

Income Distribution Dynamics in Rural and Urban Nigeria in the Phase of Structural Change

Presenter

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INTRODUCTION

- ✓ Reducing poverty and inequality are core policies in Nigeria.
 - ✓ Economic growth is pivotal.
 - ✓ But epileptic, from stagnation decades before to + growth between 2001 and 2014 to –growth since 2015
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- ✓ EG or DP involves SC
- ✓ Timmer(2017) document
“the utilization of improved technologies, investment in higher educational and skill levels for the labor force, lower transactions costs and more efficient allocation of resources“


as mechanisms of structural transformation



- ✓ Kuznets(1955) did one of the earliest pieces of research on economic development and showed how structural change bring about long-run changes in income distribution.
- ✓ Identifying such changes is crucial for understanding the scope of policy intervention




INTRODUCTION

- ✓ **Mixed arguments on the contribution of SC processes on growth in Nigeria**
 - ✓ **Poverty and inequality are increasing, and economic growth not evenly spread.**
 - ✓ **labour drifted into lower productivity jobs and substantial underemployment**
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Motivation

- ✓ limited empirics on these claims and knowledge of rural income evolution during a recent period of economic growth.

Objectives


- ✓ To examine changes in per capital income over time.
- ✓ To examine inequality and poverty changes(urban and rural)2010 and 2015. 

Objectives

- ✓ To identify correlates of poverty.
- ✓ To examine factors that predict poverty transition over the period.



Methodology

- ✓ LSMS panel data(NBS,Nigeria and World Bank)
 - ✓ Aggregated all sources of income into annualized total income & per adult equivalent income.
 - ✓ Used summary statistics of mean, inequality and poverty
 - ✓ Probit & fixed effect models
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Findings 1

- ✓ *Decline in rural and urban income, four times higher in magnitude in rural than urban(Table1).*
- ✓ *More pronounced negative changes in rural than urban across income sources(Table 2).*
- ✓ *While there is +growth in enterprise income, the share declined, & more pronounced in rural than urban(3)*

**Table 1. PER CAPITA INCOME CHANGE, RURAL AND URBAN,
2010 - 2015**

	RURAL			URBAN		
	2010	2015	Δ	2010	2015	Δ
a	62,510	32,891	-47%	86,064	78,880	-8%
b	144,872	94,012	-35%	192,898	177,314	-8%
c	438,358	102,425	-77%	602337	260,420	-57%

a= Median income
b=Mean income(Trimmed)
C=Mean income(Not trimmed)

Per capita income
(in Naira)
Δ=CHANGE



**Table 2 PERCENTAGE CHANGE IN INCOME SOURCES
RURAL & URBAN, 2010 - 2015**

Income types	RURAL	URBAN
Wage	-21.20%	21.11%
Remittances	65.70%	22.73%
Safety nets	-40.55%	12.07%
Enterprise	21.67%	3.62%
Crop	-46.65%	-40.75%
Livestock	19.36%	65.05%
Rental	-9.03%	254.77%

Table3 INCOME SOURCES SHARE, 2010-2015

INCOME SOURCES	RURAL			URBAN		
	2010	2015	$\Delta\%p$	2010	2015	$\Delta\%p$
Wage	32.7	43.9	11.1	21.4	39.4	18.1
Remittances	1.0	16.0	15.0	3.8	6.0	2.3
Safety nets	0.2	0.3	0.1	0.5	0.5	-0.1
Enterprise	55.8	22.4	-33.4	58.5	45.2	-13.3
Crop	7.8	11.2	3.4	5.2	6.5	1.3
Livestock	2.0	5.1	3.1	10.6	2.0	-8.6
Rental	0.5	1.2	0.7	0.0	0.4	0.3

$\Delta\%p$... *Percentage point change*

Findings 2

- ✓ *Extremely high income inequality, higher for rural than urban, slight decline(2010-2015). (Table 4)*
- ✓ *Increase in poverty in rural and urban and more pronounced in rural. (Table 4)*
- ✓ *More households transited into poverty than to non poverty and more pronounced in rural than urban(T.5)*

**Table 4 INEQUALITY AND POVERTY INDICATORS & CHANGE,
2010 - 2015**

	RURAL			URBAN		
	2010	2015	$\Delta\%p$	2010	2015	$\Delta\%p$
p90/p10	42.1	59.4	17.3	88.9	58.2	-30.7
p90/p50	5.7	6.9	1.2	5.1	5.5	0.3
p10/p50	0.1	0.1	-0.02	0.1	0.1	0.04
p75/p25	5.5	8.1	2.5	6.2	7.3	1.1
Gini	0.9	0.7	-0.2	0.9	0.8	-0.1
A(0.5)	0.7	0.4	-0.3	0.8	0.5	-0.2
A(1)	0.9	0.7	-0.2	0.9	0.8	-0.1
A(2)	1	0.97	-0.02	1	0.98	-0.02
PI (%)	56.8	80.4	23.6	52.2	65.0	12.8
PG(%)	35.9	62.0	26.1	36.2	47.1	10.8
PS(%)	28.0	53.0	25	30.3	39.96	9.6

