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Income Inequality Trends in sub-Saharan Africa: Divergence, Determinants, and Consequences

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Global Scholar Seminar Series – Brookings Institution

Washington DC, 15th November 2017

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Outline

- Background
- Nature, Size and Pattern on Inequality in Africa: Five Core Results
- Resource Dependence and Inequality in Africa: Outcomes from the Data
- The African Manufacturing Malaise: Determinants and Attributes
- Social Protection in Africa: Key Features
- Early Conclusions

Background

- Six of the world's ten fastest growing economies (2001-2010): In Sub-Saharan Africa
- Global sentiment around SSA changed significantly
- Dominant global view: Africa is last of great untapped markets, ripe for rapid growth and development.
- Supported by the Data: Six of the world's ten fastest growing economies during 2001-2010 were in Sub-Saharan Africa*
- UNDP, RBA then embarks on a 2-year multiple-authored study on Income Inequality in Sub-Saharan Africa.

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*: *The countries are Angola, Nigeria, Ethiopia, Chad, Mozambique, and Rwanda*

Background

- Result was a an edited volume:
  - *Income Inequality Trends in sub-Saharan Africa: Divergence, Determinants, and Consequences* by Ayodele Odusola, Andrea Giovanni Cornia, Haroon Bhorat & Pedro Conceicao (2017)
  - http://www.undp.org/content/undp/en/home/presscenter/pressreleases/2017/09/21/undp-launches-study-on-income-inequality-in-sub-saharan-africa.html
- Focus Here is on 4 chapters of the book :
  - Understanding the Nature of Inequality in Africa
  - Resource Dependence and Inequality
  - Economic Complexity and Growth in SSA
  - Social Protection and Inequality In SSA

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I: The Nature, Size and Pattern of Inequality in Africa

Inequality in Africa and Other Developing Economies

Gini	Africa		Other developing countries		Diff.
Average	0.43	(8.52)	0.39	(8.54)	0.04**
Median	0.41		0.38		
Min	0.31 (Egypt)		0.25 (Ukraine)		
Max	0.65 (South Africa)		0.52[a] (Haiti)		
Ratio of incomes: Top 20% / Bottom 20%	10.18		8.91		
Average Gini					
Low-income	0.42	(7.66)	0.39	(11.84)	0.03
Lower-middle-income	0.44	(8.31)	0.40	(8.55)	0.05*
Upper-middle income	0.46	(11.2)	0.40	(8.29)	0.06*

Source: WIDER Inequality Database, 2014; World Development Indicators, 2014

Notes: 1. Other Developing Economies have been chosen according to the World Bank classification of a developing economy, which includes a range of countries from Latin America, Asia and Eastern Europe. 2. The latest available data was used for each country (after 2000). 3. Standard deviations are shown in parenthesis.4. [a] The small island nation of the Federated States of Micronesia has the highest Gini coefficient 0.61 in the 'other developing countries' category, which has been excluded here for comparability purposes.

5. ** significant at the 5% level, * significant at the 10% level. 6. The small sample size of other developing countries in the low income group makes determining statistical significance difficult.

- The average Gini coefficient for Africa is 0.43, which is 1.1 times the coefficient for the rest of the developing world at 0.39
- On average, the top 20 percent of earners in Africa have an income that is over 10 times that of the bottom 20 percent

