Urban proximity as a determinant of rural self-employment profitability: Evidence from Ethiopia and Tanzania

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  - Detailed data allows to account for heterogeneity of rural areas
- Is there a spatial dimension to rural self-employment?

Outline

2.1 Literature Review & Research Questions

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- Research questions
  - Does running a NAHE increase household consumption?
  - Is distance to urban markets a relevant determinant of running a NAHE?
  - Does the effect of NAHE on consumption depend on the proximity to urban markets?

3.1 Data and Main Variables

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Descriptives

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- Three possible reference points across space
  - Primary cities - Large cities - Market towns

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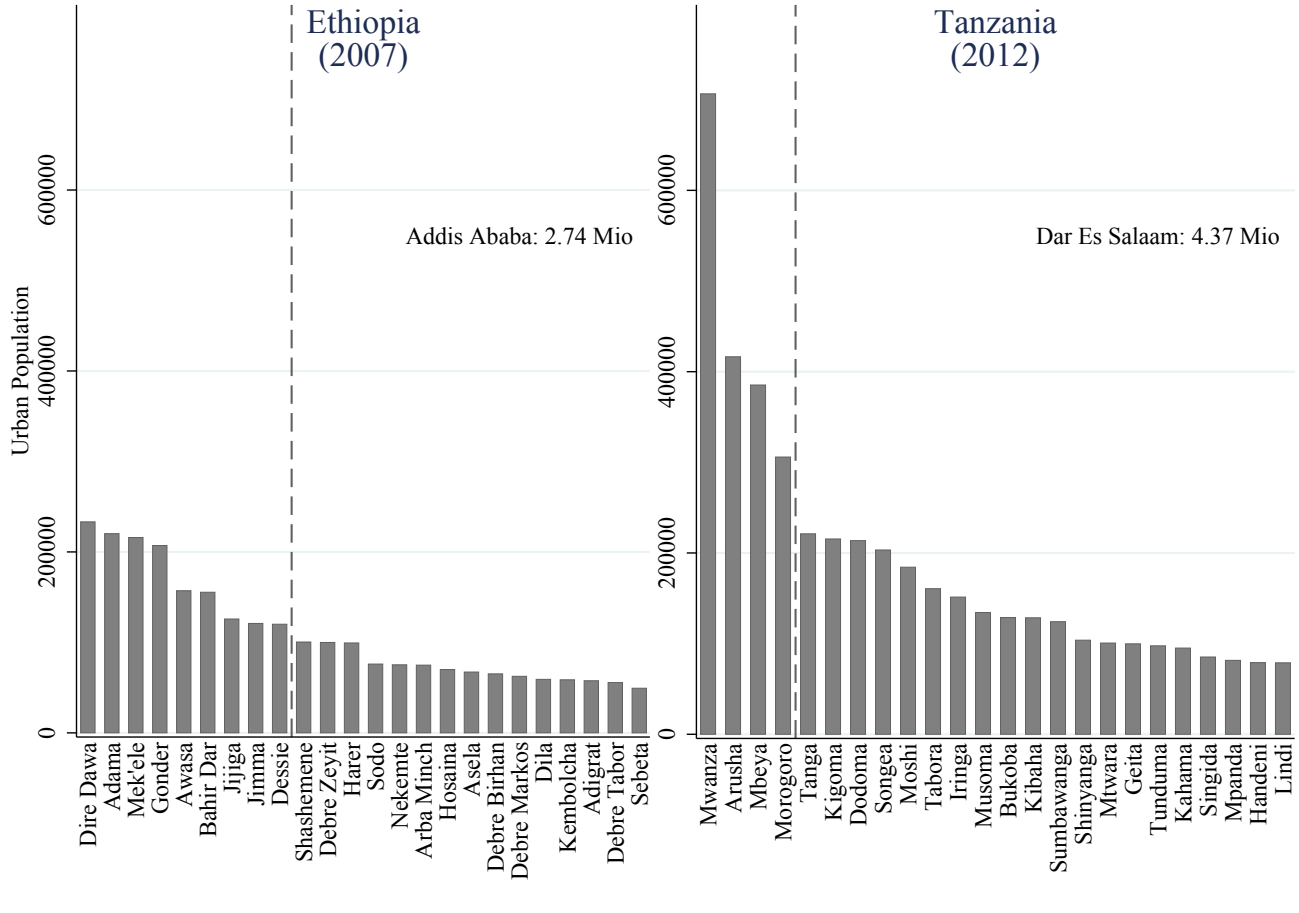


Figure: City size distribution as per latest census

3.3 Sample distribution across distance rings

	Ethiopia				Tanzania			
	HHs per distance ring (% of total in year)			HHs changing NAHE status	HHs per distance ring (% of total in year)			HHs changing NAHE status
Distance (km)	2011	2013	2015	(% of total in ring)	2008	2010	2012	(% of total in ring)
≤ 50	9.87	10.12	10.14	46.60	4.19	4.06	4.15	42.05
≤ 100	14.09	14.27	14.25	36.84	7.06	6.83	6.89	46.15
≤ 150	9.64	9.30	9.70	31.92	5.80	5.84	5.57	47.79
≤ 200	18.81	18.65	18.60	34.65	10.04	9.90	10.09	41.35
≤ 250	8.75	8.48	8.41	30.84	6.76	6.67	6.73	40.14
≤ 300	9.73	9.92	10.02	35.95	8.58	8.70	8.36	54.02
≤ 350	8.69	8.56	8.58	38.24	14.63	14.28	14.35	42.95
≤ 400	4.81	4.80	4.89	34.44	8.07	8.03	8.41	54.27
≤ 450	4.67	4.61	4.69	27.22	4.84	4.95	4.78	43.88
≤ 500	2.57	2.63	2.48	46.67	5.35	5.37	5.42	46.30
≤ 550	2.60	2.85	2.56	60.00	3.78	3.96	3.79	50.63
≤ 600	0.92	0.96	0.95	33.33	6.61	6.67	6.94	40.14
≤ 650	4.86	4.83	4.72	47.09	14.28	14.75	14.51	46.05
Total per year (%)	100	100	100	37.18	100	100	100	45.65
Total per year (#)	3,578	3,538	3,473		1,982	1,919	1,902	
Total (#)		10589		1374		5803		935

