

# Appendices

## Land and Legibility: When do Citizens Expect Secure Property Rights in Weak States?

### Contents

|          |   |           |
|----------|---|-----------|
| <b>A</b> | <b>Additional Analyses</b>  | <b>2</b>  |
| A.1      | Land Rights and Land Access in Malawi . . . . .                                       | 2         |
| A.2      | Tables . . . . .  | 4         |
| A.2.1    | Average Marginal Component Effects . . . . .  | 4         |
| A.2.2    | Average Marginal Component Interaction Effects - Attribute Interactions . . . . .     | 5         |
| A.2.3    | Average Marginal Component Interaction Effects with Respondent Demographics . . . . . | 11        |
| A.3      | Marginal Means and Respondent Demographics . . . . .                                  | 16        |
| <b>B</b> | <b>Sampling</b>   | <b>21</b> |
| B.1      | Locating 2019 participants . . . . .  | 21        |
| B.2      | Revisiting 2016 villages . . . . .  | 21        |
| B.3      | LGPI Malawi 2019 survey . . . . .   | 21        |
| B.4      | LGPI Malawi 2016 Survey . . . . .   | 22        |
| B.5      | Ethics and Consent . . . . .  | 23        |
| <b>C</b> | <b>Binding Constraints Survey</b>   | <b>24</b> |
| C.1      | Informed Consent for the Binding Constraints Survey . . . . .                         | 24        |

## A Additional Analyses

### A.1 Land Rights and Land Access in Malawi

Table A1: Summary Statistics by Land Documents Status

|   | Papers from<br>Customary Authority (CA) | Papers from<br>State Authority | No Papers |
|---|---|--------------------------------|-----------|
| % High Income   | 10                                      | 9                              | 4         |
| % Middle Income   | 17                                      | 13                             | 7         |
| % Low Income  | 74                                      | 78                             | 89        |
| % Earns a Cash Income                                       | 15                                      | 12                             | 9         |
| % Migrant (10 years)  | 42                                      | 24                             | 26        |
| % Considered Local  | 69                                      | 78                             | 79        |
| % Related to TL   | 6                                       | 10                             | 13        |
| % Member of Ethnic Majority                                 | 62                                      | 6                              | 71        |
| % Single Women  | 16                                      | 18                             | 20        |
| % Single Men  | 11                                      | 13                             | 8         |
| % Married   | 73                                      | 69                             | 72        |
| % High Population Area<br>(within 10km of district capital) | 49                                      | 35                             | 30        |
| % No Schooling  | 7                                       | 8                              | 12        |
| % Primary Schooling   | 53                                      | 50                             | 65        |
| % Secondary Plus  | 41                                      | 43                             | 23        |
| % Allocated Land by CA                                      | 8                                       | 12                             | 13        |
| % Purchased   | 57                                      | 28                             | 7         |
| % Inherited   | 33                                      | 56                             | 76        |
| Land Size (ha)  | 1.34                                    | 8.16                           | 1.18      |
| Mean Age  | 36.4                                    | 40.72                          | 38.43     |
| N   | 556                                     | 543                            | 4828      |

Notes: Table describes the percentage of landowning respondents in each land rights grouping with the given characteristic based on the 2019 LGPI household survey. Sample characteristics described in Section 3. Sample numbers are based on the lowest response level per subgroup. Response rates, however, minimally varied.

**Table A2: Summary Statistics by Modes of Land Access**

|   | <b>Purchased Land</b> | <b>Received Land from Customary Authority</b> | <b>Inherited Land</b> |
|---|-----------------------|---|-----------------------|
| % High Income   | 13                    | 2   | 4                     |
| % Middle Income   | 18                    | 8   | 7                     |
| % Low Income  | 70                    | 90  | 89                    |
| % Earns a Cash Income                                       | 16                    | 9   | 8                     |
| % Migrant (10 years)  | 43                    | 22  | 26                    |
| % Considered Local  | 69                    | 79  | 80                    |
| % Related to CA   | 4                     | 10  | 14                    |
| % Member of Ethnic Majority                                 | 50                    | 53  | 74                    |
| % Single Women  | 20                    | 19  | 20                    |
| % Single Men  | 14                    | 9   | 8                     |
| % Married   | 67                    | 72  | 72                    |
| % High Population Area<br>(within 10km of district capital) | 53                    | 13  | 32                    |
| %No Schooling   | 6                     | 14  | 11                    |
| %Primary Schooling  | 44                    | 62  | 65                    |
| %Secondary Plus   | 50                    | 23  | 24                    |
| Land Size (ha)  | 3.41                  | 1.82  | 1.44                  |
| Mean Age  | 36.93                 | 42.37   | 37.45                 |
| N   | 933                   | 773   | 4414                  |

Notes: Table describes the percentage of landowning respondents in each land rights grouping with the given characteristic based on the 2019 LGPI household survey. Sample characteristics described in Section 3. Sample numbers are based on the lowest response level per subgroup. Response rates, however, minimally varied.

**Table A3: Frequency of Helping Neighbors by Respondent's Community Type**

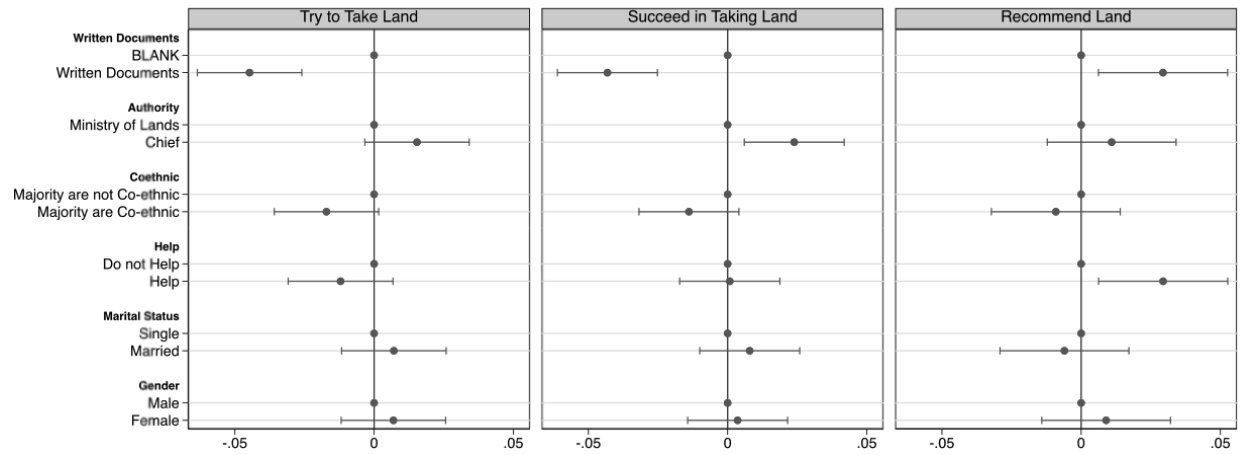
| <b>Neighbors Help Each Other</b> | <b>Rural Village</b> | <b>Small Town</b> | <b>Urban City</b> |
|----------------------------------|----------------------|-------------------|-------------------|
| Less than Monthly                | 29%                  | 38%               | 22%               |
| Monthly                          | 25%                  | 18 %              | 22%               |
| Weekly                           | 23%                  | 16%               | 17%               |
| Daily                            | 19%                  | 20%               | 26%               |
| Don't Know/Refuse                | 4%                   | 9%                | 13%               |
| N                                | 6,230                | 390               | 1,058             |

Notes: Table describes the percentage of respondents in the nationally representative 2016 LGPI survey who reported that neighbors in their area helped each other with the given frequency. The level of urbanization is coded using an enumerator response to the question of whether the area is rural, a small town or a city.

