Income diversification patterns in rural Sub-Saharan Africa: Reassessing the evidence

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AGRICULTURE
IN AFRICA
TELLING FACTS
FROM MYTHS

The process of structural transformation

- Agriculture as share of GDP declines as GDP grows
  - In rural areas, implies shrinking agricultural sector and expanding rural nonfarm (RNF) activities, as well as a changing definition of rural itself
- RNF and agriculture linked through investment, production, consumption
- Where is Sub Saharan Africa along the process of structural transformation?
  - Much debate
  - Focus on rural space

Diversification and RNF literature: conventional wisdom

- Large rural non-farm (or off-farm) sector (though estimates vary)
- Positively related to household income and GDP
- Role of assets (education, land, infrastructure)
- Barriers to entry, dualism
  - High/low skills/returns in both agriculture and non agriculture
- Likely good for poverty reduction; mixed evidence on inequality
- But despite efforts:
  - Data issues remain (comparability, measurement issues)
  - Is there an African specificity?
  - Not much on spatial analysis

Is Africa different when it comes to rural income diversification?

- Are rural households in Africa diversifying less out of agriculture than elsewhere?
- Spatial aspects of income diversification in Africa
  - Agricultural potential
  - Distance from urban centers
  - Small vs large cities
- Implications
  - Structural change
  - Welfare
  - Approach to rural development

Countries included in the study

- *Ethiopia* (2011)
- Ghana (1992, 1998 and 2005)
- Kenya (2005)
- Madagascar (1993)
- *Malawi* (2004 and 2011)
- *Niger* (2010-11)
- *Nigeria* (2004 and 2011)
- *Tanzania* (2009)
- *Uganda* (2005-06 and 2009-10)

Builds off RIGA dataset

- Comparable income aggregates
- Recent addition of LSMS-ISA and georeferenced variables
- Comparing with earlier work

- Nepal (1996 and 2003)
- Bangladesh (2000 and 2005)
- Tajikistan (2003 and 2007)
- Pakistan (1991 and 2001)
- Nicaragua (1998, 2001 and 2005)
- Indonesia (1993 and 2000)
- Bolivia (2005)
- Guatemala (2000 and 2006)
- Albania (2002 and 2005)
- Ecuador (1995 and 1998)
- Bulgaria (1995 and 2001)
- Panama (1997 and 2003)
- Vietnam (1992, 1998 and 2002)

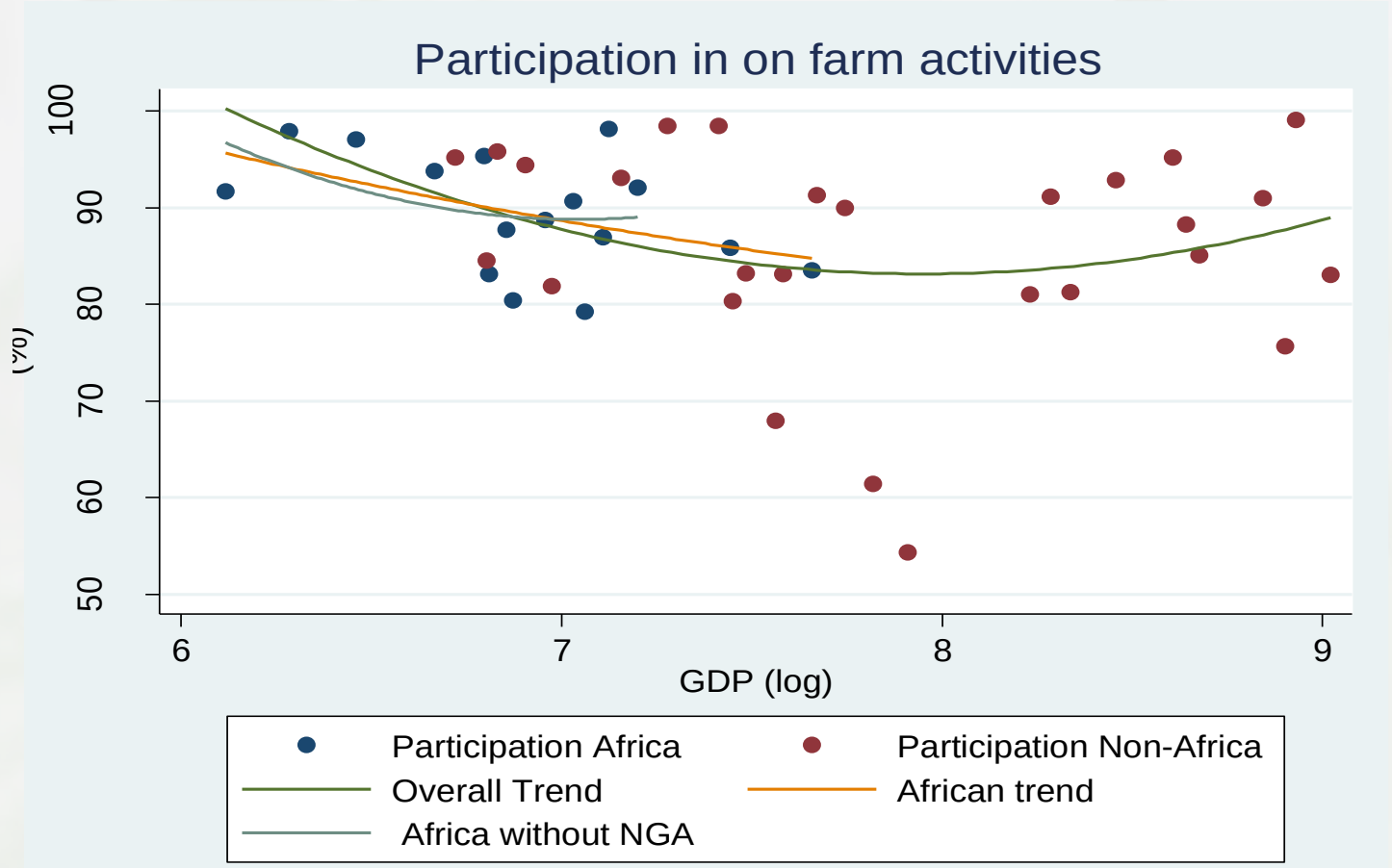
We use the following income categories

7 income categories:

1. Crop production
2. Livestock production
3. Agricultural wage employment
4. Non-agricultural wage employment
5. Non-agricultural self-employment
6. Transfer
7. Other