3.4 Model - Payoffs to NAHE

$$Cons_{itjk} = \beta_0 + \beta_1 NAHE_{it} + \beta_2 X_i^1 + \beta_3 X_{it}^2 + \beta_4 Z_{jt} + \beta_5 V_{kt} + \beta_6 W_t + \varepsilon_{it} \quad (1)$$

- $Cons_{itjk}$: consumption of HH i at time t in village j in region k,
- $NAHE_{it}$: indicator for participation in NAHE,
- X_i^1: HH-FE,
- X_{it}^2: time-varying HH characteristics (# workers, health, gender, other income),
- Z_{jt}: time-varying village characteristics (dep. on remittances, grain price, climate),
- V_{kt}: region (Ethiopia) / zone (Tanzania) FE,
- W_t: year FE

H1: β_1 in Regression (1) is positive in both countries, indicating positive returns to NAHE.

3.4 Model - Selection into NAHE by distance rings

$$NAHE_{ijtk} = \beta_0 + \beta_1 distcat_j + \beta_2 X_{it} + \beta_3 Z_{jt} + \beta_4 V^1_{kt} + \beta_5 V^2_k + \beta_6 W_t + \varepsilon_{it} \quad (2)$$

H2: The β_1 in Regression (2) decrease with distance from large towns, as only the less remote households can benefit from NAHE.

3.4 Model - Payoffs of NAHE by distance rings

$$Cons_{itjk} = \beta_0 + \beta_1(NAHE_{it} \times distcat_j) + \beta_2 X_i^1 + \beta_3 X_{it}^2 + \beta_4 Z_{jt} + \beta_5 V_{kt} + \beta_6 W_t + \varepsilon_{it} \quad (3)$$

H3: The β_1 in Regression (3) are largest in areas relatively closer to large towns.

4.1 Returns to NAHE for the whole sample (H1)

	Ethiopia		Tanzania	
	Food	Non-food	Food	Non-food
NAHE	0.061	0.219	0.073	0.064
	(0.051)	(0.066)***	(0.019)***	(0.026)**
year2	-0.027	0.359	0.073	-4.784
	(0.177)	(0.155)**	(0.049)	(0.081)***
year3	0.158	0.385	0.261	0.505
	(0.090)*	(0.132)***	(0.055)***	(0.064)***
workers	-0.084	0.159	-0.055	0.195
	(0.013)***	(0.014)***	(0.011)***	(0.013)***
health	0.149	0.074	0.215	0.106
	(0.125)	(0.170)	(0.056)***	(0.064)
genderhead	-0.080	0.096	-0.006	0.139
	(0.048)*	(0.056)*	(0.051)	(0.081)*
remitdep	0.000	0.000	-0.024	-0.070
	(0.000)	(0.000)*	(0.108)	(0.135)
lnprice	0.104	-0.030	0.017	-0.025
	(0.042)**	(0.049)	(0.028)	(0.034)
otherincome	0.000	0.000		
	(0.000)	(0.000)		
floods	0.171	0.520		
	(0.188)	(0.345)		
droughts	-0.111	-0.076		
	(0.065)*	(0.066)		
foodinsec	0.014	-0.064		
	(0.031)	(0.032)**		
extremeclimate			0.107	0.132
			(0.083)	(0.097)
R^2	0.03	0.13	0.18	0.25
N	10,367	10,367	5,794	5,802
Household-FE	Yes	Yes	Yes	Yes
Reg.-Year-FE	Yes	Yes	Yes	Yes
Date of Intrvw.	Yes	Yes	Yes	Yes

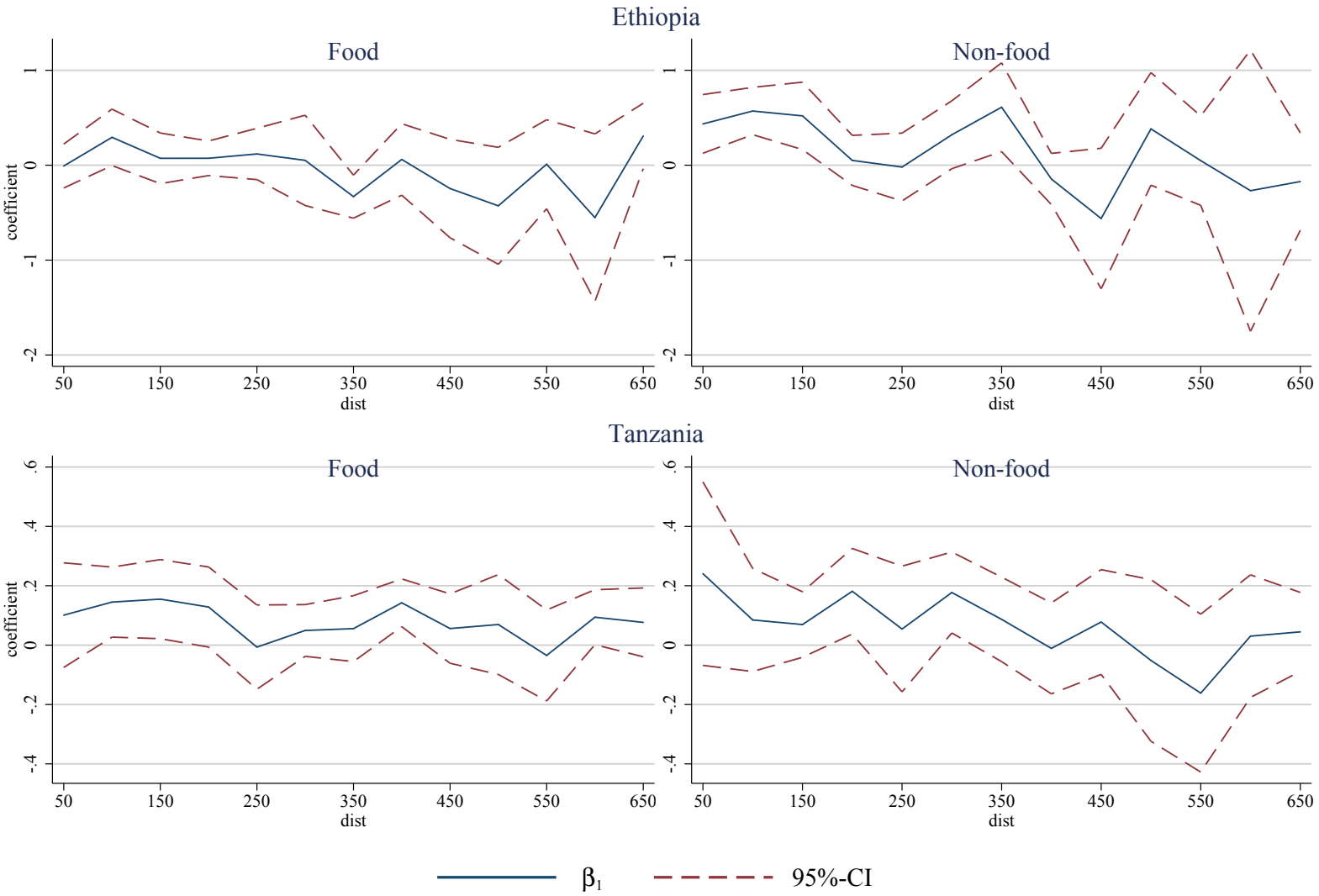
* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$; SE clustered at village/community level