## A.2 Tables

### A.2.1 Average Marginal Component Effects

Figure 1: Average Marginal Treatment Effects



Full results reported in Online Appendix Table 4.

## A.2.2 Average Marginal Component Interaction Effects - Attribute Interactions

**Table A4: Average Marginal Component Interaction Effects- Marital Status**

|                             | (1)<br>Try to Take Land | (2)<br>Succeed to Take Land | (3)<br>Would Recommend |
|-----------------------------|-------------------------|-----------------------------|------------------------|
| Written Documents           | -0.0328*<br>(0.0134)    | -0.0293*<br>(0.0128)        | 0.0251<br>(0.0166)     |
| Married                     | 0.0187<br>(0.0143)      | 0.0214<br>(0.0138)          | -0.0102<br>(0.0169)    |
| Written Documents × Married | -0.0238<br>(0.0191)     | -0.0276<br>(0.0183)         | 0.00864<br>(0.0236)    |
| Majority are Co-ethnic      | -0.0172<br>(0.00956)    | -0.0140<br>(0.00915)        | -0.00909<br>(0.0118)   |
| Help                        | -0.0120<br>(0.00960)    | 0.000778<br>(0.00918)       | 0.0294*<br>(0.0118)    |
| Chief                       | 0.0155<br>(0.00955)     | 0.0240**<br>(0.00914)       | 0.0110<br>(0.0118)     |
| Woman                       | 0.00657<br>(0.00957)    | 0.00315<br>(0.00916)        | 0.00911<br>(0.0118)    |
| Constant                    | 0.142***<br>(0.0141)    | 0.117***<br>(0.0134)        | 0.757***<br>(0.0174)   |
| Observations                | 4799                    | 4793                        | 4814                   |

Standard errors in parentheses

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

**Table A5: Average Marginal Component Interaction Effects - Gender**

|                           | (1)<br>Try to Take Land | (2)<br>Succeed to Take Land | (3)<br>Would Recommend |
|---------------------------|-------------------------|-----------------------------|------------------------|
| Written Documents         | -0.0353**<br>(0.0134)   | -0.0224<br>(0.0129)         | 0.0148<br>(0.0169)     |
| Woman                     | 0.0161<br>(0.0143)      | 0.0237<br>(0.0138)          | -0.00526<br>(0.0169)   |
| Written Documents × Woman | -0.0188<br>(0.0191)     | -0.0412*<br>(0.0182)        | 0.0290<br>(0.0236)     |
| Majority are Co-ethnic    | -0.0171<br>(0.00956)    | -0.0138<br>(0.00915)        | -0.00919<br>(0.0118)   |
| Help                      | -0.0121<br>(0.00960)    | 0.000659<br>(0.00918)       | 0.0295*<br>(0.0118)    |
| Chief                     | 0.0153<br>(0.00955)     | 0.0238**<br>(0.00914)       | 0.0110<br>(0.0118)     |
| Married                   | 0.00681<br>(0.00958)    | 0.00726<br>(0.00916)        | -0.00553<br>(0.0118)   |
| Constant                  | 0.143***<br>(0.0140)    | 0.114***<br>(0.0133)        | 0.762***<br>(0.0172)   |
| Observations              | 4799                    | 4793                        | 4814                   |

Standard errors in parentheses

\* p &lt; 0.05, \*\* p &lt; 0.01, \*\*\* p &lt; 0.001

**Table A6: Average Marginal Component Interaction Effects - Local Demographics**

|  | (1)<br>Try to Take Land | (2)<br>Succeed to Take Land | (3)<br>Would Recommend |
|--|-------------------------|-----------------------------|------------------------|
| Written Documents                          | -0.0461***<br>(0.0139)  | -0.0433**<br>(0.0133)       | 0.0422*<br>(0.0166)    |
| Majority are Co-ethnic                     | -0.0184<br>(0.0143)     | -0.0140<br>(0.0138)         | 0.00351<br>(0.0169)    |
| Written Documents × Majority are Co-ethnic | 0.00267<br>(0.0190)     | 0.000228<br>(0.0182)        | -0.0257<br>(0.0236)    |
| Help                                       | -0.0120<br>(0.00960)    | 0.000767<br>(0.00918)       | 0.0294*<br>(0.0118)    |
| Chief                                      | 0.0154<br>(0.00955)     | 0.0239**<br>(0.00915)       | 0.0112<br>(0.0118)     |
| Married                                    | 0.00711<br>(0.00958)    | 0.00793<br>(0.00915)        | -0.00605<br>(0.0118)   |
| Woman                                      | 0.00693<br>(0.00957)    | 0.00359<br>(0.00916)        | 0.00905<br>(0.0118)    |
| Constant                                   | 0.148***<br>(0.0145)    | 0.123***<br>(0.0138)        | 0.749***<br>(0.0175)   |
| Observations                               | 4799                    | 4793                        | 4814                   |

Standard errors in parentheses

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

**Table A7: Average Marginal Component Interaction Effects - Help**

|                          | (1)<br>Try to Take Land | (2)<br>Succeed to Take Land | (3)<br>Would Recommend |
|--------------------------|-------------------------|-----------------------------|------------------------|
| Written Documents        | -0.0701***<br>(0.0138)  | -0.0641***<br>(0.0130)      | 0.0552**<br>(0.0172)   |
| Help                     | -0.0366*<br>(0.0144)    | -0.0194<br>(0.0139)         | 0.0545**<br>(0.0170)   |
| Written Documents × Help | 0.0502**<br>(0.0191)    | 0.0413*<br>(0.0183)         | -0.0510*<br>(0.0236)   |
| Majority are Co-ethnic   | -0.0170<br>(0.00956)    | -0.0138<br>(0.00915)        | -0.00919<br>(0.0118)   |
| Chief                    | 0.0153<br>(0.00955)     | 0.0239**<br>(0.00914)       | 0.0111<br>(0.0118)     |
| Married                  | 0.00711<br>(0.00957)    | 0.00792<br>(0.00915)        | -0.00602<br>(0.0118)   |
| Woman                    | 0.00703<br>(0.00956)    | 0.00369<br>(0.00915)        | 0.00897<br>(0.0118)    |
| Constant                 | 0.160***<br>(0.0147)    | 0.134***<br>(0.0138)        | 0.742***<br>(0.0179)   |
| Observations             | 4799                    | 4793                        | 4814                   |