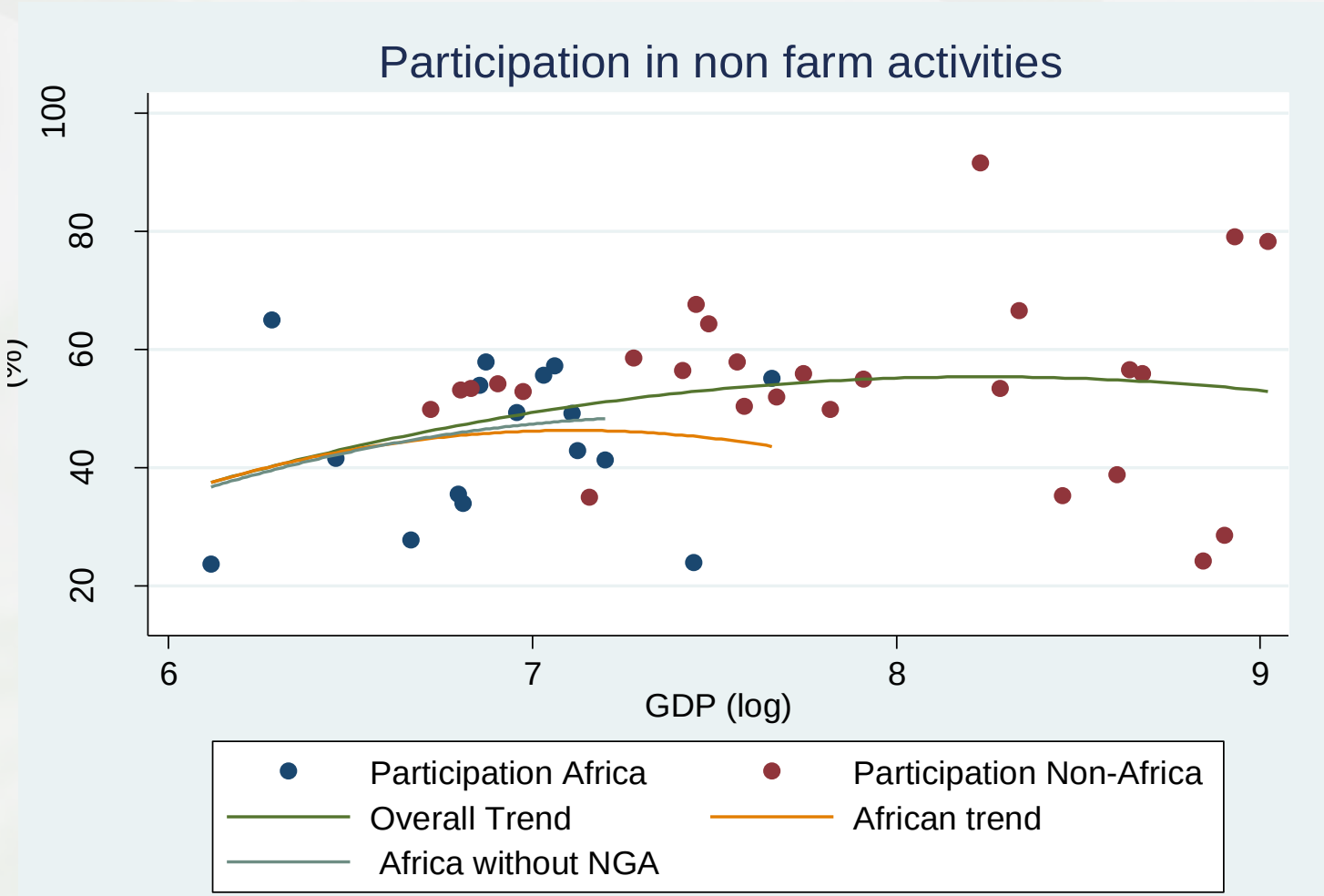
- Agricultural income
  - crop + livestock + agricultural wage
- Non agricultural income
  - non-agricultural wage + non-agricultural self + transfer + other
- On farm
  - crop + livestock
- Non farm
  - non-agricultural wage + non-agricultural self
- Off farm
  - agricultural wage + non-agricultural wage + non-agricultural self + transfers + other