4.2 Selection into NAHE by distance rings (H2)

	Ethiopia	Tanzania
β_1^{50km}	-0.025	0.065
	(0.052)	(0.089)
β_1^{100km}	-0.062	0.001
	(0.044)	(0.053)
β_1^{150km}	-0.088	-0.015
	(0.045)*	(0.057)
β_1^{200km}	-0.069	-0.002
	(0.044)	(0.053)
β_1^{250km}	-0.046	0.039
	(0.051)	(0.056)
β_1^{300km}	-0.026	-0.010
	(0.050)	(0.046)
β_1^{350km}	-0.077	0.047
	(0.045)*	(0.049)
β_1^{400km}	-0.049	-0.033
	(0.046)	(0.049)
β_1^{450km}	-0.092	-0.066
	(0.045)**	(0.053)
β_1^{500km}	-0.057	-0.045
	(0.043)	(0.055)
β_1^{550km}	0.028	-0.039
	(0.054)	(0.063)
β_1^{600km}	-0.112	-0.018
	(0.066)*	(0.058)
year2	0.070	0.096
	(0.033)**	(0.046)**
year3	0.035	0.010
	(0.046)	(0.050)
highestgradehh	0.009	0.030
	(0.001)***	(0.003)***
workers	-0.006	0.010
	(0.004)*	(0.005)*
health	-0.058	0.081
	(0.028)**	(0.041)**
genderhead	-0.035	-0.005
	(0.010)***	(0.019)
remitdep	0.000	-0.095
	(0.000)	(0.102)
lnprice	0.032	0.031
	(0.014)**	(0.024)
otherincome	0.000	
	(0.000)***	
floods	-0.052	
	(0.049)	
droughts	-0.049	
	(0.016)***	
foodinsec	-0.001	
	(0.009)	
extremeclimate		0.096
		(0.081)
R^2	0.07	0.06
N	10,551	5,802
Household-FE	No	No
Reg.-Year-FE	Yes	Yes
Date of Intrvw.	Yes	Yes

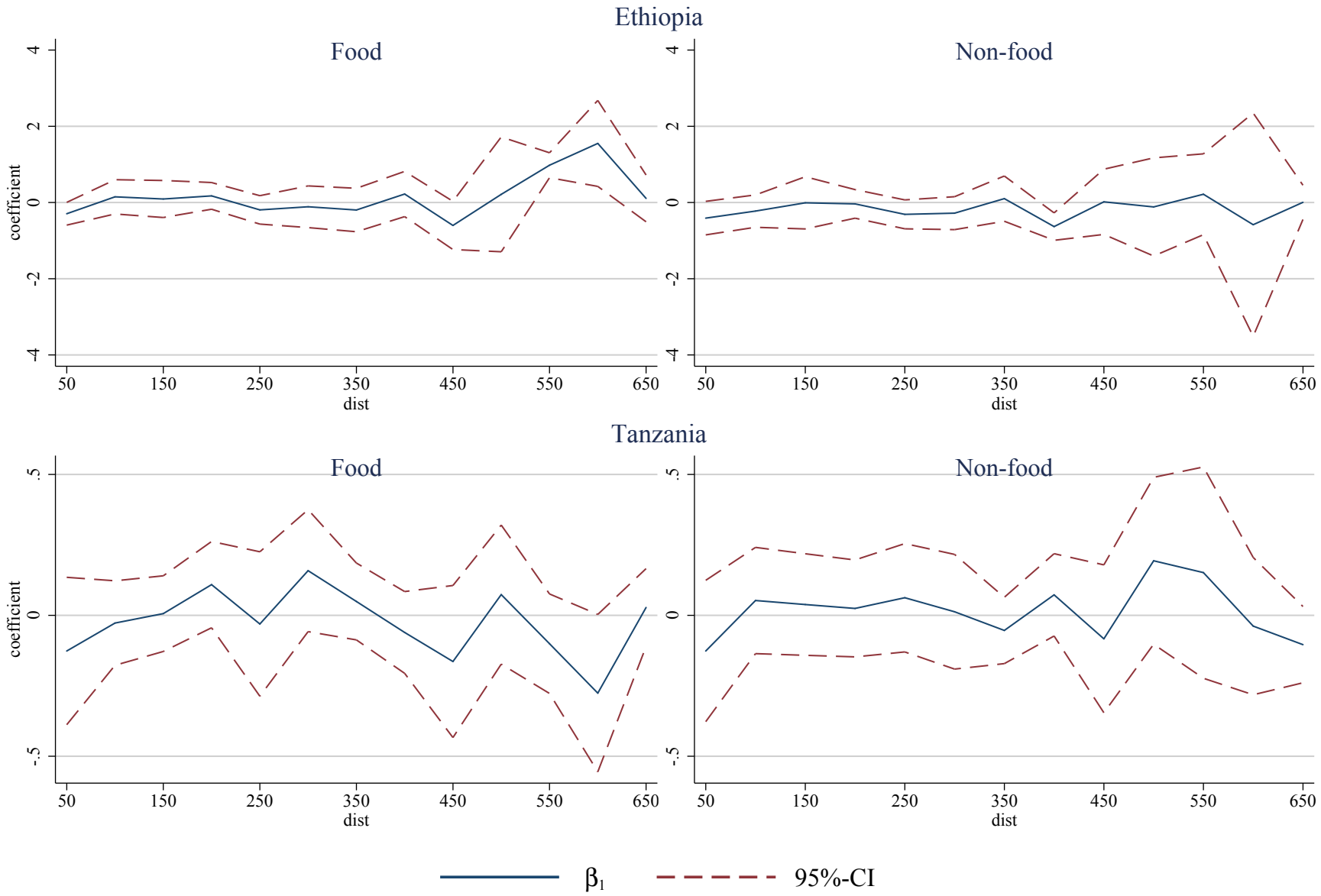
* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$; SE clustered at village/community level