Standard errors in parentheses

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$



**Table A8: Average Marginal Component Interaction Effects - Source of Authority**

|                           | (1)<br>Try to Take Land | (2)<br>Succeed to Take Land | (3)<br>Would Recommend |
|---------------------------|-------------------------|-----------------------------|------------------------|
| Written Documents         | -0.0362**<br>(0.0132)   | -0.0343**<br>(0.0124)       | 0.0371*<br>(0.0170)    |
| Chief                     | 0.0237<br>(0.0143)      | 0.0325*<br>(0.0138)         | 0.0185<br>(0.0170)     |
| Written Documents × Chief | -0.0169<br>(0.0190)     | -0.0176<br>(0.0182)         | -0.0152<br>(0.0236)    |
| Majority are Co-ethnic    | -0.0170<br>(0.00956)    | -0.0138<br>(0.00916)        | -0.00899<br>(0.0118)   |
| Help                      | -0.0120<br>(0.00960)    | 0.000800<br>(0.00918)       | 0.0295*<br>(0.0118)    |
| Married                   | 0.00715<br>(0.00958)    | 0.00798<br>(0.00915)        | -0.00600<br>(0.0118)   |
| Woman                     | 0.00688<br>(0.00957)    | 0.00355<br>(0.00916)        | 0.00894<br>(0.0118)    |
| Constant                  | 0.143***<br>(0.0142)    | 0.119***<br>(0.0135)        | 0.751***<br>(0.0177)   |
| Observations              | 4799                    | 4793                        | 4814                   |

Standard errors in parentheses

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

**Table A9: Average Marginal Component Interaction Effects - Marital Status and Gender**

|                        | (1)<br>Try to Take Land | (2)<br>Succeed to Take Land | (3)<br>Would Recommend |
|------------------------|-------------------------|-----------------------------|------------------------|
| Written Documents      | -0.0448***<br>(0.00957) | -0.0434***<br>(0.00917)     | 0.0299*<br>(0.0118)    |
| Majority are Co-ethnic | -0.0171<br>(0.00956)    | -0.0138<br>(0.00915)        | -0.00924<br>(0.0118)   |
| Help                   | -0.0121<br>(0.00960)    | 0.000650<br>(0.00919)       | 0.0296*<br>(0.0118)    |
| Chief                  | 0.0154<br>(0.00955)     | 0.0240**<br>(0.00915)       | 0.0107<br>(0.0118)     |
| Married                | 0.00844<br>(0.0135)     | 0.0157<br>(0.0129)          | -0.0210<br>(0.0169)    |
| Woman                  | 0.00827<br>(0.0134)     | 0.0114<br>(0.0128)          | -0.00587<br>(0.0166)   |
| Married × Woman        | -0.00265<br>(0.0191)    | -0.0155<br>(0.0183)         | 0.0296<br>(0.0236)     |
| Constant               | 0.147***<br>(0.0140)    | 0.119***<br>(0.0132)        | 0.763***<br>(0.0173)   |
| Observations           | 4799                    | 4793                        | 4814                   |

Standard errors in parentheses

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

### A.2.3 Average Marginal Component Interaction Effects with Respondent Demographics

**Table A10: Average Marginal Component Interaction Effects  
Respondent Education (Some Secondary)**

|  | (1)<br>Try to Take Land | (2)<br>Succeed to Take Land | (3)<br>Would Recommend |
|--|-------------------------|-----------------------------|------------------------|
| BLANK  | 0<br>(.)                | 0<br>(.)                    | 0<br>(.)               |
| Written Documents                            | -0.0252*<br>(0.0115)    | -0.0255*<br>(0.0110)        | 0.0241<br>(0.0152)     |
| Some Secondary Education                     | 0.0654***<br>(0.0158)   | 0.0586***<br>(0.0153)       | 0.0411*<br>(0.0174)    |
| Written Documents × Some Secondary Education | -0.0596**<br>(0.0206)   | -0.0542**<br>(0.0198)       | 0.00527<br>(0.0241)    |
| Majority are Co-ethnic                       | -0.0166<br>(0.00961)    | -0.0133<br>(0.00920)        | -0.0100<br>(0.0118)    |
| Help   | -0.0137<br>(0.00965)    | -0.000642<br>(0.00924)      | 0.0302*<br>(0.0119)    |
| Chief  | 0.0151<br>(0.00959)     | 0.0238**<br>(0.00918)       | 0.00984<br>(0.0118)    |
| Married                                      | 0.00711<br>(0.00962)    | 0.00785<br>(0.00919)        | -0.00647<br>(0.0118)   |
| Woman  | 0.00777<br>(0.00960)    | 0.00431<br>(0.00920)        | 0.0120<br>(0.0118)     |
| Constant                                     | 0.126***<br>(0.0139)    | 0.104***<br>(0.0132)        | 0.743***<br>(0.0177)   |
| Observations                                 | 4759                    | 4753                        | 4774                   |

Standard errors in parentheses

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

**Table A11: Average Marginal Component Interaction Effects  
Respondent Age**

|                                    | (1)<br>Try to Take Land | (2)<br>Succeed to Take Land | (3)<br>Would Recommend  |
|------------------------------------|-------------------------|-----------------------------|-------------------------|
| Written Documents                  | -0.0223<br>(0.0277)     | -0.0291<br>(0.0258)         | 0.0565<br>(0.0345)      |
| Respondent Age                     | -0.000704<br>(0.000498) | -0.000188<br>(0.000471)     | -0.000300<br>(0.000604) |
| Written Documents × Respondent Age | -0.000581<br>(0.000662) | -0.000367<br>(0.000629)     | -0.000707<br>(0.000863) |
| Majority are Co-ethnic             | -0.0186<br>(0.00959)    | -0.0145<br>(0.00920)        | -0.0100<br>(0.0118)     |
| Help                               | -0.0117<br>(0.00962)    | 0.000984<br>(0.00920)       | 0.0298*<br>(0.0118)     |
| Chief                              | 0.0155<br>(0.00954)     | 0.0240**<br>(0.00914)       | 0.0111<br>(0.0118)      |
| Married                            | 0.00699<br>(0.00957)    | 0.00792<br>(0.00916)        | -0.00604<br>(0.0118)    |
| Woman                              | 0.00691<br>(0.00956)    | 0.00358<br>(0.00916)        | 0.00898<br>(0.0118)     |
| Constant                           | 0.175***<br>(0.0237)    | 0.131***<br>(0.0224)        | 0.767***<br>(0.0285)    |
| Observations                       | 4799                    | 4793                        | 4814                    |

Standard errors in parentheses

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

**Table A12: Average Marginal Component Interaction Effects  
Respondent Gender**

|                                      | (1)<br>Try to Take Land | (2)<br>Succeed to Take Land | (3)<br>Would Recommend |
|--------------------------------------|-------------------------|-----------------------------|------------------------|
| Written Documents                    | -0.0540***<br>(0.0144)  | -0.0394**<br>(0.0138)       | 0.0441**<br>(0.0168)   |
| Respondent Woman                     | -0.0102<br>(0.0145)     | 0.00200<br>(0.0139)         | -0.0355*<br>(0.0169)   |
| Written Documents × Respondent Woman | 0.0166<br>(0.0192)      | -0.00689<br>(0.0184)        | -0.0272<br>(0.0235)    |
| Majority are Co-ethnic               | -0.0169<br>(0.00959)    | -0.0139<br>(0.00918)        | -0.00822<br>(0.0118)   |
| Help                                 | -0.0122<br>(0.00961)    | 0.000810<br>(0.00919)       | 0.0298*<br>(0.0118)    |
| Chief                                | 0.0154<br>(0.00955)     | 0.0239**<br>(0.00915)       | 0.0107<br>(0.0118)     |
| Married                              | 0.00714<br>(0.00959)    | 0.00796<br>(0.00917)        | -0.00500<br>(0.0118)   |
| Woman                                | 0.00691<br>(0.00957)    | 0.00361<br>(0.00916)        | 0.00895<br>(0.0118)    |
| Constant                             | 0.153***<br>(0.0154)    | 0.122***<br>(0.0146)        | 0.774***<br>(0.0185)   |
| Observations                         | 4799                    | 4793                        | 4814                   |