Rural households in most countries have an on farm activity

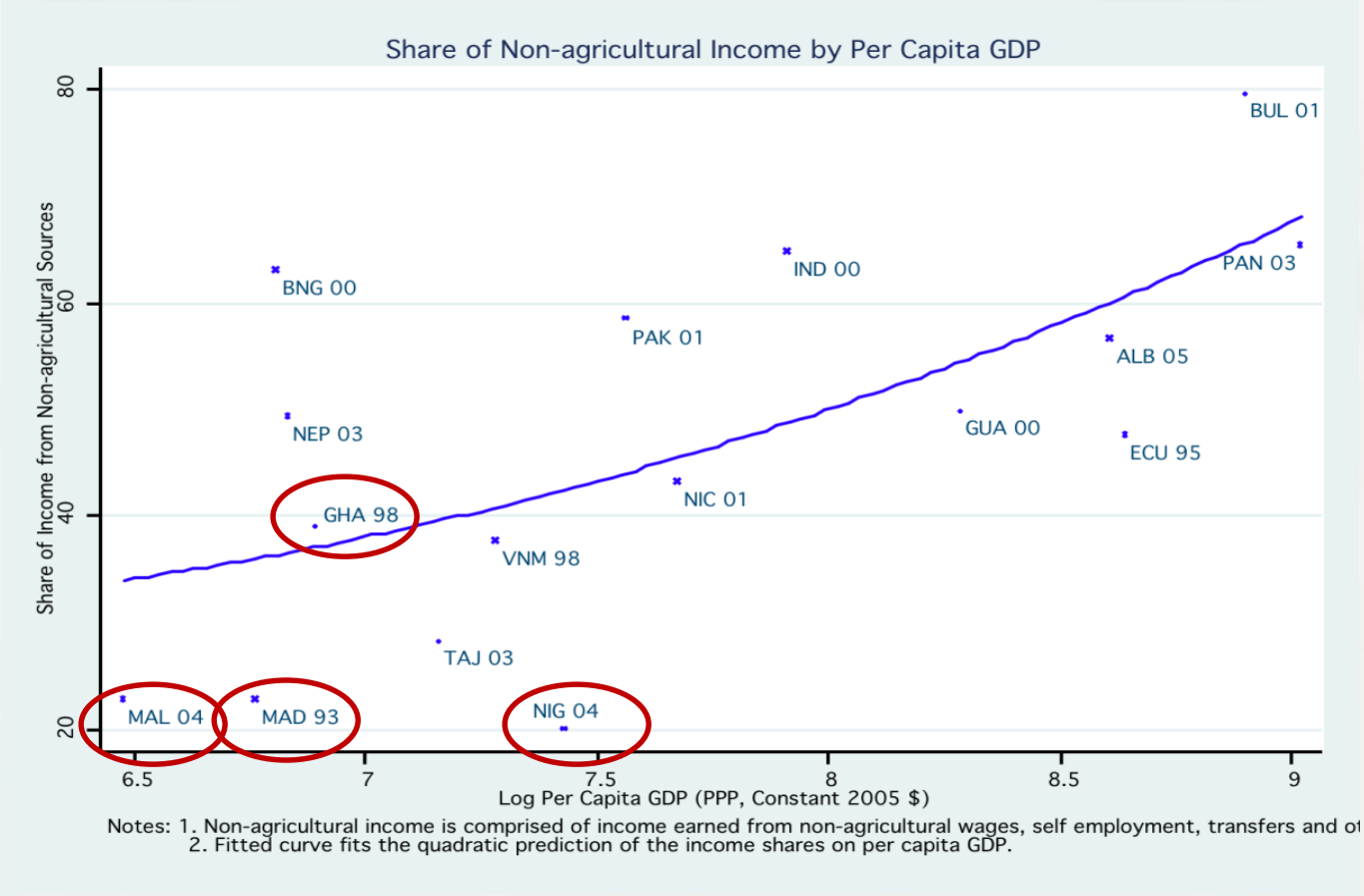


Log of 2005 PC GDP

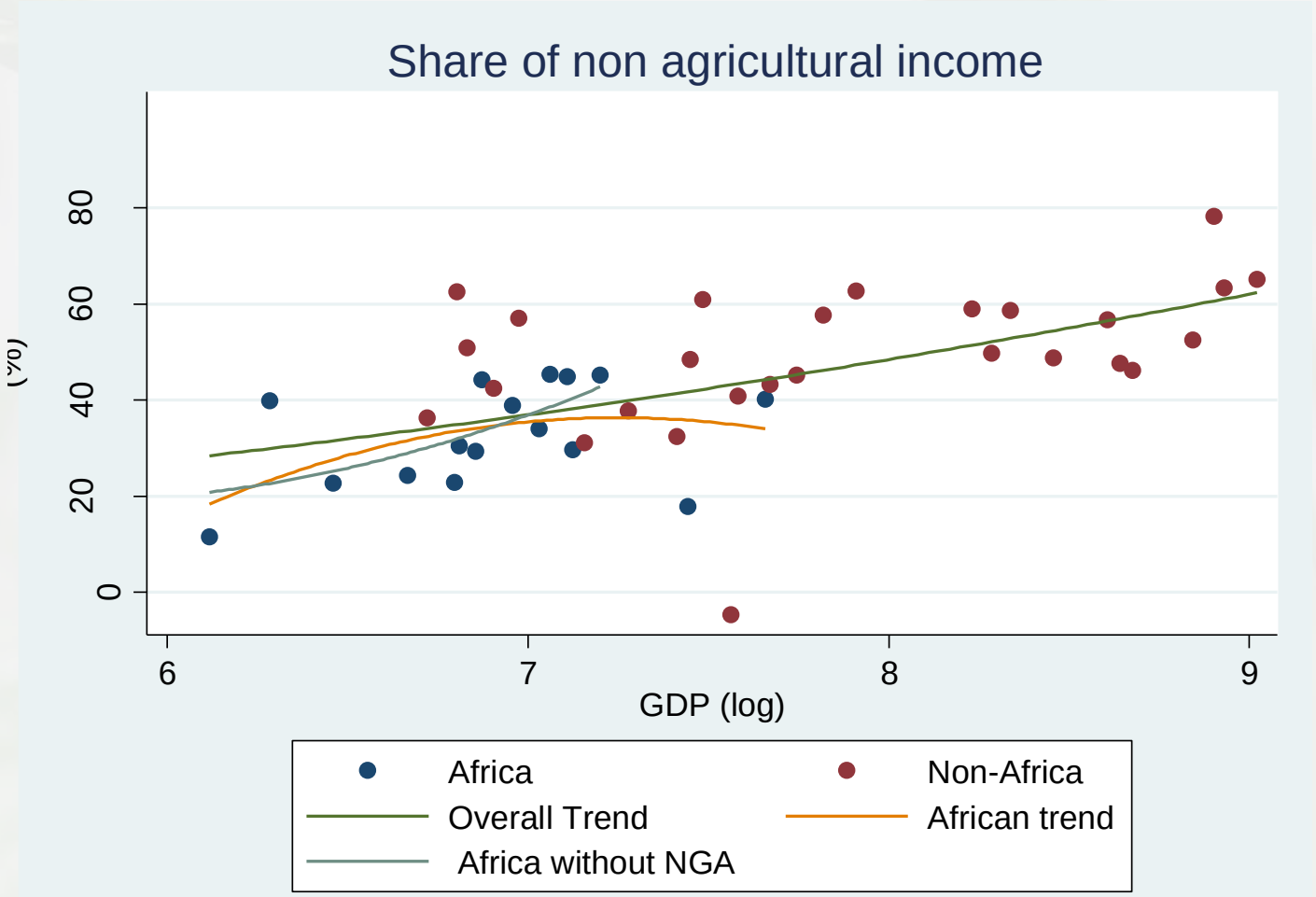
And a large share have a non farm activity (non agricultural wage and self emp)



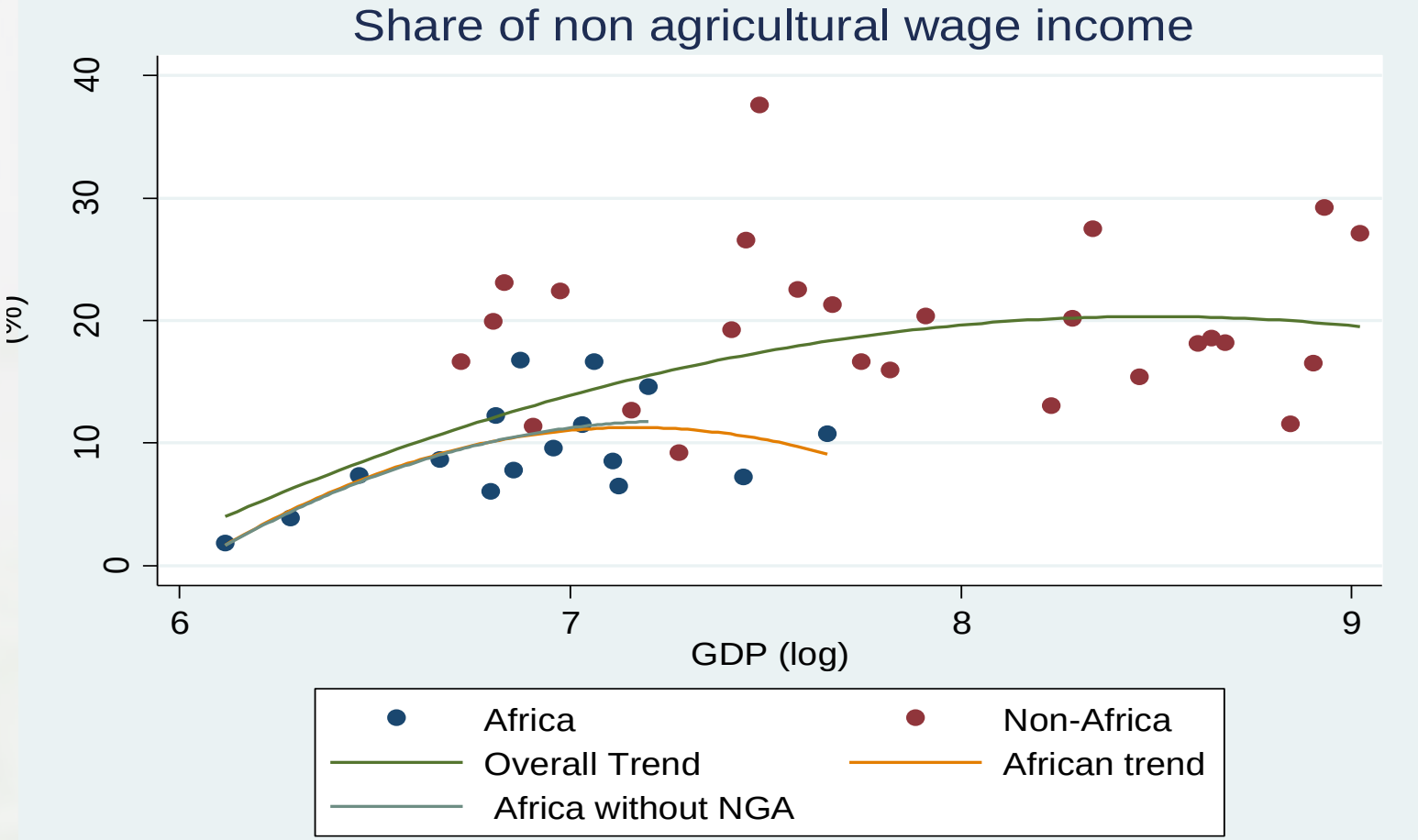
Increasing share of non agricultural income with GDP: Is Africa different?