4.3 Returns of NAHE by distance rings (H3)



Broader Bands

5.1 Exploratory Analysis - Lagged effects



5.2 Differential effects between landowners and landless

Country	Ethiopia				Tanzania			
Dep. Var.	Food		Non-food		Food		Non-food	
Landholders	Yes	No	Yes	No	Yes	No	Yes	No
β_1^{50km}	-0.044	0.107	0.455	0.489	0.089	0.121	0.101	0.085
	(0.148)	(0.207)	(0.198)**	(0.256)*	(0.123)	(0.173)	(0.095)	(0.411)
β_1^{100km}	0.416	0.204	0.475	0.727	0.188	-0.108	0.146	-0.125
	(0.286)	(0.202)	(0.155)***	(0.281)**	(0.078)**	(0.043)**	(0.138)	(0.086)
β_1^{150km}	-0.120	0.117	0.199	0.724	0.136		0.084	
	(0.195)	(0.292)	(0.218)	(0.323)**	(0.063)**		(0.065)	
β_1^{200km}	0.229	-0.096	-0.010	-0.042	0.127	0.160	0.175	0.326
	(0.186)	(0.103)	(0.204)	(0.149)	(0.083)	(0.146)	(0.101)*	(0.370)
β_1^{250km}	-0.063	0.311	0.133	0.040	-0.098	0.099	0.004	0.471
	(0.314)	(0.205)	(0.365)	(0.255)	(0.118)	(0.284)	(0.098)	(0.567)
β_1^{300km}	0.496	-0.074	0.257	0.358	0.091	0.024	0.130	0.140
	(0.345)	(0.259)	(0.305)	(0.238)	(0.060)	(0.180)	(0.086)	(0.215)
β_1^{350km}	-0.568	0.174	0.449	0.783	0.045	0.306	0.080	0.274
	(0.215)***	(0.218)	(0.238)*	(0.590)	(0.052)	(0.194)	(0.077)	(0.150)*
β_1^{400km}	-0.015	0.144	0.279	-0.530	0.118	0.154	-0.031	0.190
	(0.326)	(0.223)	(0.355)	(0.277)*	(0.061)*	(0.141)	(0.075)	(0.164)
β_1^{450km}	-0.739	0.064	-0.557	-0.657	0.017	0.199	0.039	0.275
	(0.407)*	(0.337)	(0.179)***	(0.666)	(0.079)	(0.173)	(0.101)	(0.527)
β_1^{500km}	-0.318	0.333	0.408	-0.094	0.016	-0.159	-0.029	-0.847
	(0.464)	(1.339)	(0.307)	(0.812)	(0.103)	(0.134)	(0.111)	(0.145)***
β_1^{550km}	0.001	-0.206	-0.143	0.134	-0.194	0.242	-0.291	-0.562
	(0.531)	(0.169)	(0.388)	(0.328)	(0.120)	(0.058)***	(0.186)	(0.068)***
β_1^{600km}	-1.704	-0.232	0.894	-1.369	0.018	0.432	-0.026	0.271
	(0.114)***	(0.240)	(1.208)	(0.573)**	(0.071)	(0.184)**	(0.136)	(0.104)***
β_1^{650km}	0.422	-0.193	0.162	-0.545	0.066	0.218	0.069	0.227
	(0.260)	(0.136)	(0.190)	(0.337)	(0.071)	(0.238)	(0.085)	(0.203)
R^2	0.04	0.06	0.14	0.18	0.19	0.25	0.28	0.23
N	7,004	3,362	7,004	3,362	4,530	1,264	4,535	1,267
Household-FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Reg.-Year-FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$; SE clustered at village/community level; No observations in third distance ring for non-cultivators in Tanzania.