Standard errors in parentheses

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

**Table A13: Average Marginal Interaction Effects  
Respondent Owns Land**

|                              | (1)<br>Try to Take Land | (2)<br>Succeed to Take Land | (3)<br>Would Recommend |
|------------------------------|-------------------------|-----------------------------|------------------------|
| Written Documents            | -0.0649**<br>(0.0230)   | -0.0496*<br>(0.0214)        | 0.0307<br>(0.0267)     |
| Own Land                     | -0.0189<br>(0.0200)     | -0.00500<br>(0.0187)        | -0.0222<br>(0.0223)    |
| Written Documents × Own Land | 0.0121<br>(0.0259)      | 0.00283<br>(0.0242)         | 0.0120<br>(0.0306)     |
| Majority are Co-ethnic       | -0.0276**<br>(0.0107)   | -0.0211*<br>(0.0101)        | 0.0000916<br>(0.0131)  |
| Help                         | -0.00534<br>(0.0108)    | 0.00606<br>(0.0102)         | 0.0225<br>(0.0132)     |
| Chief                        | 0.0119<br>(0.0107)      | 0.0229*<br>(0.0101)         | 0.0202<br>(0.0131)     |
| Married                      | 0.0113<br>(0.0107)      | 0.0114<br>(0.0101)          | -0.00682<br>(0.0131)   |
| Woman                        | 0.00960<br>(0.0107)     | 0.00222<br>(0.0101)         | 0.0153<br>(0.0131)     |
| Constant                     | 0.167***<br>(0.0219)    | 0.127***<br>(0.0204)        | 0.764***<br>(0.0250)   |
| Observations                 | 3827                    | 3823                        | 3839                   |

Standard errors in parentheses

\* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001

**Table A14: Marginal Means Full Sample**

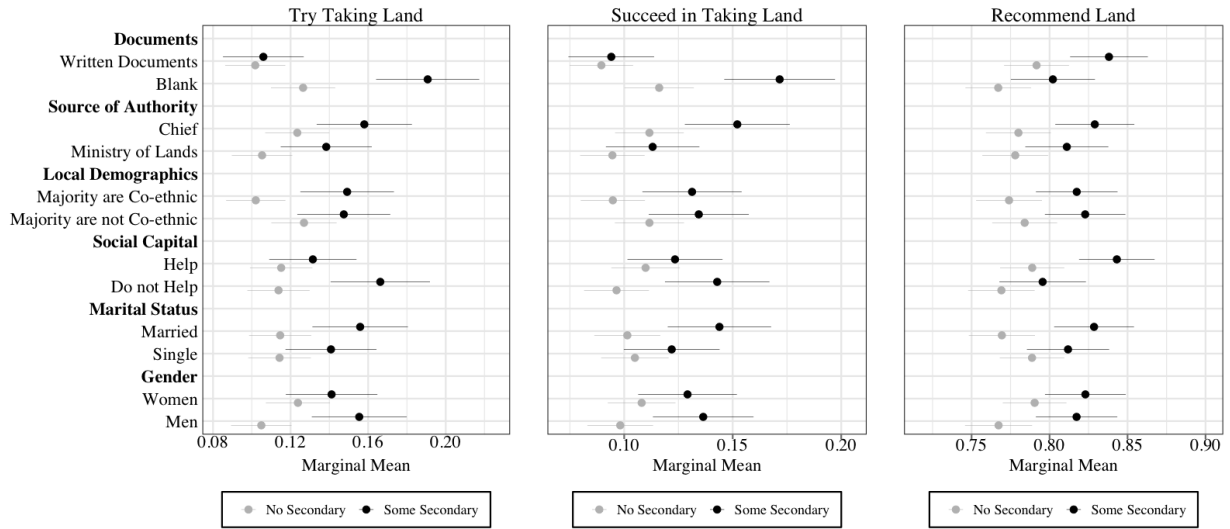
|                            | (1)<br>Try to Take Land | (2)<br>Succeed to Take Land | (3)<br>Would Recommend |
|----------------------------|-------------------------|-----------------------------|------------------------|
| BLANK                      | 0.149***<br>(0.007)     | 0.136***<br>(0.007)         | 0.779***<br>(0.008)    |
| Written Documents          | 0.103***<br>(0.006)     | 0.091***<br>(0.006)         | 0.809***<br>(0.008)    |
| Ministry of Lands          | 0.117***<br>(0.007)     | 0.101***<br>(0.006)         | 0.790***<br>(0.008)    |
| Chief                      | 0.136***<br>(0.007)     | 0.126***<br>(0.007)         | 0.798***<br>(0.008)    |
| Majority are not Co-ethnic | 0.134***<br>(0.007)     | 0.120***<br>(0.007)         | 0.798***<br>(0.008)    |
| Majority are Co-ethnic     | 0.119***<br>(0.007)     | 0.108***<br>(0.006)         | 0.790***<br>(0.008)    |
| Do not Help                | 0.132***<br>(0.007)     | 0.113***<br>(0.007)         | 0.778***<br>(0.009)    |
| Help                       | 0.121***<br>(0.007)     | 0.115***<br>(0.007)         | 0.809***<br>(0.008)    |
| Single                     | 0.124***<br>(0.007)     | 0.111***<br>(0.006)         | 0.797***<br>(0.008)    |
| Married                    | 0.129***<br>(0.007)     | 0.116***<br>(0.007)         | 0.790***<br>(0.008)    |
| Man                        | 0.123***<br>(0.007)     | 0.112***<br>(0.007)         | 0.785***<br>(0.009)    |
| Woman                      | 0.130***<br>(0.007)     | 0.116***<br>(0.007)         | 0.802***<br>(0.008)    |