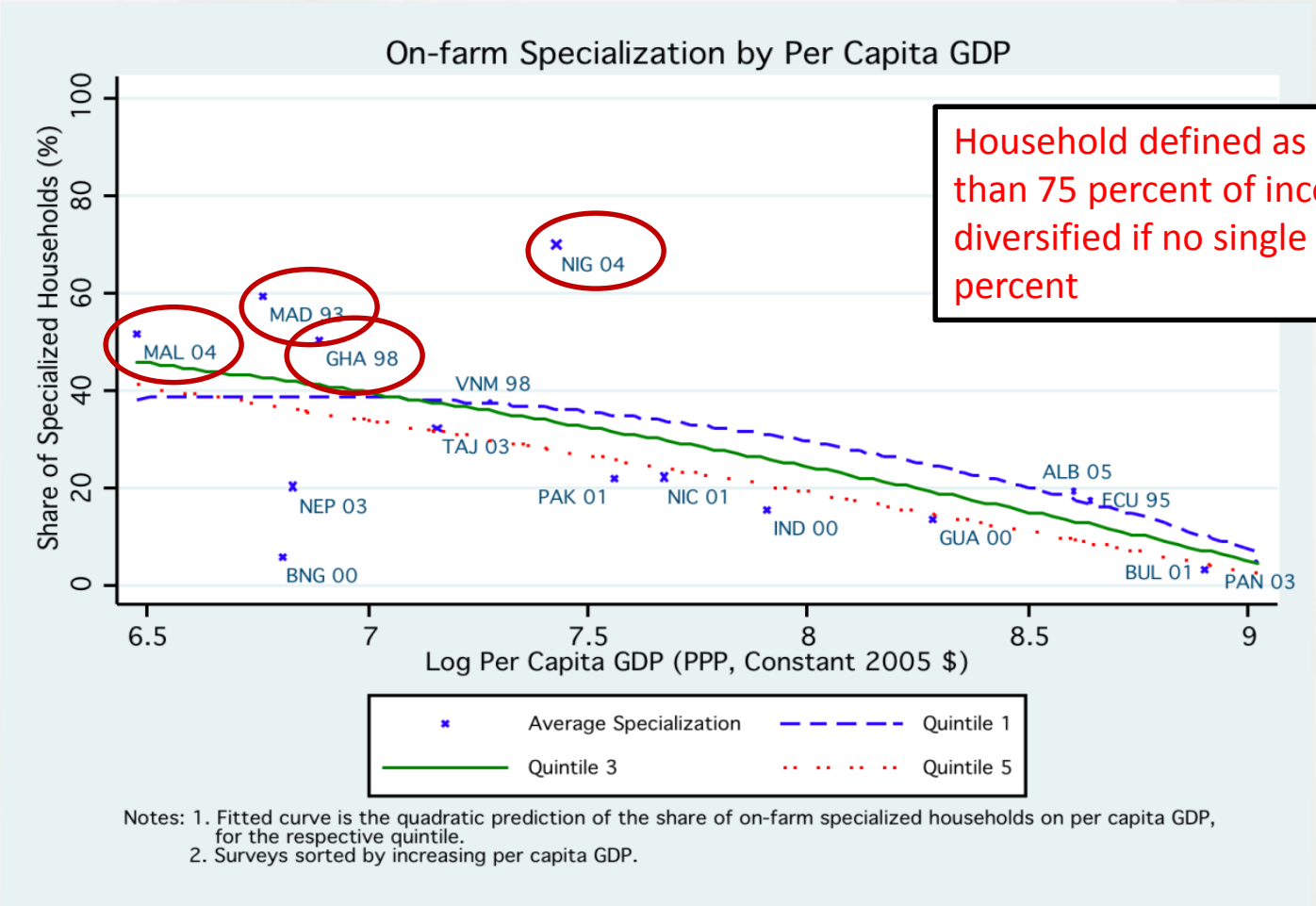
Or just still at lower levels of GDP?



Similar for non agricultural wage income— not clear if a different story



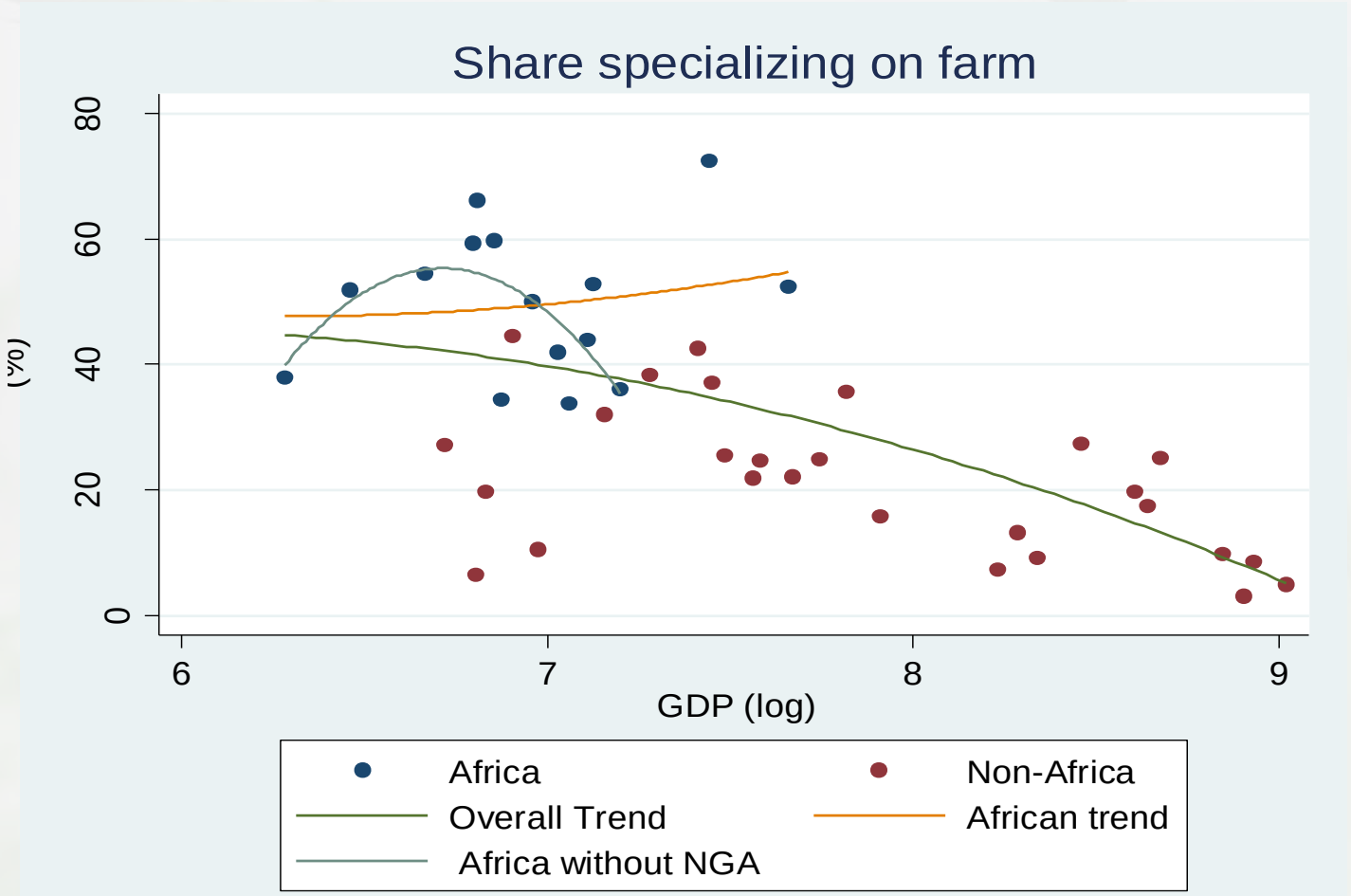
Do rural households in African have a tendency towards more on farm specialization?...