5.3 Accounting for NAHE investments

	Ethiopia		Tanzania	
β_1^{50km}	0.512	0.410	0.089	-0.046
	(0.171)***	(0.177)**	(0.171)	(0.166)
β_1^{100km}	0.564	0.431	0.096	-0.032
	(0.133)***	(0.136)***	(0.104)	(0.112)
β_1^{150km}	0.432	0.278	0.076	-0.037
	(0.190)**	(0.193)	(0.060)	(0.062)
β_1^{200km}	0.072	-0.047	0.170	0.039
	(0.122)	(0.125)	(0.082)**	(0.085)
β_1^{250km}	-0.078	-0.153	0.061	-0.069
	(0.196)	(0.195)	(0.116)	(0.124)
β_1^{300km}	0.320	0.204	0.158	0.034
	(0.195)	(0.192)	(0.070)**	(0.073)
β_1^{350km}	0.596	0.448	0.089	-0.014
	(0.286)**	(0.288)	(0.065)	(0.069)
β_1^{400km}	-0.186	-0.281	-0.032	-0.141
	(0.150)	(0.152)*	(0.085)	(0.084)*
β_1^{450km}	-0.561	-0.703	0.104	-0.035
	(0.374)	(0.381)*	(0.097)	(0.104)
β_1^{500km}	0.393	0.278	-0.062	-0.184
	(0.304)	(0.313)	(0.145)	(0.144)
β_1^{550km}	-0.007	-0.159	-0.285	-0.410
	(0.252)	(0.252)	(0.155)*	(0.148)***
β_1^{600km}	-0.182	-0.246	0.082	-0.038
	(0.741)	(0.777)	(0.104)	(0.112)
β_1^{650km}	-0.154	-0.253	0.061	-0.057
	(0.262)	(0.258)	(0.071)	(0.075)
nahe_costs		0.021		0.016
		(0.005)***		(0.003)***
R^2	0.13	0.14	0.26	0.26
N	10,367	10,367	5,802	5,802
Household-FE	Yes	Yes	Yes	Yes
Reg.-Year-FE	Yes	Yes	Yes	Yes

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$; SE clustered at village/community level

5.4 Selection - Differences between studied sub-populations

	NAHE status over time			Group-wise mean comparisons		
	(1) never	(2) always	(3) changing	(1) vs. (2)	(1) vs. (3)	(2) vs. (3)
				p-values		
			Ethiopia			
Highest grade in HH	4.789	6.343	5.523	0.000***	0.000***	0.000***
	(0.083)	(0.164)	(0.126)			
Gender HH-head	0.733	0.710	0.741	0.307	0.626	0.212
	(0.009)	(0.020)	(0.015)			
# adults in HH	2.709	2.869	2.816	0.020**	0.051*	0.494
	(0.029)	(0.064)	(0.046)			
Rooms per adult	0.778	0.842	0.807	0.021**	0.204	0.286
	(0.012)	(0.024)	(0.020)			
Agric. land (acres)	2.603	1.625	2.280	0.072*	0.403	0.059*
	(0.209)	(0.138)	(0.224)			
km to large town	232.272	216.453	244.897	0.053*	0.060*	0.005***
	(3.447)	(7.699)	(6.152)			
N	2249	497	889			
			Tanzania			
Highest grade in HH	5.821	7.397	6.827	0.000***	0.000***	0.002***
	(0.125)	(0.151)	(0.097)			
Gender HH-head	0.698	0.751	0.748	0.064*	0.023**	0.911
	(0.017)	(0.023)	(0.014)			
# adults in HH	2.876	3.135	3.183	0.009***	0.000***	0.655
	(0.056)	(0.085)	(0.059)			
Rooms per adult	1.403	1.449	1.346	0.441	0.166	0.055*
	(0.033)	(0.055)	(0.026)			
Agric. land (acres)	6.041	5.817	5.889	0.813	0.821	0.918
	(0.584)	(0.541)	(0.378)			
km to large town	345.658	349.066	348.252	0.785	0.783	0.946
	(7.062)	(10.721)	(6.247)			
N	725	370	918			

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$; Standard errors in parentheses

6. Discussion

- Validity of the chosen distance measure
- Differences between food and non-food - Prices?
- Sample sizes and selection

7. Conclusion

- Study explores the interplay between the growth of urban areas and increased market activities of rural households - two features of structural transformation

