yes
Information Sources	Yes
Soil Variables	Yes

Standard errors are clustered on the level at which we measure the rainfall, resulting in 65 clusters. Households characteristics include household size, age and gender of the household's head, whether the household's head is literate and married. Inputs include seeds, fertilizers, temperature and manure in kgs per hectare, and male and female labor in person days per hectare. Information sources include government extension officers, information from radio and television and climate information. Soil variables include average soil erosion and soil fertility of the farms. We control for change in log of wealth in all our specifications. Drought is interacted with log of wealth to explore the heterogeneous impact of drought. Dependent variable in all the columns is the change in log of revenue per hectare between the base year, 2004 and comparison years, 2015 and 2014.

For 2014:

$$F(2, 64) = 0.46$$

$$Prob > F = 0.6348$$

For 2015:

$$F(2, 64) = 5.78$$

$$Prob > F = 0.0049$$

Figure A1: Global joint exclusion test