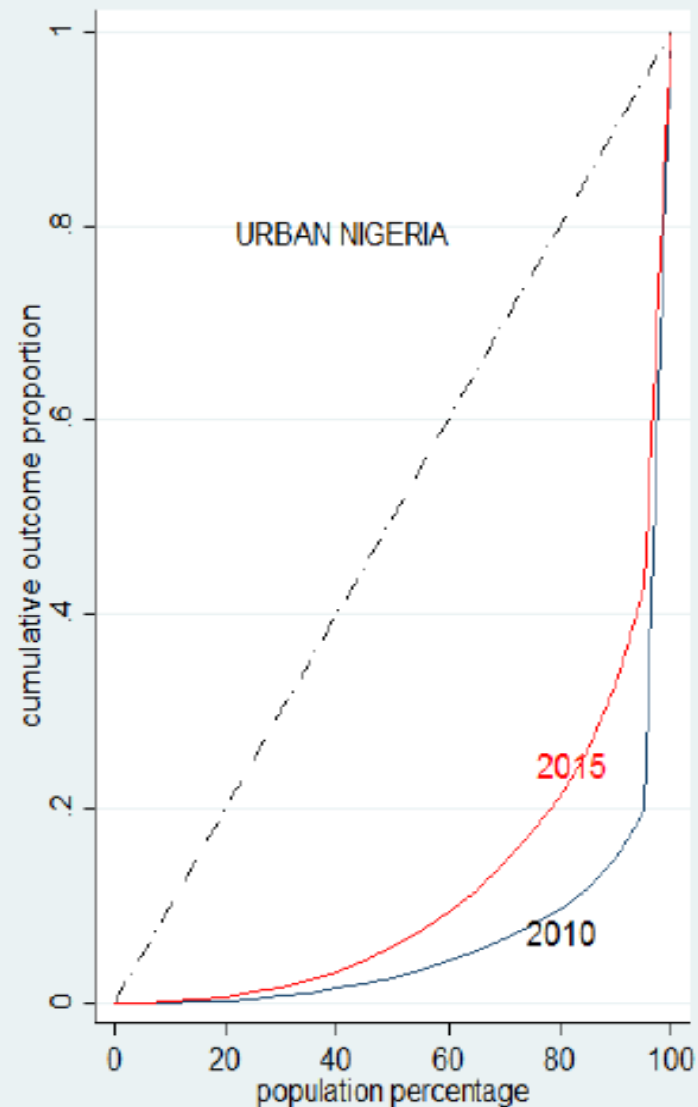
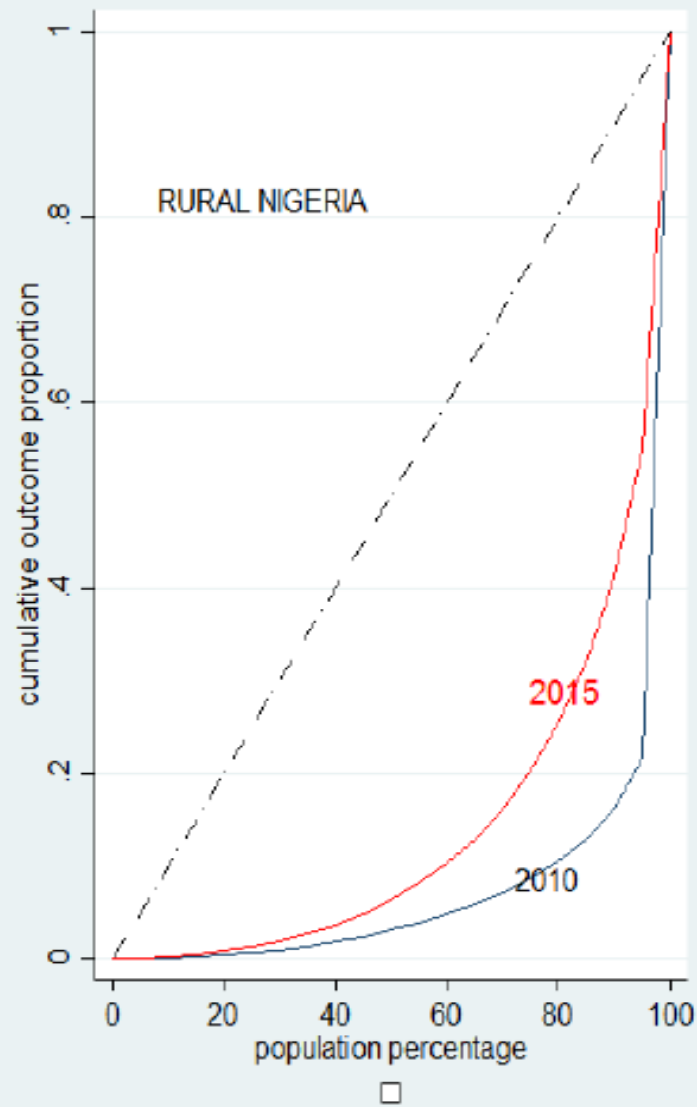


Figure 1: Rural and Urban Lorenz Curves, 2010 and 2015.