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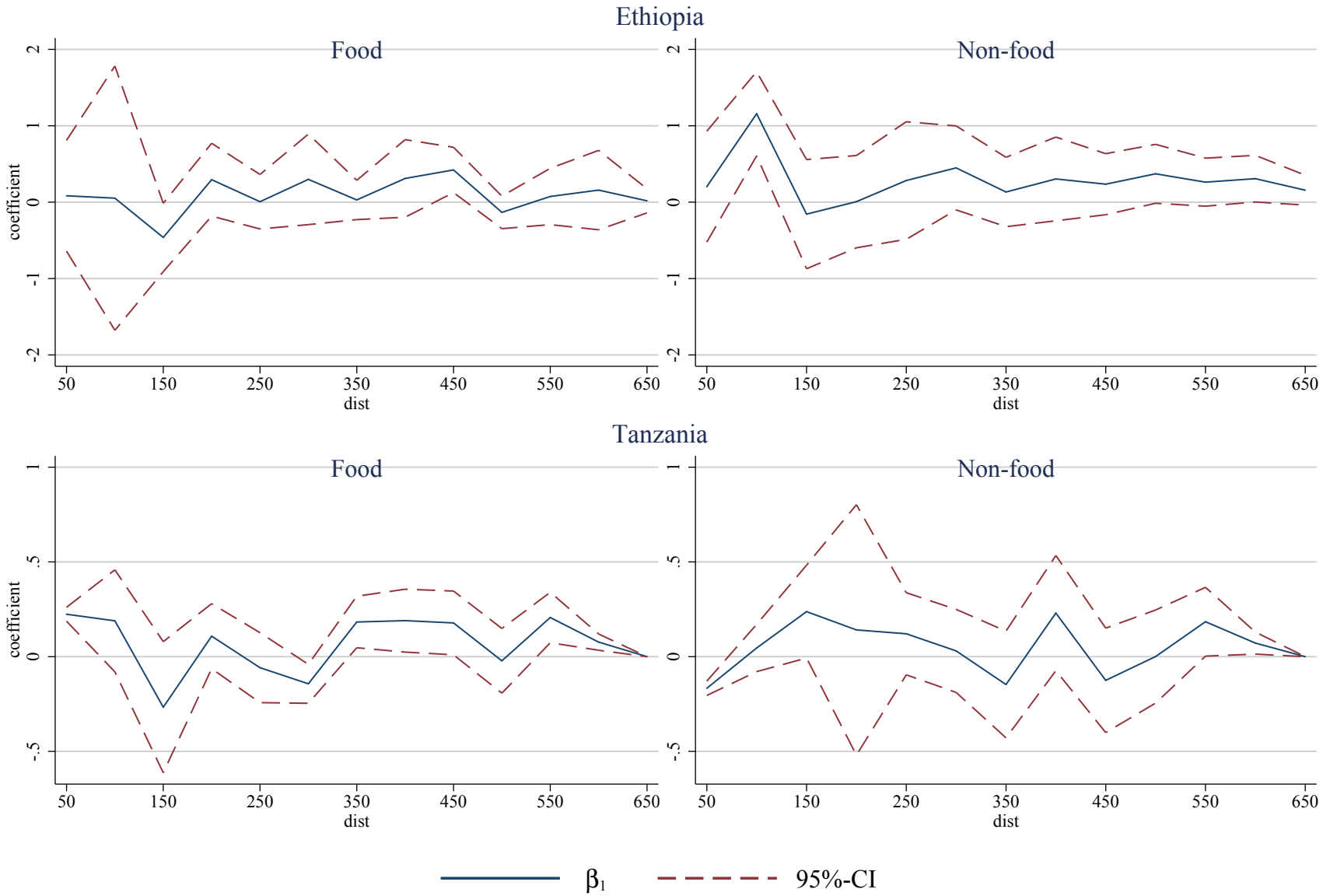
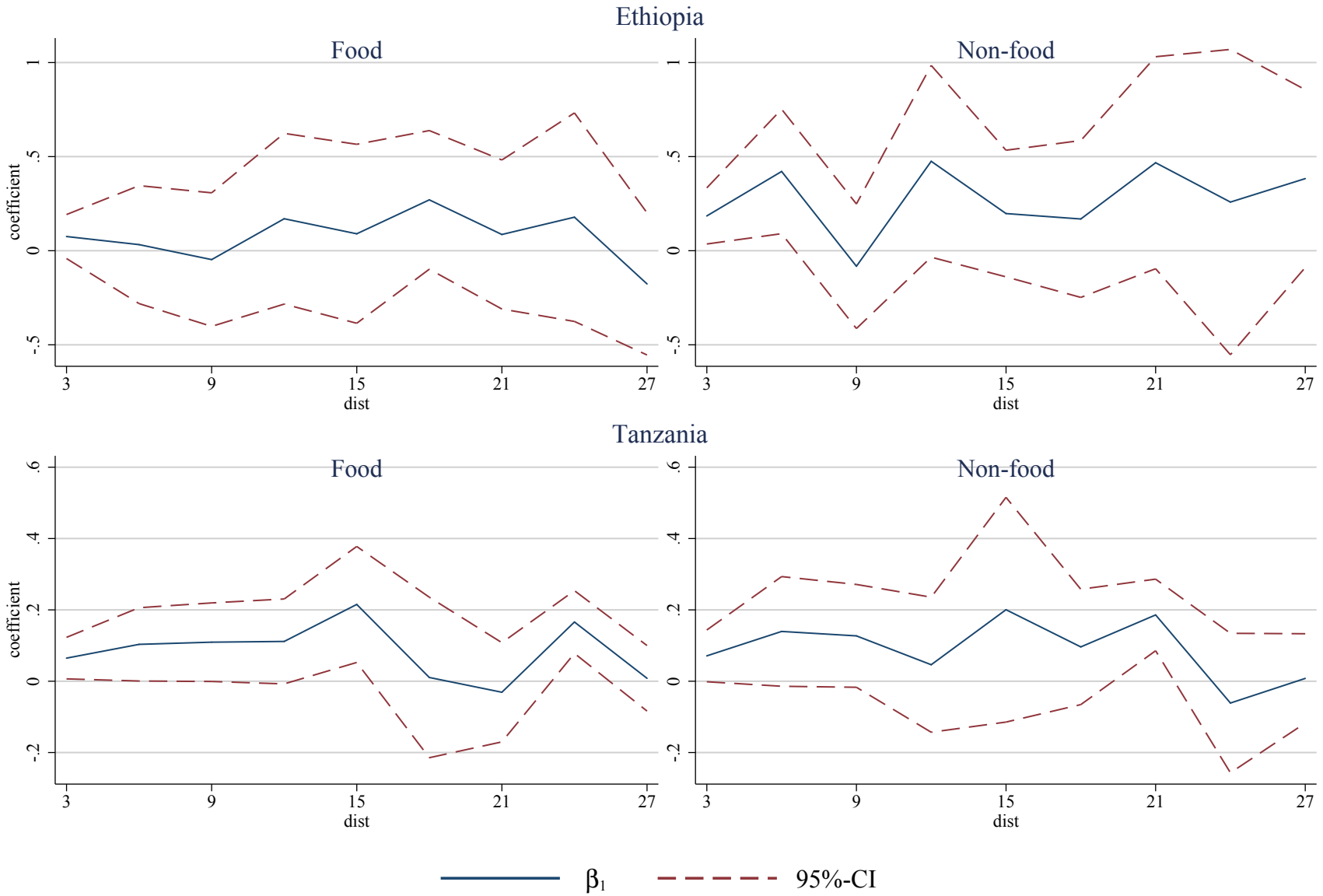
- There exists a geographic dimension to the profitability of rural self-employment in two African countries - substantial gains largely observed in less remote areas
- These gains are sustained and especially relevant for the landless population
- Role for rural connectivity and integration with domestic markets
- Results point to need for more fine-grained rural-urban analysis, and heterogenous processes between countries