Standard errors in parentheses

\* p &lt; 0.05, \*\* p &lt; 0.01, \*\*\* p &lt; 0.001

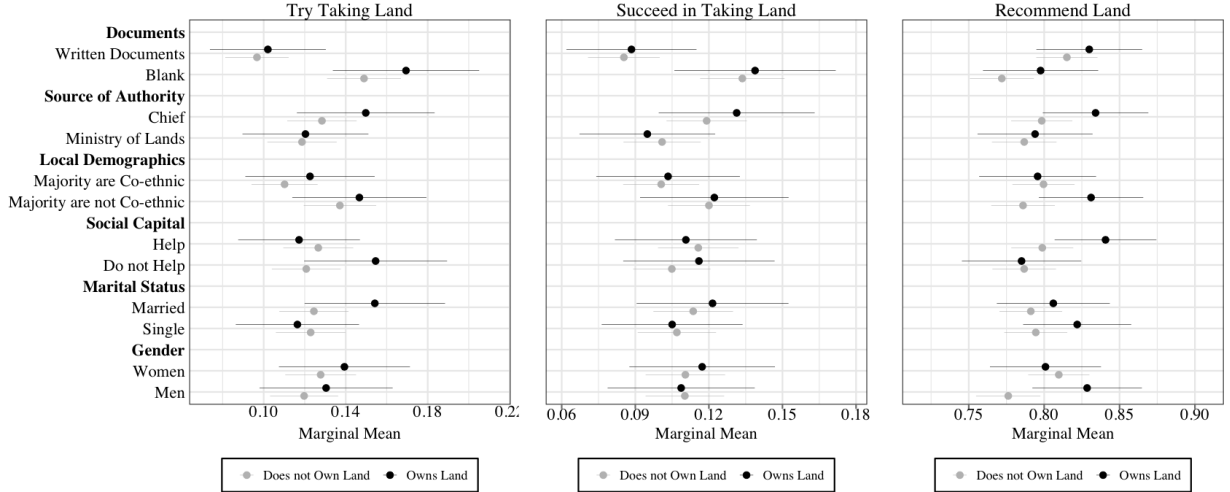
### A.3 Marginal Means and Respondent Demographics

Figure 2: Marginal Means and Respondent Education



Full results reported in Online Appendix Table A15.

Figure 3: Marginal Means and Land Ownership



Full results reported in Online Appendix Table A16.



**Table A15: Marginal Means and Respondent Education**

|   | (1)<br>Try to Take Land | (2)<br>Succeed to Take Land | (3)<br>Would Recommend |
|---|-------------------------|-----------------------------|------------------------|
| No Secondary X BLANK                        | 0.126***<br>(0.008)     | 0.116***<br>(0.008)         | 0.767***<br>(0.011)    |
| No Secondary X Written Documents            | 0.102***<br>(0.008)     | 0.089***<br>(0.007)         | 0.792***<br>(0.011)    |
| No Secondary X Ministry of Lands            | 0.105***<br>(0.008)     | 0.095***<br>(0.008)         | 0.778***<br>(0.011)    |
| No Secondary X Chief                        | 0.123***<br>(0.008)     | 0.112***<br>(0.008)         | 0.780***<br>(0.011)    |
| No Secondary X Majority are not Co-ethnic   | 0.127***<br>(0.009)     | 0.112***<br>(0.008)         | 0.784***<br>(0.011)    |
| No Secondary X Majority are Co-ethnic       | 0.102***<br>(0.008)     | 0.095***<br>(0.008)         | 0.774***<br>(0.011)    |
| No Secondary X Do not Help                  | 0.114***<br>(0.008)     | 0.096***<br>(0.008)         | 0.769***<br>(0.011)    |
| No Secondary X Help                         | 0.115***<br>(0.008)     | 0.110***<br>(0.008)         | 0.789***<br>(0.011)    |
| No Secondary X Single                       | 0.114***<br>(0.008)     | 0.105***<br>(0.008)         | 0.789***<br>(0.011)    |
| No Secondary X Married                      | 0.115***<br>(0.008)     | 0.101***<br>(0.008)         | 0.769***<br>(0.011)    |
| No Secondary X Man                          | 0.105***<br>(0.008)     | 0.098***<br>(0.008)         | 0.767***<br>(0.011)    |
| No Secondary X Woman                        | 0.124***<br>(0.008)     | 0.108***<br>(0.008)         | 0.790***<br>(0.010)    |
| Some Secondary X BLANK                      | 0.191***<br>(0.014)     | 0.172***<br>(0.013)         | 0.802***<br>(0.014)    |
| Some Secondary X Written Documents          | 0.106***<br>(0.011)     | 0.094***<br>(0.010)         | 0.838***<br>(0.013)    |
| Some Secondary X Ministry of Lands          | 0.138***<br>(0.012)     | 0.113***<br>(0.011)         | 0.811***<br>(0.014)    |
| Some Secondary X Chief                      | 0.158***<br>(0.013)     | 0.152***<br>(0.012)         | 0.829***<br>(0.013)    |
| Some Secondary X Majority are not Co-ethnic | 0.147***<br>(0.012)     | 0.134***<br>(0.012)         | 0.823***<br>(0.013)    |
| Some Secondary X Majority are Co-ethnic     | 0.149***<br>(0.012)     | 0.131***<br>(0.012)         | 0.817***<br>(0.013)    |
| Some Secondary X Do not Help                | 0.166***<br>(0.013)     | 0.143***<br>(0.012)         | 0.796***<br>(0.014)    |
| Some Secondary X Help                       | 0.131***<br>(0.011)     | 0.123***<br>(0.011)         | 0.843***<br>(0.012)    |
| Some Secondary X Single                     | 0.141***<br>(0.012)     | 0.122***<br>(0.011)         | 0.812***<br>(0.013)    |
| Some Secondary X Married                    | 0.156***<br>(0.013)     | 0.144***<br>(0.012)         | 0.829***<br>(0.013)    |
| Some Secondary X Man                        | 0.155***<br>(0.012)     | 0.136***<br>(0.012)         | 0.817***<br>(0.013)    |
| Some Secondary X Woman                      | 0.141***<br>(0.012)     | 0.129***<br>(0.012)         | 0.823***<br>(0.013)    |

Standard errors in parentheses

\* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001

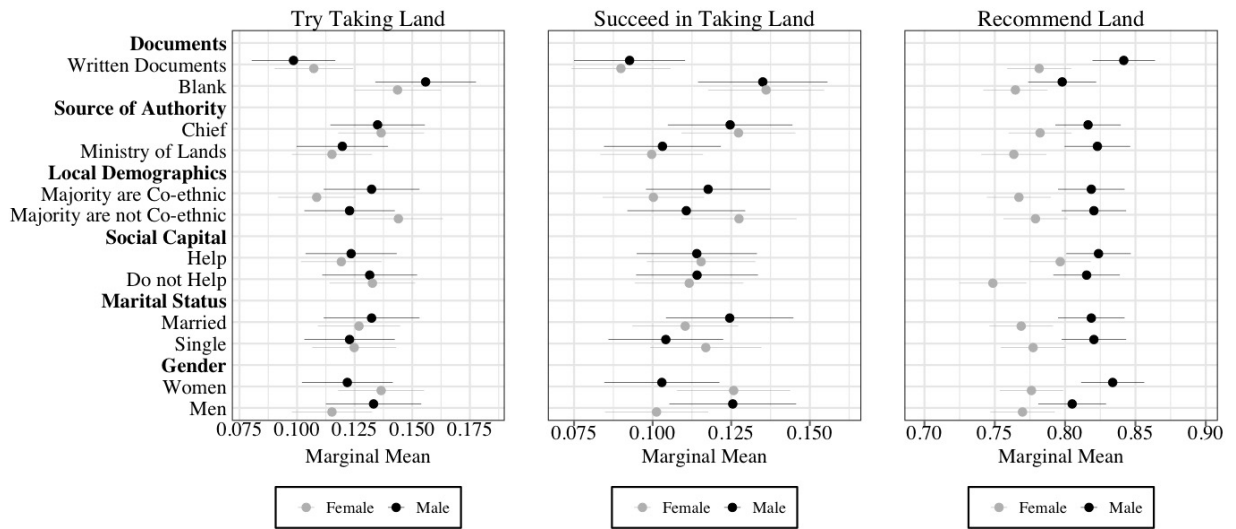
**Table A16: Marginal Means and Respondent Land Ownership**