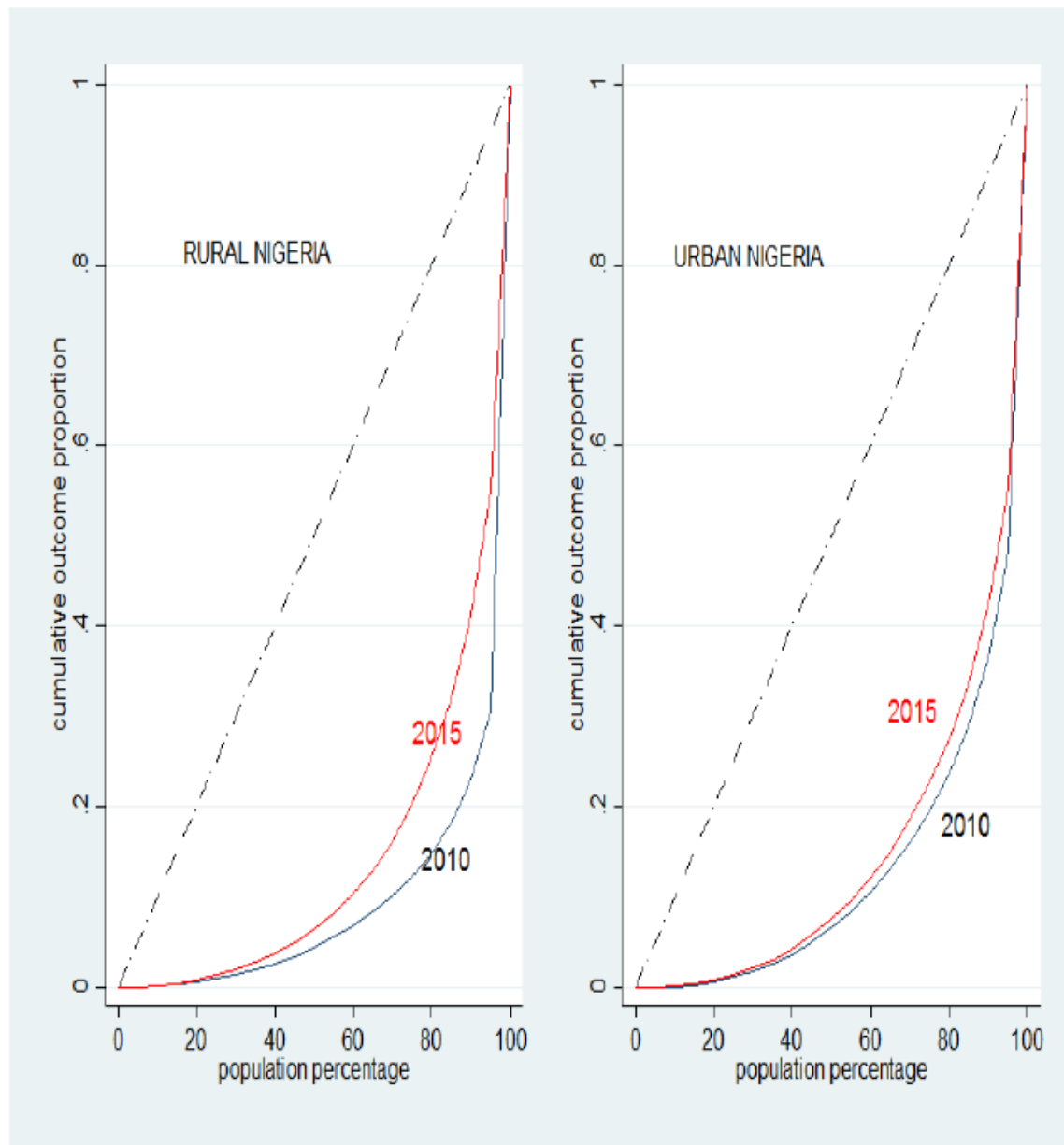


Figure 2: Rural and Urban Lorenz Curves, 2010 and 2015 When income is less than 50,000,000 naira.