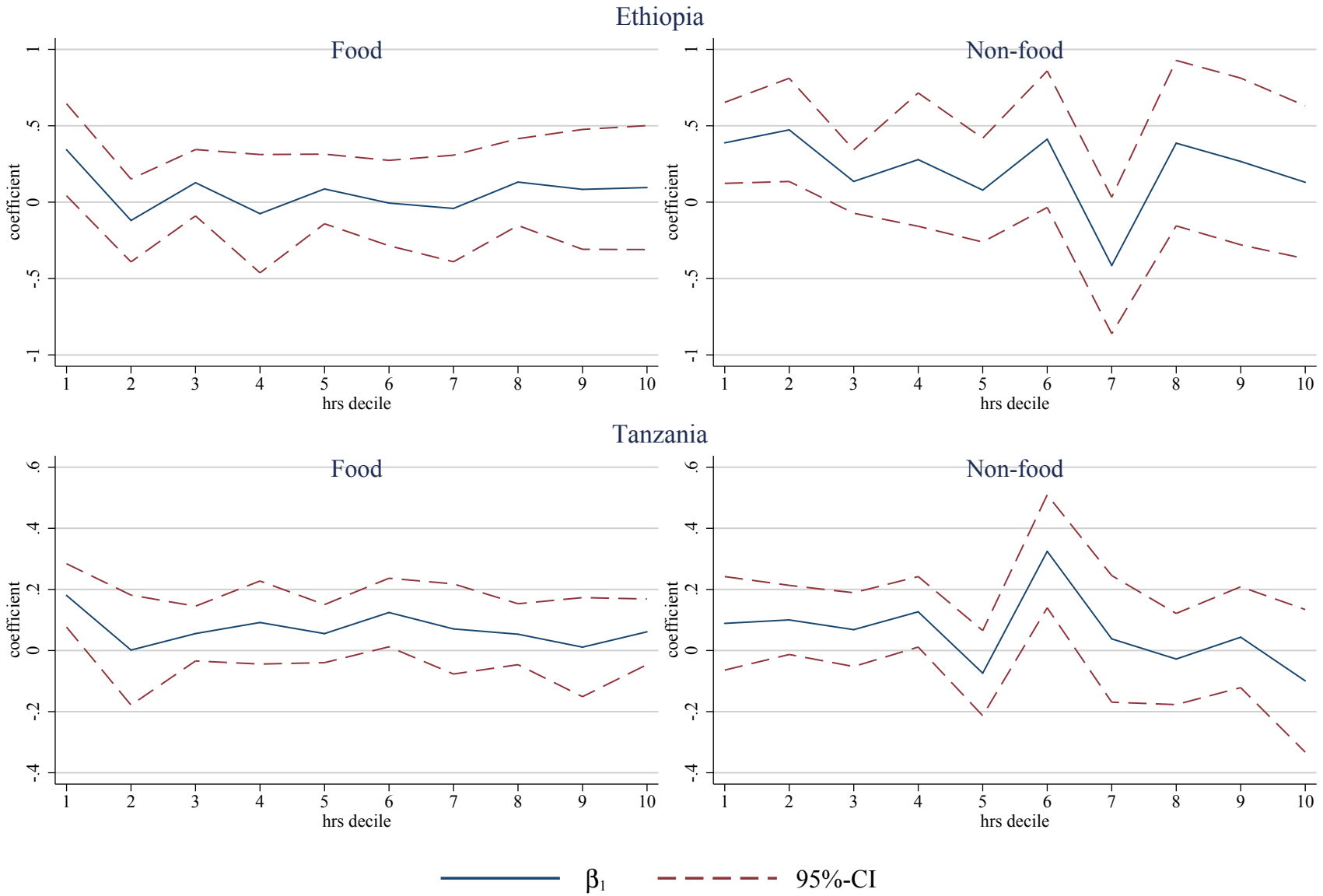
Primary cities as reference points



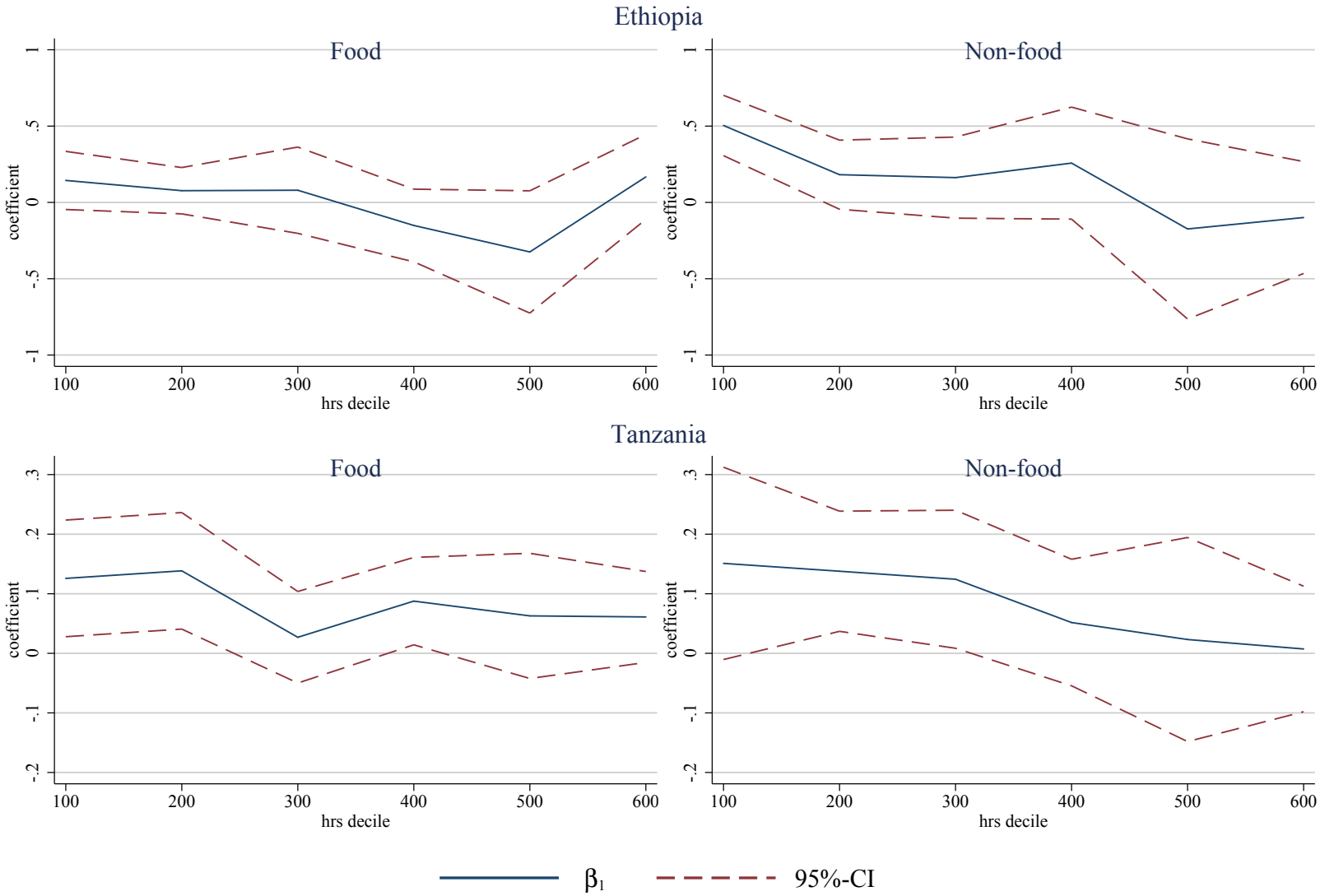
Market towns as reference points



Travel time to nearest 100k city



Broader Bands



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Descriptive statistics

	Ethiopia				Tanzania			
	Mean	SD	Min	Max	Mean	SD	Min	Max
Food consumption	5.152	6.778	0.50	58.53	473.479	345.131	26.38	4889.39
Non-Food consumption	4.230	4.659	0.01	66.42	389.373	575.924	1.20	9133.80
NAHE	0.120	0.250	0.00	0.95	0.421	0.494	0.00	1.00
workers	2.445	1.193	1.00	10.00	2.592	1.580	0.00	24.00
health	0.035	0.083	0.00	1.00	0.070	0.153	0.00	1.00