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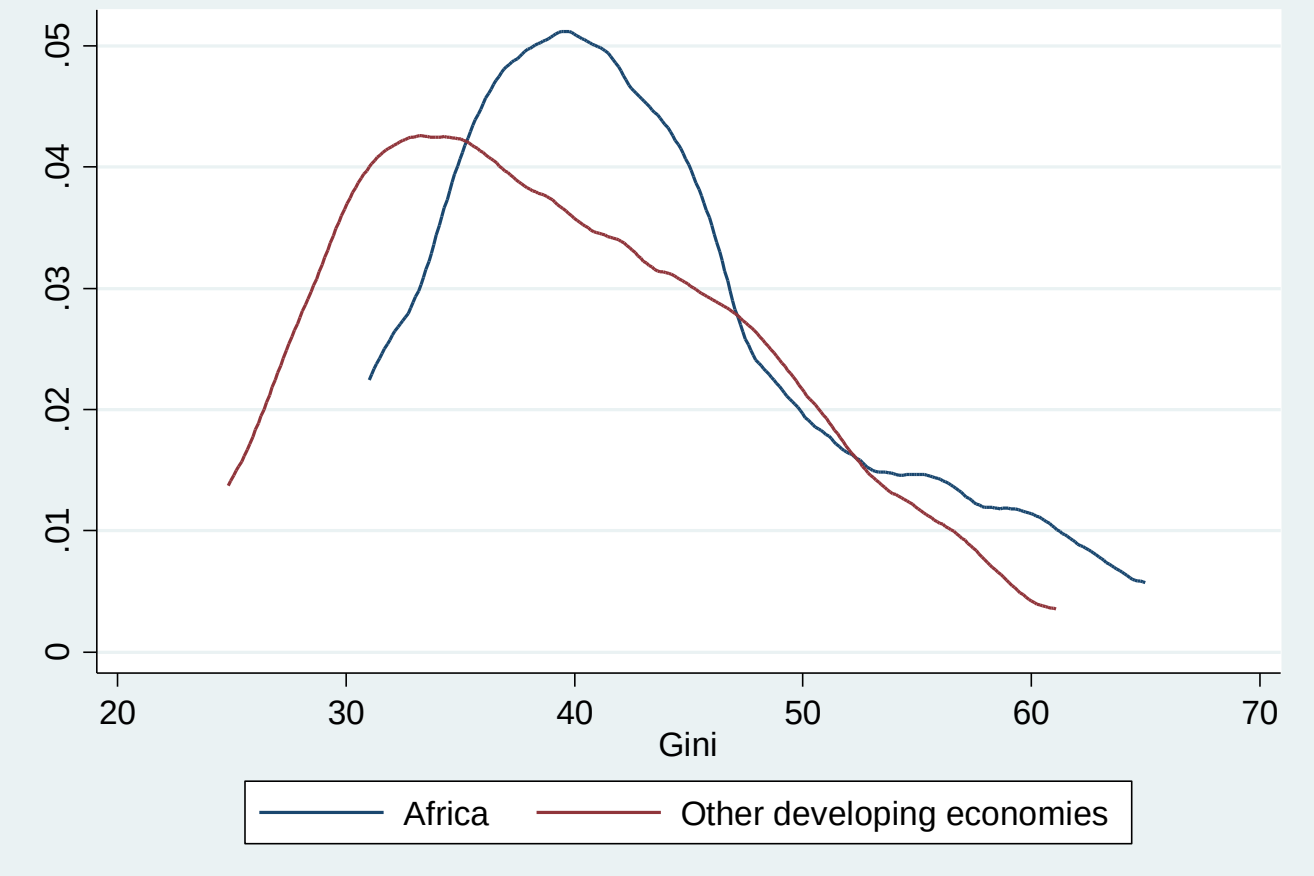
I: The Nature, Size and Pattern of Inequality in Africa

The Distribution of Gini Coefficients: Africa and Other Developing Economies



- Prevalence of extreme inequality in Africa, which is not observed in other developing economies.
- 7 outlier African economies that have a Gini coefficient of above 0.55: Angola, Central African Republic, Botswana, Zambia, Namibia, Comoros and South Africa.
- Once 7 removed, *no difference in mean inequality between and Africa and RODW.*

Source: WIDER Inequality Database, 2014; World Development Indicators, 2014; Own graph
Notes: 1. The latest available data was used for each country (after 2000).
2. Kolmogorov-Smirnov tests for equality of distributions are rejected at the 5% level.