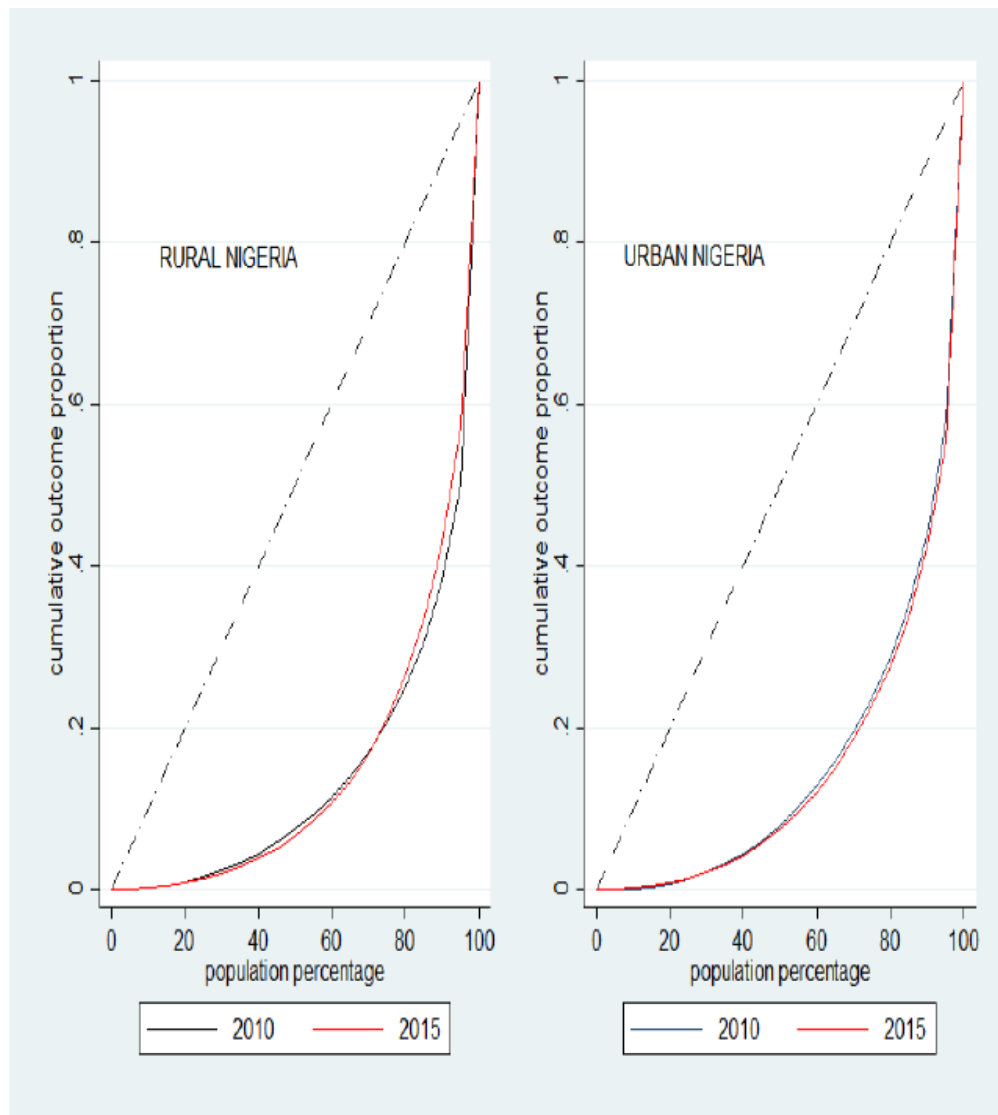


Figure 3: Rural and Urban Lorenz Curves, 2010 and 2015 When income is less than 10,000,000 naira.



