Urban proximity, demand for land and land prices in Malawi

By

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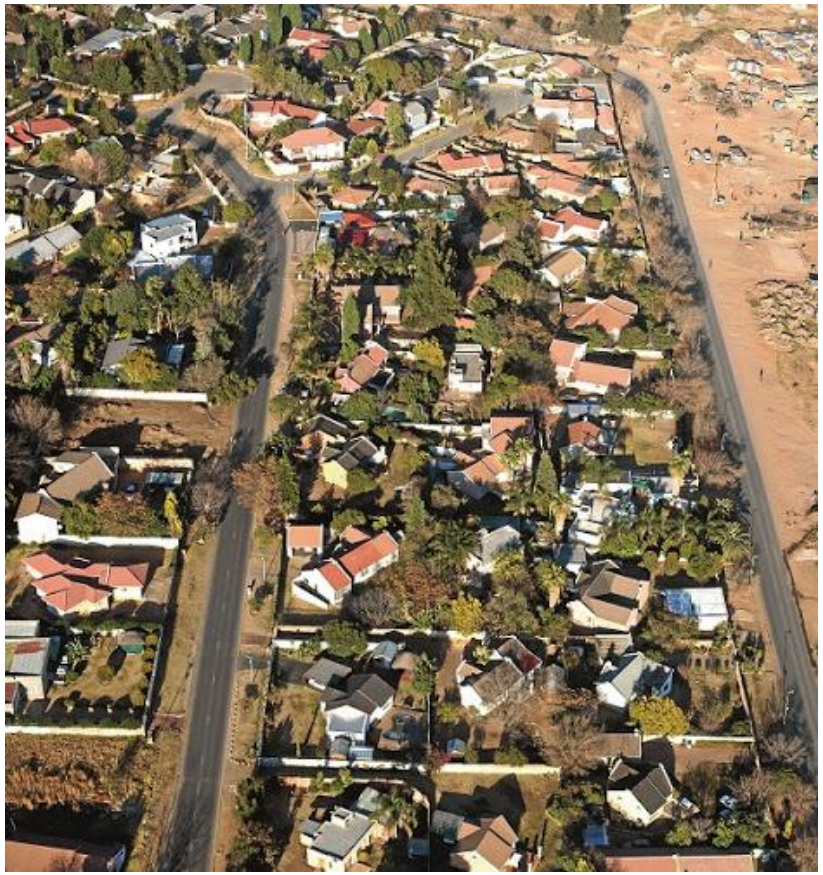
Background

- African cities are growing rapidly
- Urbanisation is driven by population growth from
  - Natural increase and rural-urban migration
- This has lead to increasing urban–rural space (reclassifying boundaries)



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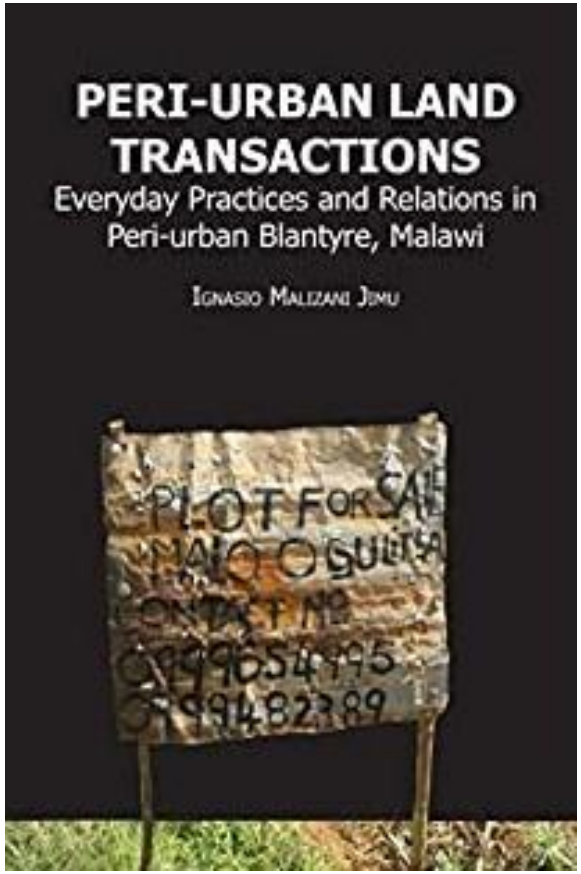