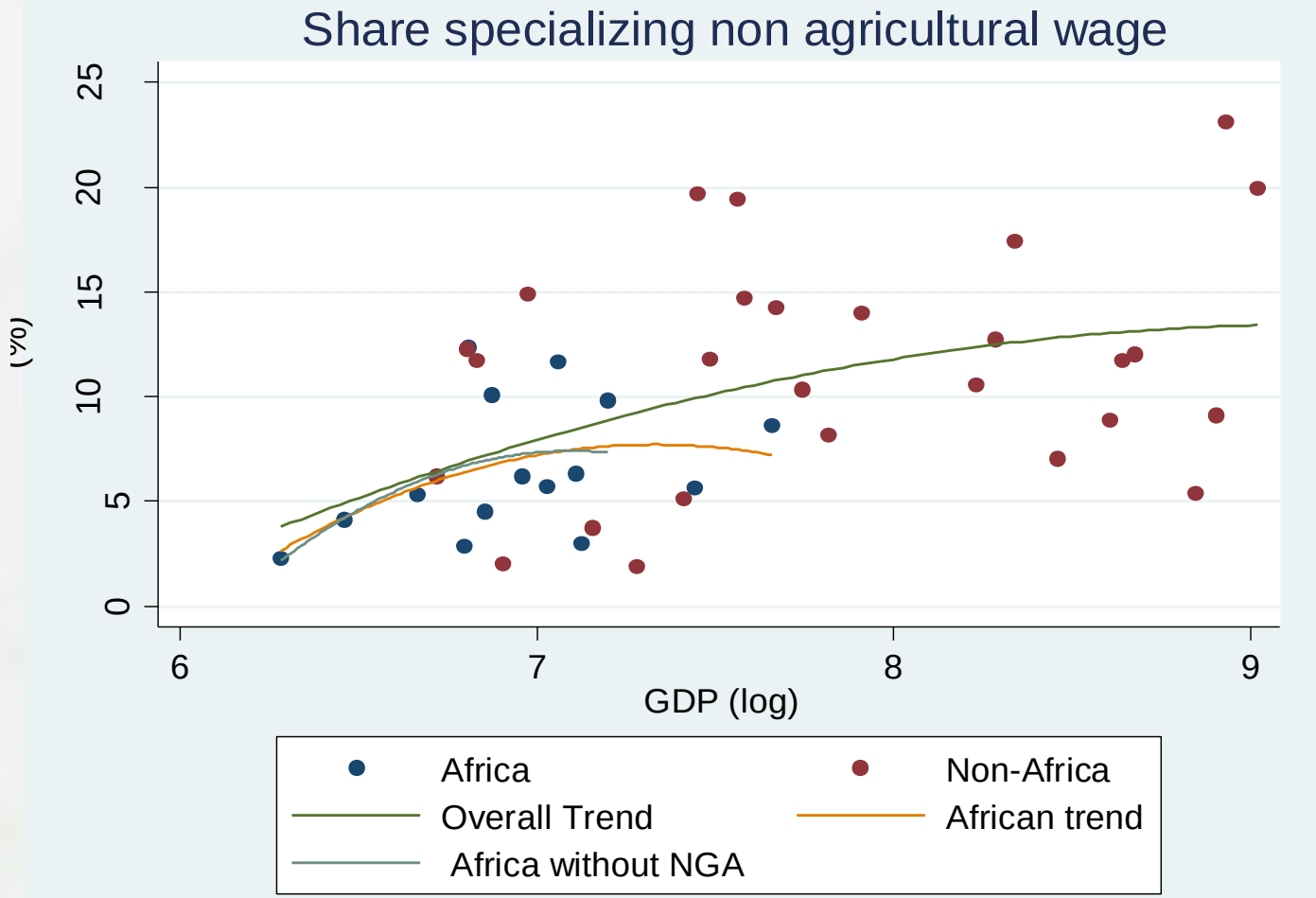
Notes: 1. Fitted curve is the quadratic prediction of the share of on-farm specialized households on per capita GDP, for the respective quintile.
2. Surveys sorted by increasing per capita GDP.

Household defined as specialized if receives more than 75 percent of income from single source and diversified if no single source is greater than 75 percent

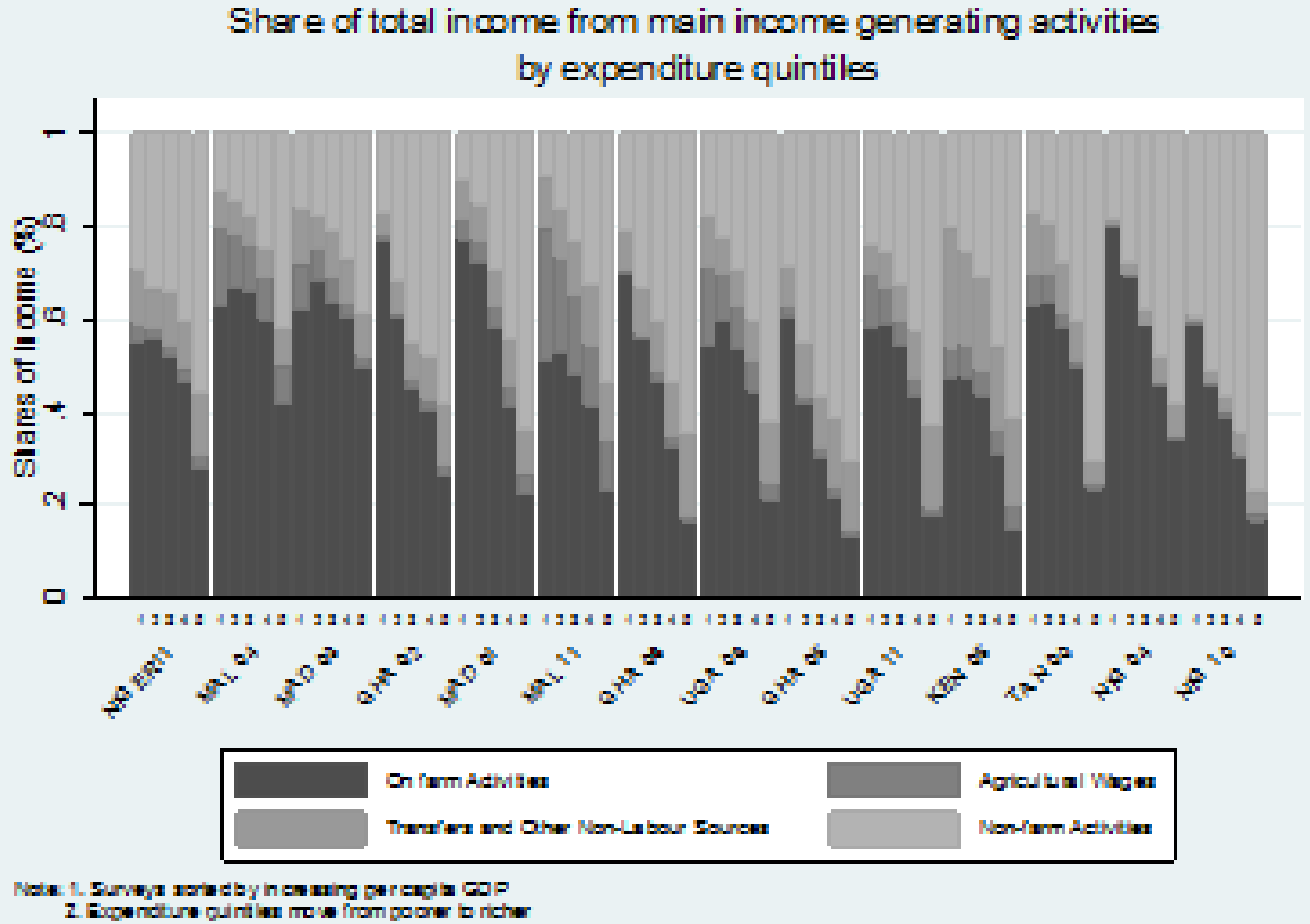
… Possibly!