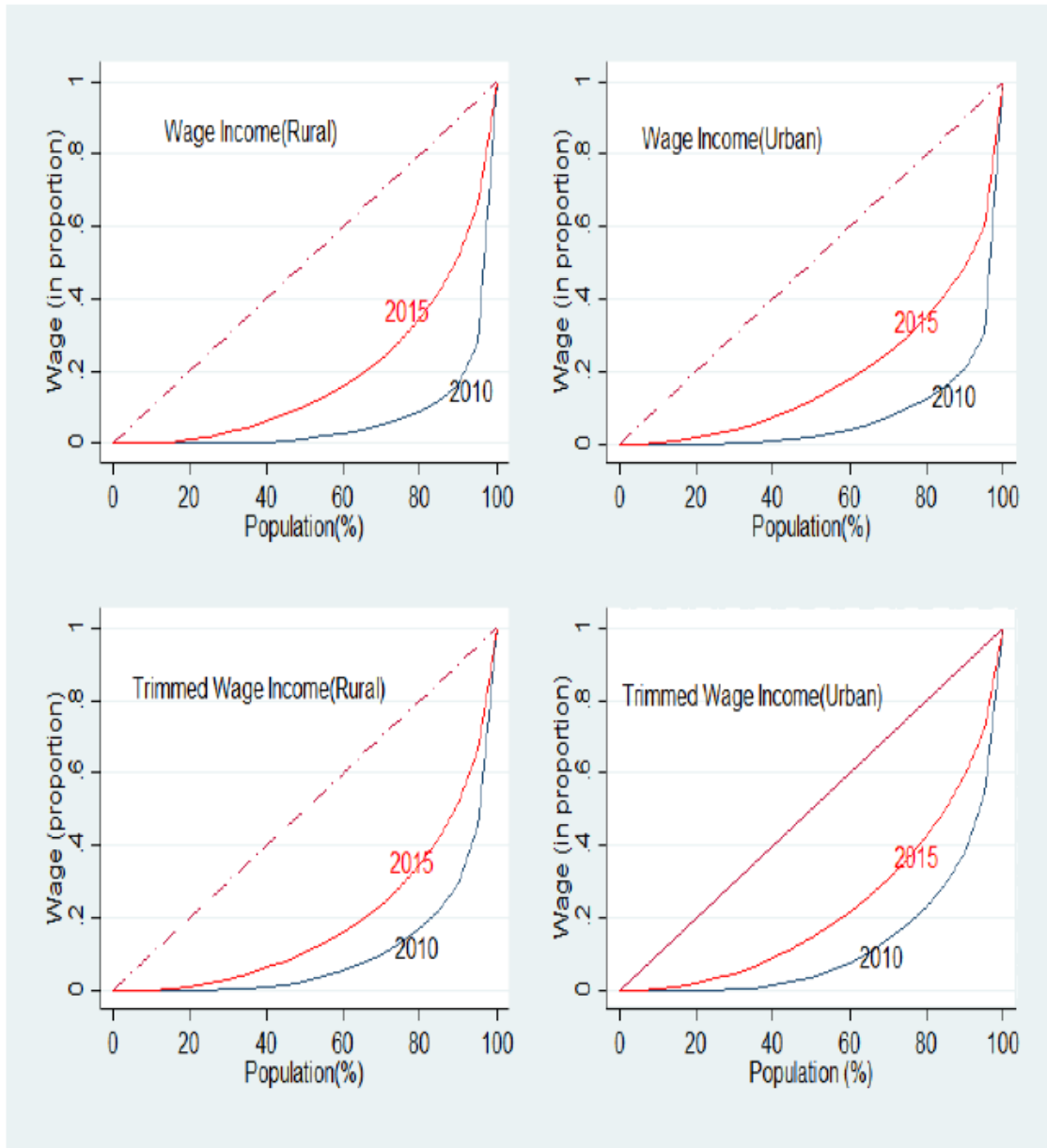


Figure 4: Rural and Urban Lorenz Curves, Wage Income, 2010 and 2015.



Table 5. HOUSEHOLD POVERTY TRANSITION ACROSS LOCATIONS, 2010 -2015

	P-P%	P-N%	N-P%	N-N%
Rural	49.76	6.81	32.26	11.17
Urban	41.81	10	24.4	23.79
North central	44.69	5.66	34.9	14.76
North east	56.03	2.93	34.14	6.9
North west	54.49	5.15	32.93	7.43
South east	54.64	7.83	26.23	11.3
South south	39.27	13.25	24.92	22.56
South west	32.99	12.59	25.68	28.74
National	47.48	7.72	30.01	14.78

P-P=Poor to poor, **P-N=**Poor to Non-poor, **N-P=**Non poor to poor, **N-N=**Non poor to Non poor

Findings 3

- ✓ *Level of heterogeneity across sectors and time. Schooling(-), cultivated land(-) do vigorous activity(-) significantly correlates with poverty. (Table 7a – 7d)*
- ✓ *Variables more likely to predict transitioning into poverty: shocks -suffered illness, departure of income earning member, theft of crops / cash.*
- ✓ *Less likely variables: cultivated land(-) cultivated land , govt school availability, market and police station, number of agri cooperative (Urban) (Table 8a – 8c)*



Table 6. Nature of variables used

Variable	Nature	Mean
Variables	Nature	Mean
Poverty incidence(proportion)	dummy	0.66
Poor to Not poor(proportion)	dummy	0.08
Not poor to poor(proportion)	dummy	0.30
Years of schooling	Continuous	6.57
Cultivated land(proportion)	dummy	0.68
Age in years	Continuous	51.67
Age squared	Continuous	2892.94
Household size	Continuous	6.57
Population density	Continuous	339.06
Pocket spending on medication(Prop)	dummy	0.59
Do vigorous activity (proportion)	dummy	0.82
Suffered illness.injury (proportion)	dummy	0.59
Able to walk over 100m(proportion)	dummy	0.91
Death of remittances sender(prop)	dummy	0.03
Loss of an important contact(prop)	dummy	0.02
Job loss(proportion)	dummy	0.01
Departure of income earning member	dummy	0.00
Theft of crops/livestock/cash	dummy	0.03
Poor rain/harvest failure	dummy	0.04
Loss of land	dummy	0.00
Fall in the price of output	dummy	0.01
Increase in the price of food items	dummy	0.10