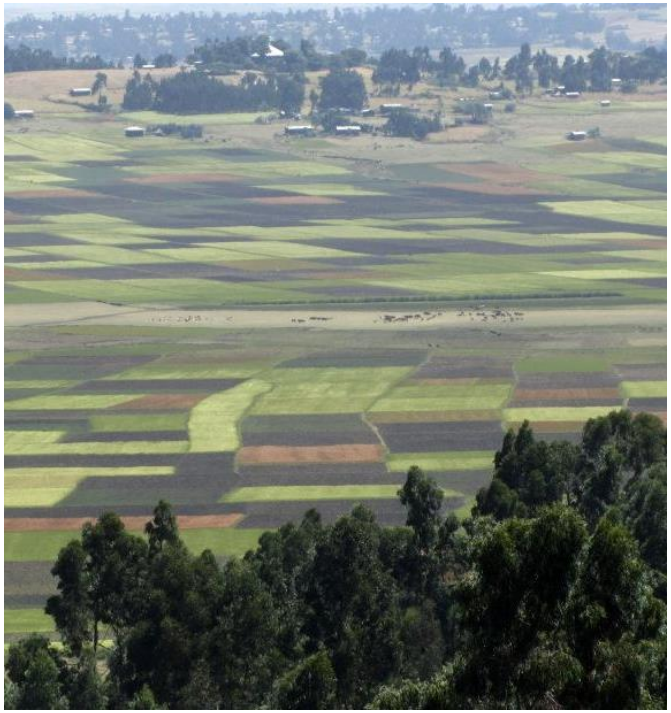
- There is now demand for land and markets are growing in SSA
- However, these markets are only emerging in most countries, including in Malawi
  - Depending on tenure institutions, political economy and shock effects

Introduction

- Scholarly papers shows that land prices or values are important for assessing demand for land and the related land market transactions.
- (Coomes et al., 2018; Plantinga et al., 2002).

- For land prices, these are be a function
  - Experience in the market
  - Salient factors that are intrinsic to the land and individuals

- Thus, **implicit or land shadow prices should reflect land values** at household level and changes in land market conditions.



Research Idea

- To contribute to this understanding, this paper follows the recent discussions on “land grabs” in Africa within the agrarian political economy perspectives.

- These discussions are associated with the 2007–08 spike in energy and food prices.
- This created speculations for a roaming food crisis and led to demand for agricultural land in Africa
  - (Byerlee & Deininger, 2013 & Cotula, 2013).

Research Idea

- Malawi committed to providing land to large scale commercial investors under the Greenbelt initiative, between 2007 and 2013 (Chinsinga, 2017).

– We use Willingness to Accept (WTA) a sale and rent-out of land, and their ratio for household parcel farmland area

Research Question

Question:

What are the important spatial and intertemporal changes in **land shadow prices** that affect patterns of **land valuation** and transactions?

Theoretical framework

- Farmland prices decrease with increasing distance from urban centres mainly from transportation costs
  - That is, unit prices decrease from urban to peri-urban to rural areas
- Both macro and micro economic factors can affect the unit prices. Including;
  - Development cost
  - Expected land use changes
  - Non-land market factors

Theoretical framework

On macro and micro factors, evidence shows that;

- The 2007/08 spike in world energy and food prices induced new demand for land and the associated “land grab” fears in SSA
- However, land supply response was constrained with the fall of prices in 2013, and the policies and political responses to these “land grab” fears.
- This amidst horizontal expansion of African cities from
  - Population growth and urban migration
  - Accessibility to urban centres

Theoretical Framework,

We use the

- **von Thünen theory** and **stylized urban growth model** that we incorporate within the **agrarian political economy perspective**.

Hypotheses

We hypothesize 4 statements

H1: Land shadow prices increase with increasing farm household level population pressure in rural as well as in peri-urban areas.

- Assumption non-linear transaction costs that lead to imperfections in both land and non-land factor markets

H2: High food and energy prices during the associated “land grab” period in Malawi (2007–2013) induced higher expected profitability in farming among smallholder farmers even in remote rural areas, thereby increasing the land shadow prices, and especially the shadow sales prices.

Hypotheses

H3: Rural land shadow prices have fallen after 2013 and fallen back towards the previous low level in rural areas by 2016.

- Assume that the global political discussions, **imposed restrictions** on large-scale land transfers.