Share specializing on farm
(%)
0
20
40
60
80
6
7
8
9
GDP (log)
Africa
Non-Africa
Overall Trend
African trend
Africa without NGA

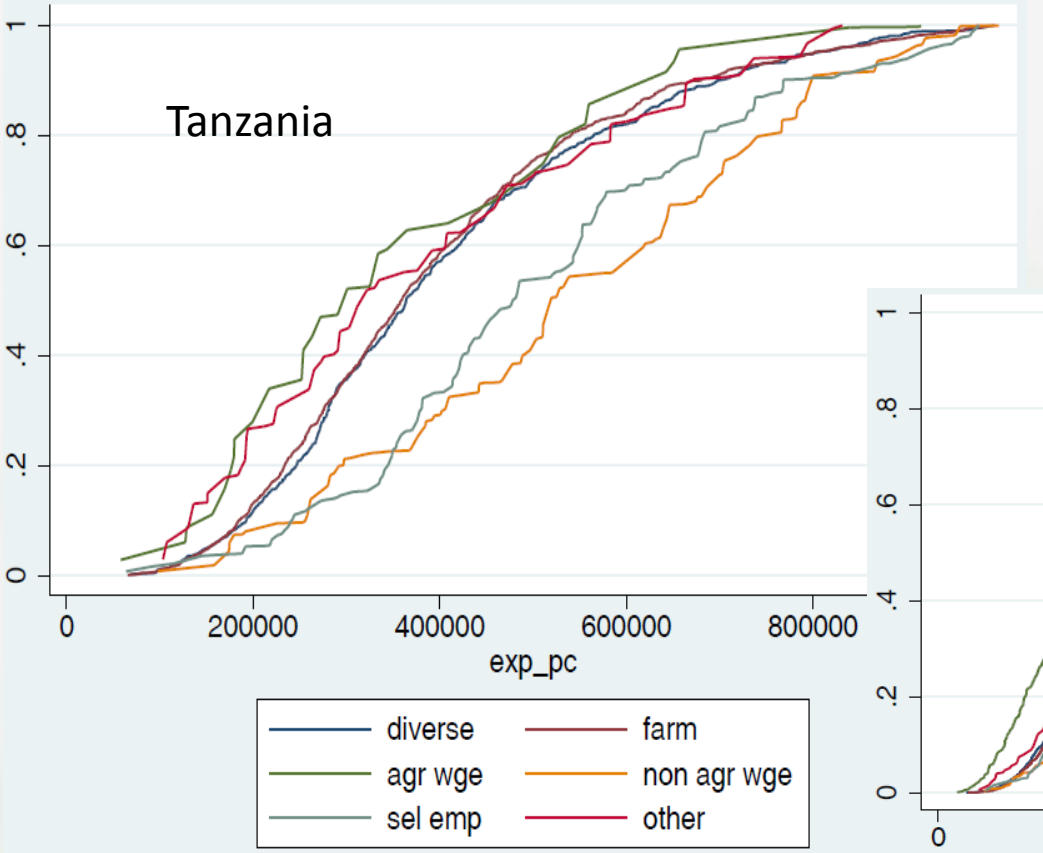
Increasing specialization in non agricultural wage income with GDP

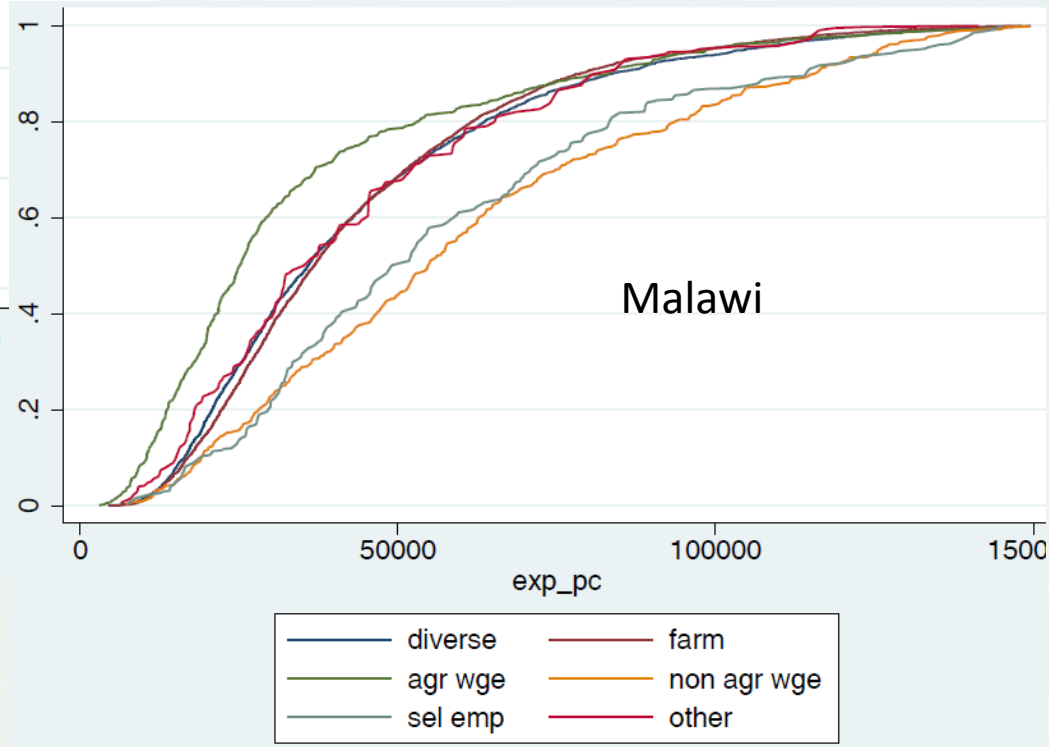


Implications for welfare: share of on farm income decreases with wealth status, and off farm income increases