Table 6. Nature of variables used (Cont)

Variable	Nature	Mean
Govt sec school availalblity	dummy	0.30
Public hospital availalblity	dummy	0.16
Internet café availability	dummy	0.18
Health centre availability	dummy	0.57
Primary health clinic availability	dummy	0.26
Bank availalblity	dummy	0.32
Micro finanace availability	dummy	0.46
Police station availability	dummy	0.25
Commercial centre availablity	dummy	0.41
Market availability	dummy	0.38
Number of Agri. Cooperative	Coninuous	0.81
Number of youth groups	Coninuous	2.24
Number of women groups	Coninuous	2.15
Number of NGO	Coninuous	0.08
Number of cultural groups	Coninuous	1.34
Number of Vigilante groups	Coninuous	0.93

Table 7a.**CORRELATES OF POVERTY INCIDENCE**

	(2010)	(2010)	(2015)	(2015)
	RURAL	URBAN	RURAL	URBAN
	dfdx/se	dfdx/se	dfdx/se	dfdx/se
Years of schooling	-0.011*** (0.003)	-0.026*** (0.004)	-0.012*** (0.002)	-0.031*** (0.003)
Cultivated land	-0.211*** (0.032)	-0.234*** (0.051)	-0.041* (0.021)	
Age	-0.014** (0.005)			-0.026*** (0.009)
Age squared	0.000** (0.000)			0.000*** (0.000)
Household size	0.022*** (0.005)	0.015* (0.009)	0.008*** (0.003)	0.018*** (0.006)
N	2086	737	2854	1139

Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

**Table 7b CORRELATES OF POVERTY INCIDENCE (CONT.)
(SHOCK & INFRASTRUCTUREVARIABLES)**

	(2010) RURAL dfdx/se	(2010) URBAN dfdx/se	(2015) RURAL dfdx/se	(2015) URBAN dfdx/se
Do vigorous activity	-0.111*** (0.037)	-0.217*** (0.065)	-0.039* (0.022)	-0.099** (0.048)
Death of remittances sender	0.105* (0.060)			
Loss of job	0.225* (0.096)			
Poor rain/harvest failure			0.101** (0.031)	
Population Density	0.000** (0.000)	0.000* (0.000)	0.000* (0.000)	
Gov Sec Sch. availability			-0.056* (0.033)	-0.128* (0.079)
Health centre availability	-0.088*** (0.030)			
Pri.clinic availability				0.111** (0.046)
Police station availability			-0.208*** (0.049)	
Community centre availability	-0.075** (0.031)			-0.083* (0.043)

Table 7c CORRELATES OF POVERTY INCIDENCE (CONT.)

	(2010) RURAL dfdx/se	(2010) URBAN dfdx/se	(2015) RURAL dfdx/se	(2015) URBAN dfdx/se
Num. Agri cooperative	0.039*** (0.001)			0.034*** (0.010)
Num.youth group	0.017* (0.010)			
Num women group			0.004** (0.002)	
Num. NGO	-0.092** (0.038)			
Num. cultural groups	-0.012* (0.007)			
Num.Vigilante groups		0.033* (0.020)		0.025*** (0.010)

Table 7d. CORRELATES OF POVERTY (CONT.)

	(2010) RURAL dfdx/se	(2010) URBAN dfdx/se	(2015) RURAL dfdx/se	(2015) URBAN dfdx/se
North east region		0.174* (0.090)	0.082*** (0.024)	
North west region			0.063** (0.024)	-0.139* (0.080)
South east region	0.168*** (0.046)		0.060** (0.023)	
South south region			-0.107*** (0.035)	-0.219*** (0.075)
South west region	-0.208*** (0.068)		-0.256*** (0.053)	-0.132** (0.058)
_cons	***	***	***	***
r2				
N	2086	737	2854	1139

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 8a. CORRELATES OF POVERTY TRANSITION

	(1)	(2)
	Rural	Urban
	b/se	b/se
Cultivated land	-0.094*** (0.033)	-0.107** (0.050)
Household size	0.041*** (0.008)	
Suffered illness/injury	0.221*** (0.022)	
Able to walk over 100m		-0.105* (0.060)
Departure of income earning member	0.402** (0.175)	
Theft of crops/livestock/cash	0.118** (0.052)	
r ²		0.356
N		4582
		1714

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 8b. CORRELATES OF POVERTY TRANSITION(CONT.)