|  | (1)<br>Try to Take Land | (2)<br>Succeed to Take Land | (3)<br>Would Recommend |
|--|-------------------------|-----------------------------|------------------------|
| Owens Land X BLANK                             | 0.169***<br>(0.018)     | 0.139***<br>(0.017)         | 0.798***<br>(0.019)    |
| Owens Land X Written Documents                 | 0.102***<br>(0.014)     | 0.088***<br>(0.014)         | 0.830***<br>(0.018)    |
| Owens Land X Ministry of Lands                 | 0.120***<br>(0.016)     | 0.095***<br>(0.014)         | 0.794***<br>(0.019)    |
| Owens Land X Chief                             | 0.150***<br>(0.017)     | 0.131***<br>(0.016)         | 0.834***<br>(0.018)    |
| Owens Land X Majority are not Co-ethnic        | 0.147***<br>(0.017)     | 0.122***<br>(0.015)         | 0.831***<br>(0.018)    |
| Owens Land X Majority are Co-ethnic            | 0.123***<br>(0.016)     | 0.103***<br>(0.015)         | 0.796***<br>(0.020)    |
| Owens Land X Do not Help                       | 0.155***<br>(0.018)     | 0.116***<br>(0.016)         | 0.785***<br>(0.020)    |
| Owens Land X Help                              | 0.117***<br>(0.015)     | 0.111***<br>(0.015)         | 0.841***<br>(0.017)    |
| Owens Land X Single                            | 0.116***<br>(0.015)     | 0.105***<br>(0.015)         | 0.822***<br>(0.018)    |
| Owens Land X Married                           | 0.154***<br>(0.017)     | 0.121***<br>(0.016)         | 0.806***<br>(0.019)    |
| Owens Land X Man                               | 0.130***<br>(0.017)     | 0.109***<br>(0.015)         | 0.829***<br>(0.019)    |
| Owens Land X Woman                             | 0.139***<br>(0.016)     | 0.117***<br>(0.015)         | 0.801***<br>(0.019)    |
| Does not Own Land X BLANK                      | 0.149***<br>(0.009)     | 0.134***<br>(0.009)         | 0.772***<br>(0.011)    |
| Does not Own Land X Written Documents          | 0.097***<br>(0.008)     | 0.085***<br>(0.007)         | 0.815***<br>(0.010)    |
| Does not Own Land X Ministry of Lands          | 0.119***<br>(0.009)     | 0.101***<br>(0.008)         | 0.787***<br>(0.011)    |
| Does not Own Land X Chief                      | 0.128***<br>(0.009)     | 0.119***<br>(0.008)         | 0.798***<br>(0.010)    |
| Does not Own Land X Majority are not Co-ethnic | 0.137***<br>(0.009)     | 0.120***<br>(0.009)         | 0.786***<br>(0.011)    |
| Does not Own Land X Majority are Co-ethnic     | 0.110***<br>(0.008)     | 0.101***<br>(0.008)         | 0.800***<br>(0.011)    |
| Does not Own Land X Do not Help                | 0.121***<br>(0.009)     | 0.105***<br>(0.008)         | 0.787***<br>(0.011)    |
| Does not Own Land X Help                       | 0.127***<br>(0.009)     | 0.116***<br>(0.008)         | 0.799***<br>(0.010)    |
| Does not Own Land X Single                     | 0.123***<br>(0.009)     | 0.107***<br>(0.008)         | 0.794***<br>(0.011)    |
| Does not Own Land X Married                    | 0.124***<br>(0.009)     | 0.114***<br>(0.008)         | 0.791***<br>(0.011)    |
| Does not Own Land X Man                        | 0.120***<br>(0.008)     | 0.110***<br>(0.008)         | 0.776***<br>(0.011)    |
| Does not Own Land X Woman                      | 0.128***<br>(0.009)     | 0.110***<br>(0.008)         | 0.810***<br>(0.010)    |

Standard errors in parentheses

\* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001

**Figure 4: Marginal Means and Respondent Gender**



Full results reported in Online Appendix Table A17.

**Table A17: Marginal Means and Respondent Gender**

|                                    | (1)<br>Try to Take Land | (2)<br>Succeed to Take Land | (3)<br>Would Recommend |
|------------------------------------|-------------------------|-----------------------------|------------------------|
| Man X BLANK                        | 0.156***<br>(0.011)     | 0.135***<br>(0.011)         | 0.798***<br>(0.012)    |
| Man X Written Documents            | 0.098***<br>(0.009)     | 0.093***<br>(0.009)         | 0.842***<br>(0.011)    |
| Man X Ministry of Lands            | 0.120***<br>(0.010)     | 0.103***<br>(0.009)         | 0.823***<br>(0.012)    |
| Man X Chief                        | 0.135***<br>(0.010)     | 0.125***<br>(0.010)         | 0.816***<br>(0.012)    |
| Man X Majority are not Co-ethnic   | 0.123***<br>(0.010)     | 0.111***<br>(0.010)         | 0.820***<br>(0.012)    |
| Man X Majority are Co-ethnic       | 0.132***<br>(0.011)     | 0.118***<br>(0.010)         | 0.819***<br>(0.012)    |
| Man X Do not Help                  | 0.132***<br>(0.011)     | 0.114***<br>(0.010)         | 0.815***<br>(0.012)    |
| Man X Help                         | 0.123***<br>(0.010)     | 0.114***<br>(0.010)         | 0.824***<br>(0.012)    |
| Man X Single                       | 0.123***<br>(0.010)     | 0.104***<br>(0.009)         | 0.820***<br>(0.012)    |
| Man X Married                      | 0.132***<br>(0.011)     | 0.125***<br>(0.010)         | 0.819***<br>(0.012)    |
| Man X Male                         | 0.133***<br>(0.011)     | 0.125***<br>(0.010)         | 0.805***<br>(0.012)    |
| Man X Female                       | 0.122***<br>(0.010)     | 0.103***<br>(0.009)         | 0.834***<br>(0.011)    |
| Woman X BLANK                      | 0.144***<br>(0.010)     | 0.136***<br>(0.009)         | 0.765***<br>(0.012)    |
| Woman X Written Documents          | 0.107***<br>(0.009)     | 0.090***<br>(0.008)         | 0.782***<br>(0.012)    |
| Woman X Ministry of Lands          | 0.115***<br>(0.009)     | 0.100***<br>(0.008)         | 0.764***<br>(0.012)    |
| Woman X Chief                      | 0.137***<br>(0.010)     | 0.127***<br>(0.009)         | 0.782***<br>(0.011)    |
| Woman X Majority are not Co-ethnic | 0.144***<br>(0.010)     | 0.127***<br>(0.009)         | 0.779***<br>(0.012)    |
| Woman X Majority are Co-ethnic     | 0.109***<br>(0.009)     | 0.100***<br>(0.008)         | 0.767***<br>(0.012)    |
| Woman X Do not Help                | 0.133***<br>(0.009)     | 0.112***<br>(0.009)         | 0.749***<br>(0.012)    |
| Woman X Help                       | 0.119***<br>(0.009)     | 0.115***<br>(0.009)         | 0.797***<br>(0.011)    |
| Woman X Single                     | 0.125***<br>(0.009)     | 0.117***<br>(0.009)         | 0.777***<br>(0.012)    |
| Woman X Married                    | 0.127***<br>(0.009)     | 0.110***<br>(0.009)         | 0.769***<br>(0.012)    |
| Woman X Male                       | 0.115***<br>(0.009)     | 0.101***<br>(0.008)         | 0.770***<br>(0.012)    |
| Woman X Female                     | 0.137***<br>(0.010)     | 0.126***<br>(0.009)         | 0.776***<br>(0.012)    |