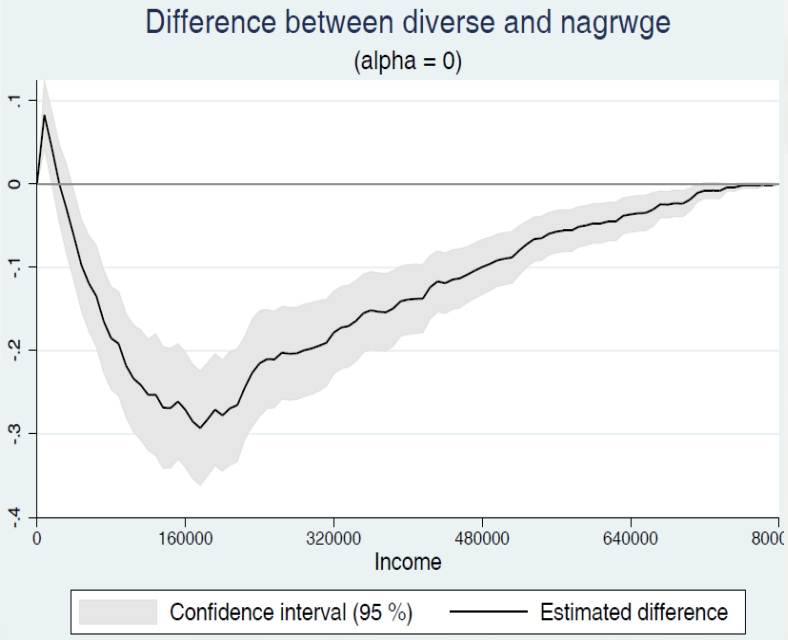
Implications for welfare: Stochastic dominance analysis for African countries

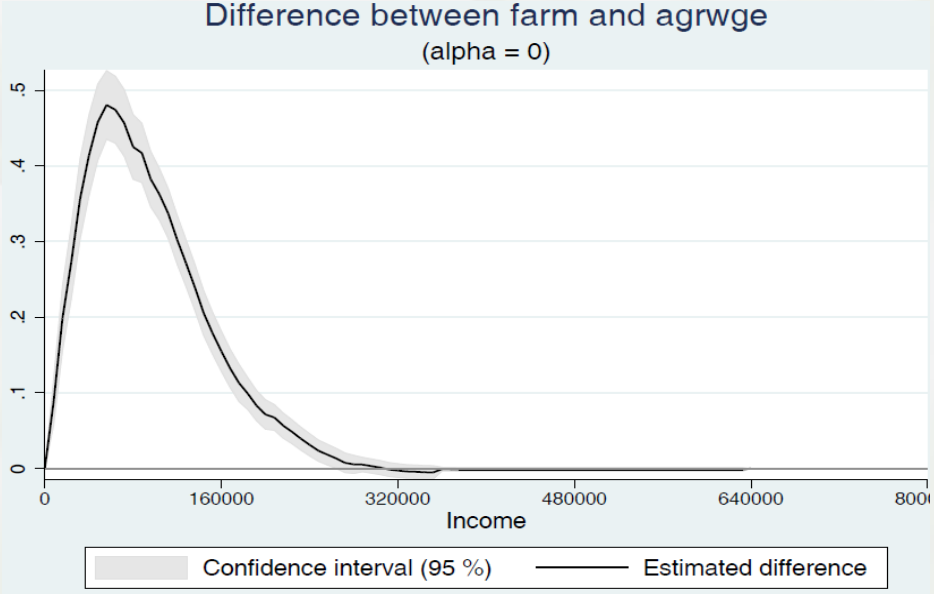




Stochastic dominance analysis: pairwise comparisons

Malawi





Non agricultural dominates agricultural specialization

	total hh income	pc exp
Malawi 2011	1. Non ag wage 2. Self employ 3. Farm—Diverse 4. Agr wage	1. Non ag wage—Self employ 2. Farm (low lev)—Diverse (high lev) 3. Ag wage
Tanzania 2009	1. Non ag wage—self employ 2. Diverse 3. Farm 4. Agr wage	1. Non ag wage—Self employ 2. Farm—Diverse 3. Ag wage
Uganda 2011	1. Non ag wage—Diverse—self employ 2. Farm 3. Agr wage	1. Non ag wage—Self employ 2. Diverse 3. Farm 4. Ag wage
Niger 2011	1. Non ag wage 2. Diverse—self employ—ag wage 3. Farm	1. Non ag wage—Self employ—Ag wage 2. Farm—Diverse

Role of space and location in terms of rural income diversification

- Farm/non farm literature
  - Backward and forward linkages between two sectors
  - Not location neutral—supply and demand not random
  - Territorial approach to rural development (incorporating spatial issues into policy)
- New economic geography
  - Geography, as opposed to institutions, explains differential outcomes
  - Mostly macro, x-country
  - Agglomeration, role of cities. etc
- Complex interaction of exogenous and endogenous factors
  - Physical location, interactions between sectors and markets, policy
  - Make it difficult to predict spatial location of economic activities
  - Interaction of location, ag potential, mediated by infrastructure, tradability, wages, etc.

Basic hypotheses on diversification and location (theory and literature)

Specialization outside of farming

Distance to cities			
Agricultural potential		Low	High
	Low	++	(?)
	High	+(?)	-

Nonlinearities, interactions complicate the picture

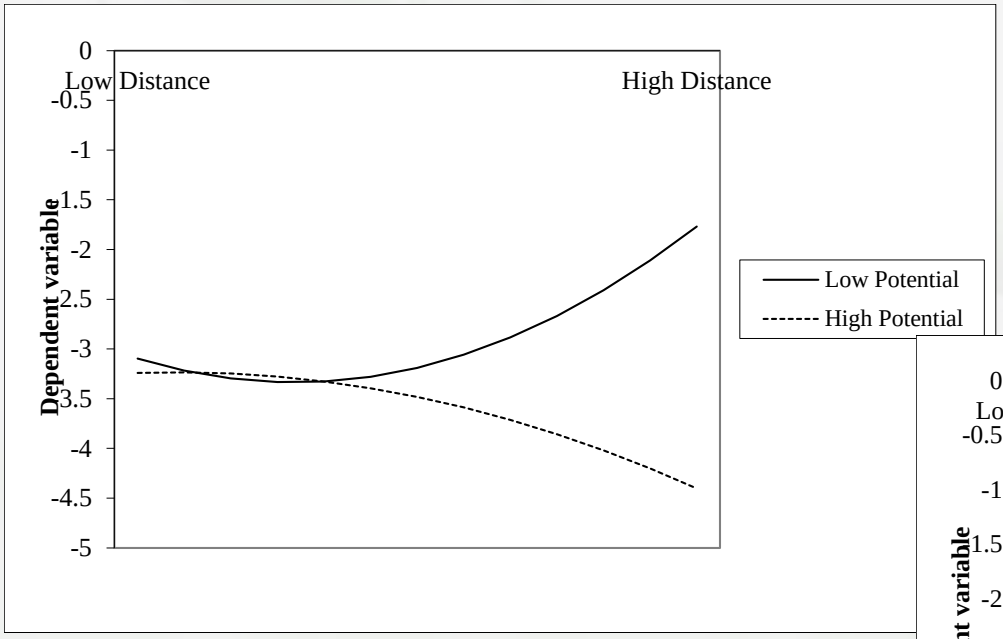
The role of geography: estimation strategy

- Multinomial logit of specialization categories
  - On-farm specialization the base
- Quadratic terms for distance, ag potential
- Interaction term for distance and ag potential
  - Non-linearities not included unless jointly significant
- Estimated separately for different city sizes
  - From 20,000 to 1 million

Results: “It depends…”