gender_head	0.758	0.428	0.00	1.00	0.734	0.442	0.00	1.00
remit_dep	4150.349	11905.744	0.00	128500.00	0.071	0.099	0.00	0.63
ln_price	3.435	0.627	1.93	5.42	8.169	0.596	6.21	9.55
otherincome	537.470	4076.087	0.00	142800.00				
floods	0.022	0.073	0.00	0.89				
droughts	0.177	0.302	0.00	1.00				
food_insec	0.301	0.459	0.00	1.00				
extreme_climate					0.295	0.152	0.00	1.00
Observations	10373				5795			

Consumption in 1,000 Local currency

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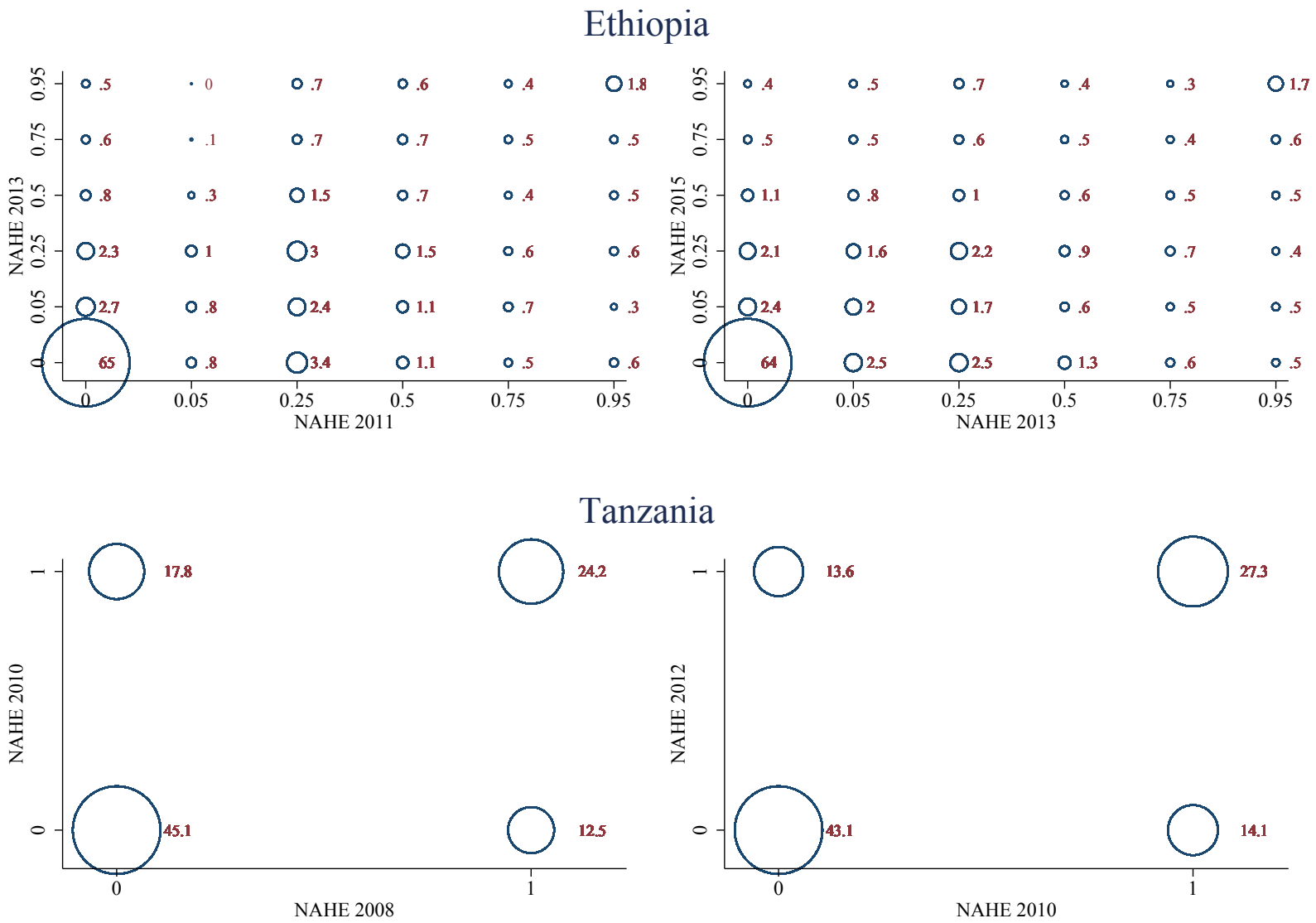
Changes in NAHE status between survey rounds



Sectoral distribution of NAHEs across space