	(1) Rural b/se	(2) Urban b/se
Theft of crops/livestock/cash	0.118** (0.052)	
Gov Sec Sch availability		-0.178*** (0.038)
Public hospital availability	0.068** (0.027)	0.103** (0.042)
Internet cafe availability		0.094*** (0.034)
Police station availability	-0.085*** (0.029)	
Market availability	-0.051** (0.025)	-0.066* (0.034)

Table 8c. CORRELATES OF POVERTY TRANSITION(CONT,)

	(1) Rural b/se	(2) Urban b/se
Community health availability	0.008** (0.004)	
Num.Agri.cooperative	0.011** (0.005)	-0.017*** (0.006)
Num.women groups	-0.010*** (0.003)	
Num.disabled Assciations		0.133*** (0.037)
_cons	0.350** (0.168)	0.363 (0.325)
r2	0.356	0.313
N	4582	1714

Summary

- ✓ The study investigated income distribution dynamics in rural and urban sector using panel data set upon which both descriptive and econometric analysis were applied to address the specific objectives
- ✓ A fall in rural income four times higher than urban. A rise in Poverty incidence, Poverty gap and Poverty severity. A fall in inequality, rural and urban areas.



Summary(Cont,)

- ✓ *Level of heterogeneity across sectors and time in the variables correlating with poverty and poverty transitioning .*
- ✓ *Variables more likely to predict transitioning into poverty include: shocks*
- ✓ *Variables Less likely include cultivated land cultivated land , gouv school availability, market and police station, number of agri cooperative (Urban)*



Limitations

- ✓ The results are still preliminary and further examination of factors leading to income changes is necessary.
- ✓ Limitations are linked with our use of income versus expenditure
- ✓ In 2010, a number of income sources were not listed in the administered questionnaire and had to be dropped from the 2015 data for consistency.
- ✓ Hence our measure of income for the household is on average lower than actual income.

- ✓ Inability to make causal inference since probit analysis provides correlates for poverty.

Further studies

- ✓ To focus on the challenges in putting together the expenditure data. This will allow us to compare expenditure and income estimates of poverty and inequality.
- ✓ To use a simulation approach of decomposing the full income distribution changes over the 2010-2015 period to get at the drivers of change.



THANK YOU



Appendix 1. CORRELATES OF POVERTY INCIDENCE

	(2010) RURAL dfdx/se	(2010) URBAN dfdx/se	(2015) RURAL dfdx/se	(2015) URBAN dfdx/se
Years of schooling	-0.011*** (0.007)	-0.026*** (0.011)	-0.012*** (0.007)	-0.031*** (0.010)
Cultivated land	-0.211*** (0.096)	-0.234*** (0.135)	-0.041* (0.097)	-0.023 (0.118)
Age	-0.014** (0.014)	-0.010 (0.021)	-0.005 (0.015)	-0.026*** (0.026)
Age squared	0.000** (0.000)	0.000 (0.000)	0.000 (0.000)	0.000*** (0.000)
Household size	0.022*** (0.012)	0.015* (0.022)	0.008*** (0.011)	0.018*** (0.018)
Population density	0.000** (0.000)	0.000* (0.000)	0.000* (0.000)	0.000 (0.000)
Pocket spending on medication	0.041 (0.068)	0.041 (0.114)	-0.023 (0.073)	0.020 (0.111)
Do vigorous activity	-0.111*** (0.101)	-0.217*** (0.186)	-0.039* (0.101)	-0.099** (0.148)
N	2086	737	2854	1139

Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

**Apend.2 CORRELATES OF POVERTY INCIDENCE (CONT.)
(SHOCK VARIALBES)**

	(2010) RURAL dfdx/se	(2010) URBAN dfdx/se	(2015) RURAL dfdx/se	(2015) URBAN dfdx/se
Death of remittance sender	0.105*	-0.015	0.039	-0.069
	(0.164)	(0.321)	(0.282)	(0.349)
Loss of important contact	-0.176**	-0.157	-0.045	0.173
	(0.222)	(0.422)	(0.274)	(0.415)
Loss of job	0.225*	0.074	0.108	0.130
	(0.335)	(0.414)	(0.423)	(0.430)
Poor rain/harvest failure	-0.002	-0.003	0.101**	
	(0.147)	(0.528)	(0.236)	
Fall in output price	-0.219**	-0.046	0.070	-0.254
	(0.270)	(0.531)	(0.329)	(0.884)
N	2086	737	2854	1139

Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

**Append3 CORRELATES OF POVERTY INCIDENCE (CONT.)
(COMMUNITY INFRASTRUCTURE VARIALBES)**

	(2010) RURAL dfdx/se	(2010) URBAN dfdx/se	(2015) RURAL dfdx/se	(2015) URBAN dfdx/se
Gov sec sch.availability	-0.008 (0.081)	-0.007 (0.163)	-0.056* (0.114)	-0.128* (0.202)
Health centre availability	-0.088*** (0.076)	0.019 (0.150)	-0.005 (0.077)	-0.044 (0.121)
Pri.clinic availability	-0.020 (0.102)	-0.053 (0.132)	0.003 (0.107)	0.111** (0.134)
Bank availability	-0.076 (0.168)	-0.112 (0.208)	0.001 (0.075)	0.014 (0.111)
Micro finance availability	0.045 (0.173)	0.128 (0.210)	-0.011 (0.086)	-0.052 (0.202)
Police station availability	-0.007 (0.094)	-0.059 (0.151)	-0.208*** (0.136)	-0.061 (0.110)
Community centre availability	-0.075** (0.078)	0.017 (0.148)	0.029 (0.086)	-0.083* (0.125)