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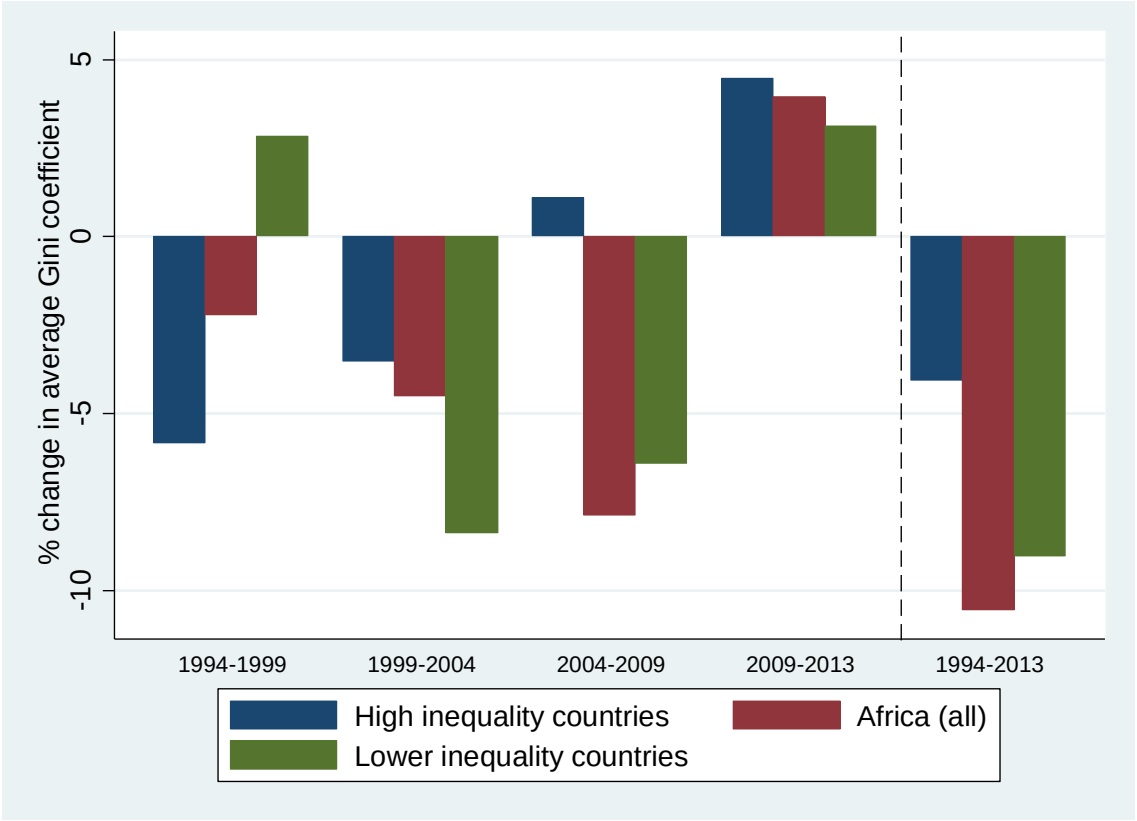
I: The Nature, Size and Pattern of Inequality in Africa

Rates of Change in Inequality in Africa



- After 1999, the overall decline in inequality in Africa has been driven disproportionately by the decline in inequality of the 'low inequality' sub-sample of African economies.
- The cohort of 'high inequality' African economies have jointly served to restrict the aggregate decline in African inequality.

Source: WIID, 2014; World Development Indicators, 2014; Own graph

Notes: 1. For the Africa average, the sample sizes per period are as follows: 27 (1990-1994), 24 (1995-1999), 38 (2000-2004), 28 (2005-2009), 25 (2010-2013). 2. The High Inequality countries are: Angola, Botswana, Comoros, Central African Republic, Namibia, South Africa, Zambia. The sample sizes per period are as follows: 5 (1990-1994), 2 (1995-1999), 7 (2000-2004), 3 (2005-2009), 3 (2010-2013).