H4: Land shadow sales prices relative to rental prices are high in peri-urban areas

- Assume **land shadow sales** prices **nearer urban centres** are more associated with **transforming land use** from agricultural to non-agricultural purposes compared to rental prices

Survey method and data

- National representative LSMS – ISA data from Malawi

- Malawi because;
  - High population density (185 persons/km2)
  - Expansion of urban-rural area space
    - 4 major cities of Lilongwe, Blantyre, Zomba and Mzuzu
  - Increased demand for land in rural areas between 2007 and 2013 mainly from programs like the Greenbelt initiative

- Three panels in 2010, 2013 and 2016

Survey method and data

- WTA land prices
  - owned land parcel area only
  - Malawi Kwacha, deflated with CPI of 2010 base year

- After data cleaning, we used **6557 household-parcels** from
  - 1131 households 1602 parcels in 2010,
  - 1471 households 2245 parcels in 2013 and
  - 1918 households 2710 parcels in 2016.

- Distance to city (km) was from FDG at Enumeration Area

- 102 EAs grouped into quintiles inline with distance to city

Estimation method

- Hedonic Price method
  - Implicit prices that are differentiated by land related attributes
  - Farmland is a heterogonous commodity where the market equilibrium price price $P(\boldsymbol{Z})$ is an aggregate of implicit prices, P_j $(\boldsymbol{z})$, based on land attributes

- **Land,** being a capital asset, a key production factor and a private good, **should be considerably easier to value** than many of the public goods that use **Contingent Valuation Method** (CVM)
  - (Horowitz and McConnell, 2002; Roka and Palmquist, 1997).

Estimation method

- Log-linear function with per ha price for parcel area

$$lnWTA_{ijk} = \alpha_0 + \beta_1 D_{jk} + \gamma_t + \boldsymbol{X_{ijk}\beta} + c_k + \varepsilon_{ijk}$$
$$lnRatioWTA_{ijk} = \alpha_0 + \beta_1 D_{jk} + \gamma_t + \boldsymbol{X_{ijk}\beta} + c_k + \varepsilon_{ijk}$$

- 3 equations
  - Sales prices and rent out prices
  - Ratio of sales/rent prices

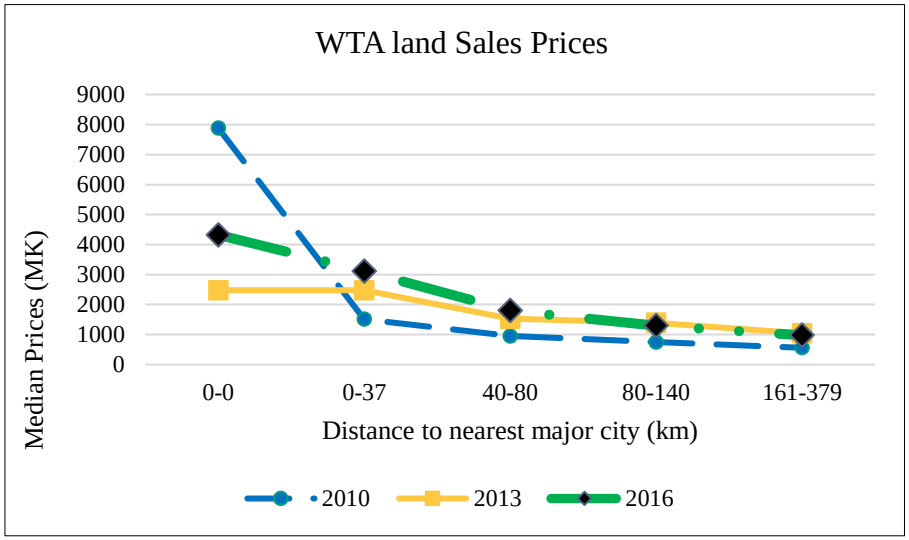
- Location fixed effect estimator (EA time-invariant unobserved heterogeneity)