**Apend 4. CORRELATES OF POVERTY INCIDENCE (CONT.)
SOCIAL CAPITAL VARIALBES**

	(2010) RURAL dfdx/se	(2010) URBAN dfdx/se	(2015) RURAL dfdx/se	(2015) URBAN dfdx/se
Num. Agri.cooperative	0.039*** (0.010)	0.004 (0.140)	-0.000 (0.000)	0.034*** (0.140)
Num.Youth groups	0.017* (0.020)	-0.011 (0.014)	0.001 (0.016)	0.001 (0.032)
Num.women groups	-0.006 (0.025)	0.010 (0.019)	0.004** (0.005)	-0.004 (0.007)
Num NGO	-0.092** (0.012)	0.006 (0.021)	0.023 (0.008)	0.032 (0.011)
Num cultural group	-0.012* (0.096)	-0.008 (0.070)	-0.003 (0.115)	-0.002 (0.151)
Num.Vigilante groups	0.003 (0.017)	0.033* (0.040)	0.005 (0.010)	0.025*** (0.009)
	(0.031)	(0.050)	(0.014)	(0.027)

**Append5. CORRELATES OF POVERTY INCIDENCE (CONT.)
REGIONAL VARIABES**

North east region	0.066 (0.129)	0.174* (0.253)	0.082*** (0.133)	0.026 (0.252)
North west region	0.047 (0.115)	-0.019 (0.218)	0.063** (0.114)	-0.139* (0.205)
South east region	0.168*** (0.130)	-0.157 (0.274)	0.060** (0.115)	-0.119 (0.224)
South south region	0.004 (0.138)	-0.102 (0.214)	-0.107*** (0.115)	-0.219*** (0.193)
South west region	-0.208*** (0.178)	-0.083 (0.215)	-0.256*** (0.140)	-0.132** (0.162)
_cons	*** (0.358)	*** (0.600)	*** (0.426)	*** (0.694)
N	2086	737	2854	1139

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Append6. CORRELATES OF POVERTY TRANSITION

	(1) Rural b/se	(2) Urban b/se
Years of schooling	-0.001 (0.003)	-0.007 (0.004)
Cultivated land	-0.095*** (0.033)	-0.110** (0.050)
Age	-0.004 (0.006)	0.001 (0.009)
Age squared	0.000 (0.000)	-0.000 (0.000)
Household size	0.041*** (0.008)	0.019* (0.011)
Population Density	0.000 (0.000)	0.001 (0.000)
Suffered illness/injury	0.222*** (0.022)	0.037 (0.040)
Able to walk over 100m	0.024 (0.037)	-0.100* (0.059)
r ²	0.355	0.307
N	4582	1718

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

**Append7. CORRELATES OF POVERTY TRANSITION(CONT.)
SHOCK VARIABLES**

	(1) Rural b/se	(2) Urban b/se
Loss of important contact	-0.166** (0.068)	-0.038 (0.104)
Departure of income earning member	0.406** (0.175)	-0.042 (0.103)
Theft of crops/cash/livestock	0.119** (0.052)	0.131 (0.139)
Poor rain/harvest failure	-0.056 (0.042)	0.095 (0.108)
Loss of land	-0.123 (0.123)	-0.332* (0.191)
Increase in the price of major food items	0.035 (0.033)	-0.139*** (0.043)
Gov sec sch availability	-0.016	-0.182***

Append 8 CONT.

Gov sec sch availability	-0.016 (0.024)	-0.182*** (0.037)
Public hospital availability	0.068** (0.027)	0.106** (0.042)
Internet cafe availability	-0.014 (0.034)	0.075** (0.034)
Micro finance availability	0.032 (0.024)	0.038 (0.034)
Police station availability	-0.085*** (0.029)	-0.027 (0.030)
Market availability	-0.051** (0.025)	-0.069** (0.034)
Num.Agri.cooperative	0.011** (0.005)	-0.017*** (0.005)
Num.women group	-0.010*** (0.003)	0.002 (0.003)
Community health availability	0.008** (0.004)	-0.012 (0.030)
Num. NGO	-0.019 (0.032)	-0.030 (0.022)
Num.disabled Association	0.009 (0.018)	0.130*** (0.037)
_cons	0.351** (0.168)	0.458 (0.313)
r2	0.355	0.307
N	4582	1718