Standard errors in parentheses

\* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001

## **B Sampling**

This experiment was embedded in a phone survey conducted on 4,908 adult Malawians between August 21 and October 7, 2020 in Malawi. Respondents were drawn from three pools: 1) We re-contacted participants from the LGPI, a survey conducted in Malawi in 2019 (n = 10,302) (Lust et al. 2020b) who had expressed willingness to participate in future surveys and had provided phone numbers to do so. We obtained 5,100 phone numbers from Malawian respondents through this process; 2) In some instances, we could not contact the original respondent through the phone number(s) provided, but we found a new participant willing to take the survey and administered it to him/her; 3) As the LGPI 2019 Malawi 2019 survey did not sample from the south of Malawi, we drew in additional participants by re-visiting villages from the LGPI 2016 Malawi survey (Lust et al. 2016) and collected phone numbers for the phone survey.

For the 2020 respondents who participated in the 2016 or 2019 LGPI surveys, we have a rich set of previously collected data on both the individual respondent and their community. Both the 2016 and 2019 LGPI surveys were implemented to allow local-level indicators; the 2016 survey sample was drawn in villages, and the 2019 survey was drawn in 1 km<sup>2</sup> areas. Both surveys were also coupled with factual and local elite surveys, which provided additional information on the nature of the community and its leadership.

### **B.1 Locating 2019 participants**

The sample included phone numbers that had been collected from participants in the 2019 LGPI survey (see below for sampling strategy). At the end of that survey, in preparation for a panel study, we had asked individuals if they would be willing to participate in a follow-up survey.

We created a dataset that included the individual's name, telephone number(s), how long the individual had lived in the area, gender, age, and education. These questions were used to verify whether the individual answering the phone was the same respondent from 2019. Where the respondent existed but was not available, enumerators set a call-back time. Where the respondent was not available but the individual answering the phone was over 18 years of age, the individual was asked if s/he wanted to participate in the study. Where the individual was under 18 years of age and the initial respondent was not available, the enumerator asked if an adult was available. That adult was then given the chance to participate in the survey. Replacement individuals were asked at the end of the survey if they are willing to participate in future studies.

### **B.2 Revisiting 2016 villages**

The phone numbers collected in the 2019 LGPI survey only included respondents in an area within a 50 km radius of each of the capital cities (Lilongwe, Malawi) and 100 km distance from the Malawi-Zambian border. In order to incorporate southern districts, we sent teams to the southern regions and to two southern-central region districts that had not been included in the LGPI survey we conducted in 2016. The researchers were given and instructed to wear masks, use hand sanitizer, and maintain social distancing measures and were sent to the same villages that were included in the 2016 survey.

For each village, they were given lists of the first names of the adults who were in the household in 2016 and their ages (drawn from the Kish grid), and the name of the original respondent chosen. They met with the village head, who then helped them to contact and hire a person from the village. This person went to village houses to ask previous respondents if they would be willing to be contacted. The telephone numbers were collected from those who were willing. Where an individual was not willing or available, another adult in the household was asked to participate and, if s/he agreed, demographic information and the phone number was collected. If no one existed in the original household (e.g., the family had moved or passed away) or if no one agreed to be contacted, the village contact was asked to find another household in the village willing to be contacted. Telephone numbers and demographics were entered into a database for use in the survey.

### **B.3 LGPI Malawi 2019 survey**

The LGPI Malawi 2019 survey was carried out between May and October of 2019 in 2 regions of Malawi (Lust et al., 2020b), where each region was an independent sample. The regions included the capital city and an area along the border between Zambia and Malawi. Samples were stratified. Border regions were divided into strata that were 0-50 km from the border and 50-100 km from the border, and each of these areas was divided into five subareas. Urban

areas were divided into two concentric circles: 0-25 km from the urban center and 25-50 km from the urban center, and each was divided into four areas. The goal was to ensure that the respondents were distributed across the region and to include more and less urban and border areas. We aimed to divide the samples evenly across these regions and strata.

Satellite imagery data was employed for selecting sampling units. To do so, we divided the regions/bins into 1 km<sup>2</sup> areas, and selected these areas using a randomized probability proportionate to size (PPS) method based on WorldPop estimates of population density. We then divided each 1 km<sup>2</sup> area into a 100 hectare grid. The hectares were randomly numbered, and enumerators were instructed to visit hectares in that order, as opposed to what might be most convenient geographically. They were asked to complete no more than 5 interviews per hectare before moving onto the next one, and to complete 30 interviews in each square kilometer. The aim of this strategy was to ensure that enumerators spread out across the 1 km<sup>2</sup> unit.

Enumerators were instructed to enter sampling units using tablets to track their locations and confirm they were in the correct area. They were asked to go to the center of each hectare and then move outward, in separate directions. Within each household, one participant was randomly selected using the Kish method. Survey weights were designed to take into account sampling and to correct for imbalances between the sample and census demographics for the area.

#### **B.4 LGPI Malawi 2016 Survey**

The survey was conducted in Malawi during March and April 2016. We implemented the survey using tablet computers.

This survey sought to measure and better understand governance and service delivery at the local level. This is a highly clustered survey, which facilitates measurement and inference at the local (in this case, village) level. The survey covers: political participation, social norms and institutions, education, health, security, welfare, corruption, land, and dispute resolution.

The sample was stratified on: region (North, Central, South); the presence of matrilineal and patrilineal ethnic groups; and the urban/rural divide. Because patrilineal groups are rare in Malawi, and we wanted to maximize variation in matrilineal and patrilineal heritage, we oversampled Primary Sampling Units (PSUs) from the patrilineal stratum. We sampled 22 PSUs, namely 'Traditional Authorities' (TAs). These 22 sampled TAs are located in 15 of Malawi's 28 districts. Districts are the largest sub-national administrative units in Malawi. Within each TA (i.e., PSU), we randomly selected four enumeration areas (EAs) as Secondary Sampling Units (SSUs). EAs are comparable to census tracts. Both PSUs and SSUs were selected without replacement, according to the principle of Probability of Selection Proportional to Measure of Size (PPMS). Within each EA, we sampled four villages, based on known geographical points provided on the maps of the EAs produced for Malawi's latest population census. Once in the village, enumerators followed a random walk pattern to select households. After they entered the household, the interviewer collected the necessary data about composition of the household. Both the contact and main questionnaires were programmed on digital tablets, including the selection of the final respondent in the household through a digital version of the Kish grid. The target was to interview 22 respondents in each village. This process produced a sample of 8,100 respondents. See Table 1 for a list of the districts and TAs included in the sample and Table 2 for a list of the villages.