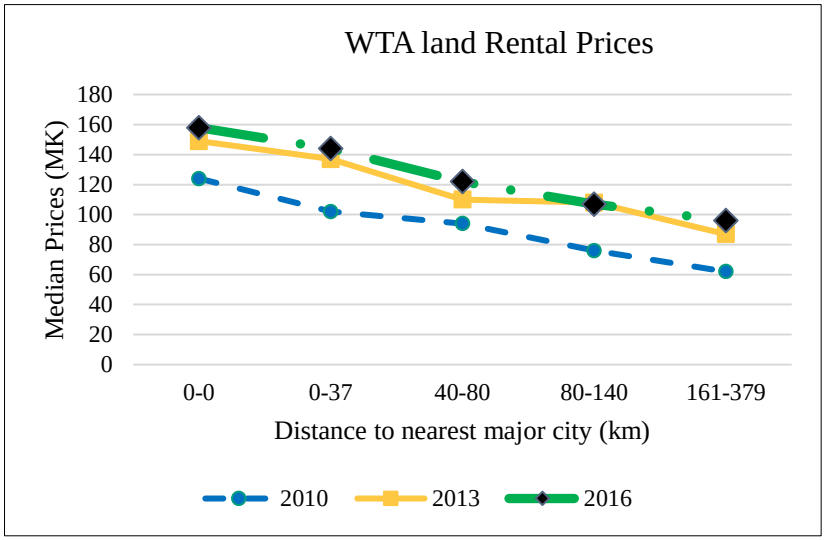
Estimation method

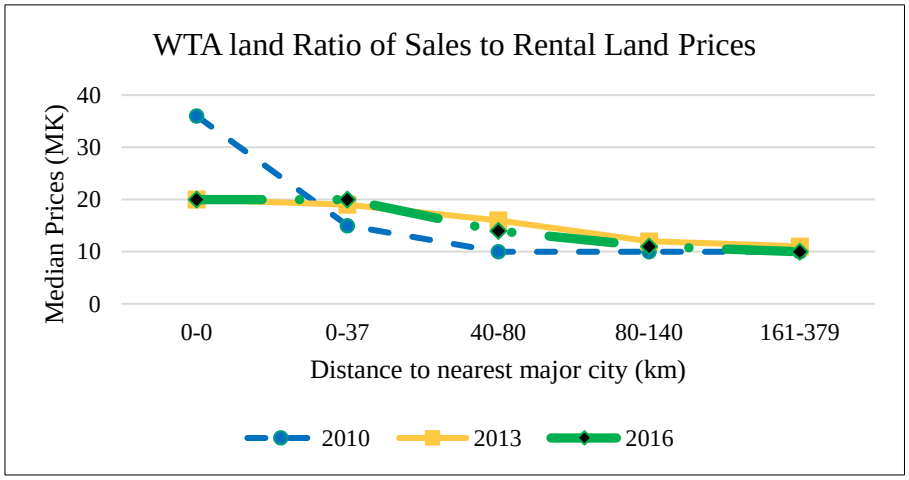
- Key variables
  - Household size to land ratio (number of person/ha) $[D_{jk}]$
  - Time dummy $[\gamma_t]$

- Control variables $[\boldsymbol{X_{ijk}}]$
  - Parcel area
  - Soil type
  - Sex, age and education of HH head
  - One lagged drought/irregular rain experience
  - Distance to weekly market
  - Distance to baseline house location
  - Total livestock units and one year lagged TLU

Descriptive statistics







- Prices decrease with distance from the city
- Focus is from peri-urban to rural areas

Descriptive statistics

- From 2010 to 2013, land shadow sales and rental prices from peri-urban to rural areas made close to a parallel shift

- The tendency of higher shadow sales price increase near urban areas became stronger again in 2016.

  – That is, the land shadow sales prices being about three times as high close to urban areas as compared to remote rural areas.

Descriptive statistics

- From 2013 to 2016, the shadow rental prices remain relatively higher

- The shadow sales prices appeared to have declined to some degree beyond 80 km distance.

- This also resulted in larger ratios between these prices closer to urban areas

Results and discussion

Results – Sales Model

Variable (2010 base year)	EA and distance quintiles				
Number of EA	**1 - 22**	**23 - 42**	**43 - 62**	**63 - 82**	**83 - 102**
Distant range to the city (km)	**0-0 km**	**0-37 km**	**40-80 km**	**80-140 km**	**161-379 km**
Sales model					
Household size to land ratio	0.008****	0.008**	0.009***	0.003*	0.005****
(Number of persons per ha)	(0.0009)	(0.0029)	(0.0028)	(0.0019)	(0.0010)
2013 year	-0.292	0.390****	0.347***	0.634****	0.346***
	(0.2913)	(0.0860)	(0.1077)	(0.0907)	(0.1043)
2016 year	-0.047	0.730****	0.453****	0.495****	0.433****
	(0.2535)	(0.0774)	(0.0976)	(0.1029)	(0.0940)
Other Controls	Yes	Yes	Yes	Yes	Yes
Constant	8.610****	7.860****	7.888****	7.750****	6.772****
	(0.5892)	(0.2559)	(0.1668)	(0.4223)	(0.1239)
Observations	388	1,070	1,847	1,600	1,574
R-squared	0.218	0.125	0.159	0.128	0.158
Number of EA id	22	20	20	20	20
Calculated change: 2013 to 2016	0.245	0.340***	0.106	-0.139	0.087
	(0.3862)	(0.1157)	(0.1454)	(0.1372)	(0.1404)

Results and discussion

Hypothesis 1:

- A unit increase in farm level population pressure (number of persons per ha) increases shadow land prices from between 0.3 to 0.9% across quintiles
- Cannot reject H1
- With population pressure, this could imply importance of own staple food (maize) production for food security in both peri-urban and rural areas in Malawi