- Non-linearities matter, the role of distance changes with agricultural potential and city size
- Role of distance appears more muted where agricultural potential is high
- Smaller towns linked to diversification; larger towns to non-agricultural sources of income

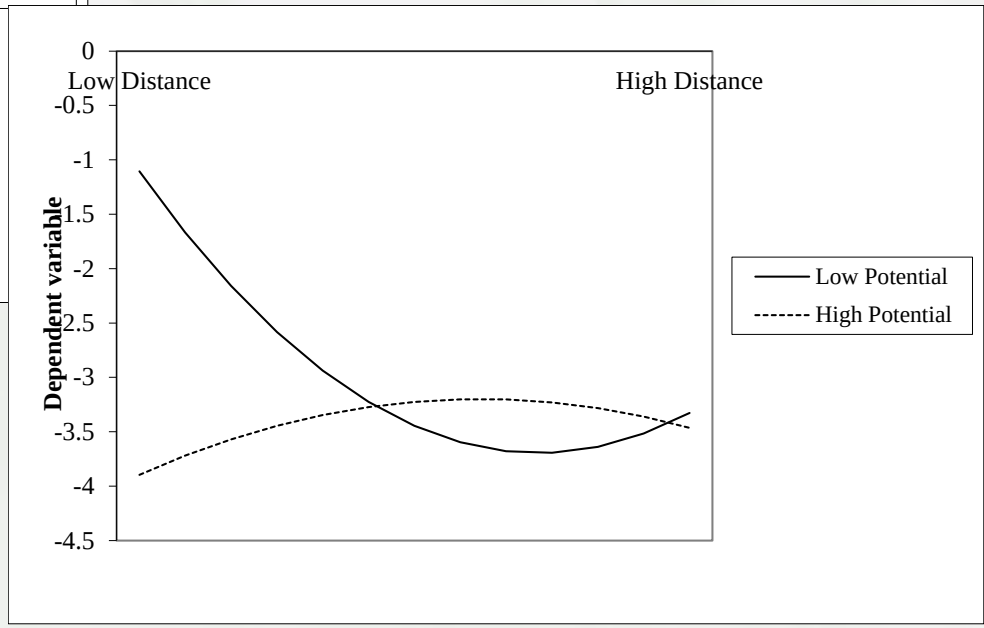
Malawi: Non ag wage specialization, ag potential, and distance from cities



Small town

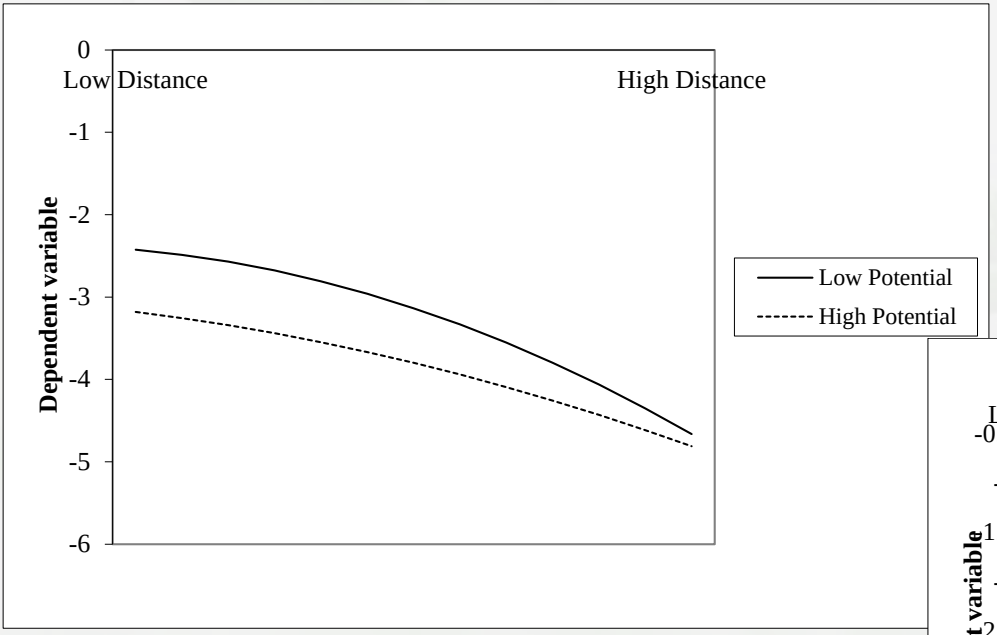
- ✓ Low potential: Non-ag higher with distance
- ✓ High potential: Ag driving with distance

- ✓ Low potential: Non-ag higher declines with distance
- ✓ High potential flatter: Ag driving



Large city

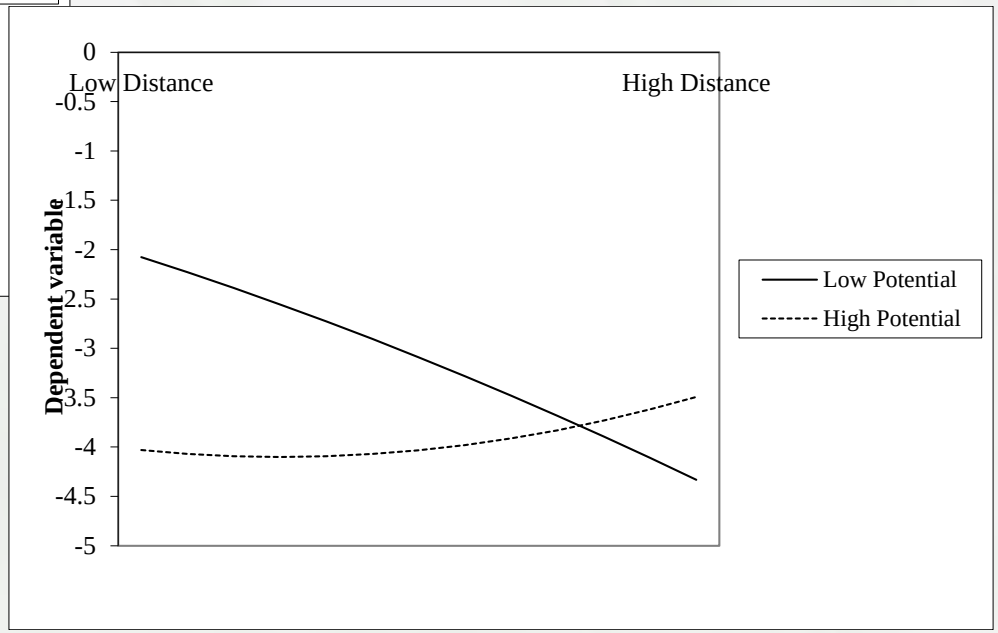
Tanzania: Non ag wage specialization, ag potential, and distance from cities



Mid-size town

- ✓ Low potential and high potential: Non-ag lower with distance

- ✓ Low potential: Non-ag higher declines with distance
- ✓ High potential flatter: Ag driving



Large city

Conclusions

- Diversification patterns in Africa do not seem different (yet) from other regions—just lower level of GDPpc
  - More on farm specialization?
- Non-farm sources of income associated with higher levels of household welfare
  - Key barriers to entry: education, land
- Diversification varies spatially
  - Context specific, but some patterns emerging
- Need to consider spatially explicit policies:
  - Ag potential
  - Land abundance/scarcity
  - City size
- Need (and opportunity) for revitalizing 'rural development' discourse in Africa?