While the sampling procedures were planned as presented, of course in practice this was not always the case. In total the research team had to draw 11 replacement EAs. One replacement EA was drawn because enumerators were chased out of a village and forced to withdraw from the EA. In the remaining 10 cases, EAs were not accessible (e.g., in one instance our team was unable to reach the designated EA because a bridge had washed away during heavy rains). In these instances, backup enumeration areas were randomly selected within the same EAs (excluding already selected and inaccessible zone) and were used as replacements. In total, only 11 of the 99 sampled EAs are replacement EAs. In addition, given that multiple enumerators conducted surveys in the same village, the target number of 22 respondents per village (neighborhood in urban areas) was not always precisely reached. In some instances, more were surveyed and in others slightly fewer than 22 households were surveyed. In addition, the boundaries between villages and neighborhoods were not always clear, which also caused our teams to deviate from the target of 22 per village/neighborhood.

## B.5 Ethics and Consent

This research seeks to maximize benefit for Malawian society while minimizing risk to participants in the study. The project leaders are trained in courses on the ethical treatment of human research participants, and took measures to ensure the survey complied with their high ethical standards. All research activities complied with the University of Malawi Institutional Review Board guidelines and the Swedish Data Services regulations and guidelines for research ethics of the national data service regulatory body. It also adheres to the APSA Principles and Guidance for Human Subjects Research.

Moreover, in the context of Covid 19, we took extra precautions to ensure safety. We implemented the training through Zoom and conducted the survey via telephone in order to minimize health risks. We only interviewed respondents who are over 18 years of age, and for whom we have informed consent.

At the beginning of the survey, we asked all respondents for consent. The consent statement clearly explained that participation is voluntary and that the respondents have the right to refuse to answer specific questions or to withdraw participation consent at any time. Participants were also offered compensation of 1000 Kwacha in airtime. This amount was determined in consultation with our IPOR partners to be an amount sufficient to reflect respect for their time and participation and yet not so great as to create undue pressure to participate.

The consent statement read: "Participation in our Covid-19 survey is voluntary, and your answers will be confidential. They will be put together with about 3500 other people we are talking to, to get an overall picture. It will be impossible to pick you out from what you say, so please feel free to tell us what you think. This interview will take about 30 minutes. There is no penalty for refusing to participate. We would like your opinion with the knowledge that there are no right or wrong answers to these questions and that you may ask for clarification or stop the survey at any time. You are also free to skip questions you consider personal or invasive without penalty. We are able to offer you 1000 Kwacha in airtime for completing the survey. Are you willing to participate in this survey, either now or at another time?"

Yes, now

Yes, at another time

No

The consent was obtained orally. The statement was read and answers were recorded by the interviewer, and the survey was programmed to end if the respondent did not give consent. Oral consent was necessary in this case for several reasons. First, in the context of Covid 19, we conducted the interviews by telephone and thus were not in a position to obtain written consent. In addition, oral consent is more appropriate in Malawi, where much of the population is illiterate and the provision of written documents can cause unnecessary confusion and stress to participants.

All data collected is kept anonymous and stored in encrypted files. We do not distribute anything with names or GPS coordinates, and all data is retained on encrypted University of Gothenburg servers. We understand that there is always risk when handling confidential data, and we did all in our power to mitigate that risk by ensuring encrypted data storage and enforcing communication regulations. Additionally, all enumerators signed non-disclosure agreements and were subject to GDPR guidelines.

No deception was used in the survey, which included questions on Covid 19 responses and threats as well as the survey experiment reported here. We expect that there was minimal, if any, physical, psychological, social and economic harm to research subjects, assistants, or staff. Topics in survey were unlikely to result in trauma to subjects, and we expect the broader social impacts of the research process are net positive, as they allow us to inform policy makers about beliefs about land security, as well as the other Covid-related findings.

## **C Binding Constraints Survey**

The Binding Constraints study was conducted by Boniface Dulani, Ellen Lust and Hannah Swila as a background report commissioned by The World Bank. The household survey reported here was one component of a four-part study, including 1) a review of administrative records and newspaper reports; 2) semi structured interviews with public officials and members of the public at selected public offices in Blantyre and Zomba; 3) a household survey with 360 respondents (non-random/no PPS); and 4) Focus Group Discussions (FGD) with a total of 184 participants.

The household survey was implemented in six districts targeted for the initial rolling out of the service delivery reforms. These included: Blantyre, Mzuzu, Mzimba, Lilongwe, Salima and Mangochi. It was fielded from April 22 - May 5, 2016 by researchers from the Institute for Public Opinion and Research.

The survey aimed to collect individual data, bearing in mind that the demand for the various services, as well as the constraints encountered, often are experienced at the individual level. The fielding of survey questions at the household level also gave us a very important tool to screen the selection of FGD participants to ensure diversity along the lines of age, demand and service usage.

Although a random selection of sites is often preferred in traditional surveys as a way of generating data that can be inferred on the wider population, the study sites for the survey were purposely selected because of the need to complete the study within the stipulated time frame as well as to ensure a balance between respondents in an urban and rural setting. As a result, the selection of the study sites was not done using the traditional random sampling using Probability Proportional to Size (PPS). Two sites were selected in each district to include both rural and urban areas. The study thus included two sites in each of the six districts, bringing the total number of study sites to twelve.

The study sites were not randomly selected, but the enumerators were instructed to select randomly a total of thirty households in each study area from where respondents were drawn. The selection of the households involved a team of five enumerators starting from a random starting point and moving in opposite directions, with each enumerator selecting the second household they encountered. Once an enumerator selected a household, the enumerator collected details of the adults aged 18 and above, including their ages, in each household and listed them according to numbers. Once a list of eligible respondents in each household was compiled, a respondent was then selected using a pack of randomized cards. In order to ensure gender balance, interviews were alternated by gender, such that if the first interview was with a woman, the next interview was conducted with a man. Listings in the households were thus gender-specific (e.g., listing only eligible women in one household, and only eligible men in the next.) A total of thirty interviews were conducted in each study site, giving us a total of 360 respondents.

### **C.1 Informed Consent for the Binding Constraints Survey**

Interviews for the Binding Constraints Survey began with an introduction to the project and assurances of confidentiality. Specifically, the script read:

"Good day. My name is 0. I am from the Institute of Public Opinion and Research, which is working with the Gothenburg University in Sweden. I do not represent the government or any political party. We are studying the views of citizens in Malawi about how the country is governed and the quality of life in your area. We would like to discuss these issues with you. Your answers will be confidential. They will be put together with other people we are talking to, to get an overall picture. It will be impossible to pick you out from what you say, so please feel free to tell us what you think. This interview will take about 45 minutes. There is no penalty for refusing to participate. Do you wish to proceed?"