Results and discussion

Hypothesis 2:

- Between 2010 and 2013, sales price increase was higher at distance above 80 km from city zone or rural areas
- With increased demand for land during the associated “land grab” period, this could have also affected the smallholder agricultural sector in rural areas of Malawi
- Cannot reject H2

Results – rental Model

Variable (2010 base year)	EA and distance quintiles				
Number of EA	1 - 22	23 - 42	43 - 62	63 - 82	83 - 102
Distant range to the city (km)	0-0 km	0-37 km	40-80 km	80-140 km	161-379 km
Rental model					
Household size to land ratio	0.009****	0.006**	0.008****	0.005****	0.004***
(Number of persons per ha)	(0.0015)	(0.0026)	(0.0014)	(0.0010)	(0.0012)
2013 year	0.151	0.103	0.084	0.339***	0.271***
	(0.1091)	(0.0991)	(0.0751)	(0.1001)	(0.0895)
2016 year	0.110	0.266**	0.298****	0.455****	0.450****
	(0.1410)	(0.0953)	(0.0684)	(0.0890)	(0.0637)
Other Controls	Yes	Yes	Yes	Yes	Yes
Constant	5.082****	5.640****	5.668****	5.478****	4.773****
	(0.2707)	(0.1613)	(0.0967)	(0.1806)	(0.1617)
Observations	389	1,076	1,847	1,602	1,575
R-squared	0.303	0.201	0.249	0.237	0.234
Number of EA id	22	20	20	20	20
Calculated change: 2013 to 2016	-0.041	0.157	0.214**	0.116	0.179
	(0.1782)	(0.1375)	(0.1056)	(0.1339)	(0.1099)

Results and discussion

Hypothesis 3:

- Between 2013 and 2016,
  - Sales prices have remained fairly stable or slightly decline in rural areas
  - Rental prices have increased in all areas

- We reject H3

- Despite constrained supply response in SSA, other upward push factors still affect land prices
  - One of which is the farm level population pressure

Results – Ratio Model

Variable (2010 base year)	EA and distance quintiles				
Number of EA	**1 - 22**	**23 - 42**	**43 - 62**	**63 - 82**	**83 - 102**
Distant range to the city (km)	**0-0 km**	**0-37 km**	**40-80 km**	**80-140 km**	**161-379 km**
Land sales/rental price ratio model					
Household size to land ratio	-0.000	0.001	0.002*	-0.001	0.001***
(Number of persons per ha)	(0.0008)	(0.0008)	(0.0011)	(0.0008)	(0.0003)
2013 year	-0.314	0.318***	0.305***	0.315***	0.086
	(0.3027)	(0.0828)	(0.0850)	(0.1072)	(0.1214)
2016 year	-0.045	0.406****	0.197*	0.066	0.022
	(0.2699)	(0.1016)	(0.1055)	(0.1037)	(0.0862)
Other Controls	Yes	Yes	Yes	Yes	Yes
Constant	3.990****	2.995****	2.909****	3.114****	2.709****
	(0.5567)	(0.1697)	(0.1439)	(0.2942)	(0.1045)
Observations	388	1,062	1,841	1,587	1,565
R-squared	0.081	0.052	0.048	0.030	0.039
Number of EA id	22	20	20	20	20
Calculated change: 2013 to 2016	0.269	0.088	-0.108	-0.249*	-0.640
	(0.4056)	(0.1311)	(0.1355)	(0.1491)	(0.1489)

Results and discussion

Hypothesis 4:

- Between 2010 and 2013,
  - Increase in ratio of prices expanded further into rural areas but partly reversed in 2016
- Cannot reject H4
- Ratio changes could be from changing land use from agricultural to non-agricultural purposes or new investments in agriculture for urban farming.

Conclusion

- While the SSA policy focus in the past decade has been on large scale land transfers, the study shows that
  - Population growth and urbanisation also affected shadow land prices among smallholder farmer in Malawi
- Thus, the rural and urban development policies in Malawi should incorporate land markets, with
  - Consideration of whether land markets can be an affordable avenue for accessing land
  - Mainly for land scarce households and youth

Policy Implications

- After almost a decade of policy discussions on large-scale land transfers and “land grabs” in Africa.
  - There is need to **refocus the policy discussion** to improving farm household access to farmland in both rural and peri-urban areas, and among smallholder farmers.

Policy Implications

The question of **who is accessing and using agricultural land** should be central to the development agenda, even in rural areas

References

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THANK YOU FOR YOUR ATTENTION