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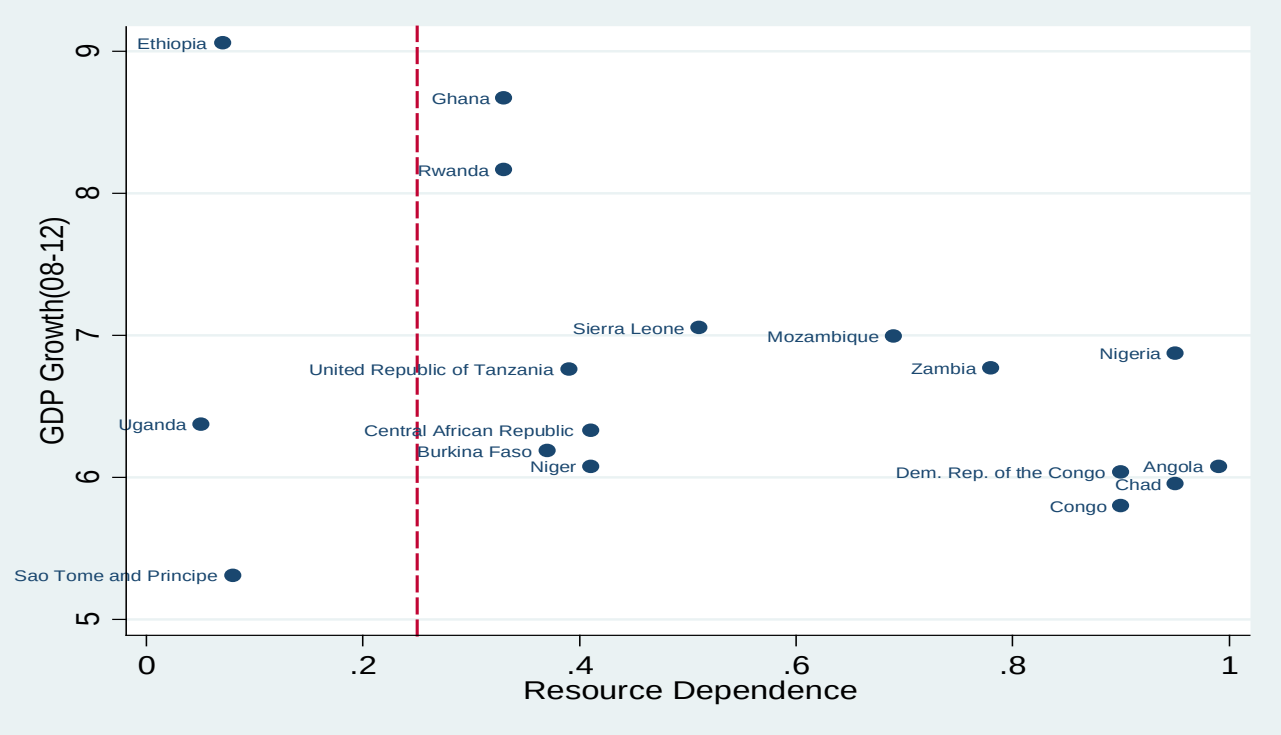
I: The Nature, Size and Pattern of Inequality in Africa:
Five Core Results

- Africa: Higher mean and median level of inequality when compared with the rest of the developing region.
- Presence of 'African Outliers': 7 economies exhibiting extremely high levels of inequality. Excluding the African Outliers - Africa's level of inequality approximates those of other developing economies.
- Inequality has on average declined in Africa, driven by economies not highly unequal.
- No obvious systemic features in nature and pattern of African inequality over time.
- High inequality African economies: Stronger relationship between economic growth and inequality.

Resource Dependence and Inequality in Africa: Outcomes from the Data

II: GDP Growth and Level of Resource Dependence, 2008-2012:
The Group of 17 'African Lions'



- In period 2008-2013: Seventeen African Economies have grown at over 5%.
- *14 of these 17* 'African Lions' classified as resource-dependent*.

Source: WDI, 2014, UNCTAD (2014), Own Calculations.

* The 17 countries are: Ethiopia, Uganda, São Tomé and Príncipe, Ghana, Rwanda, Burkina Faso, Tanzania, CAR, Niger, Sierra Leone, Mozambique, Zambia, DRC, Congo, Chad, Angola, and Nigeria.

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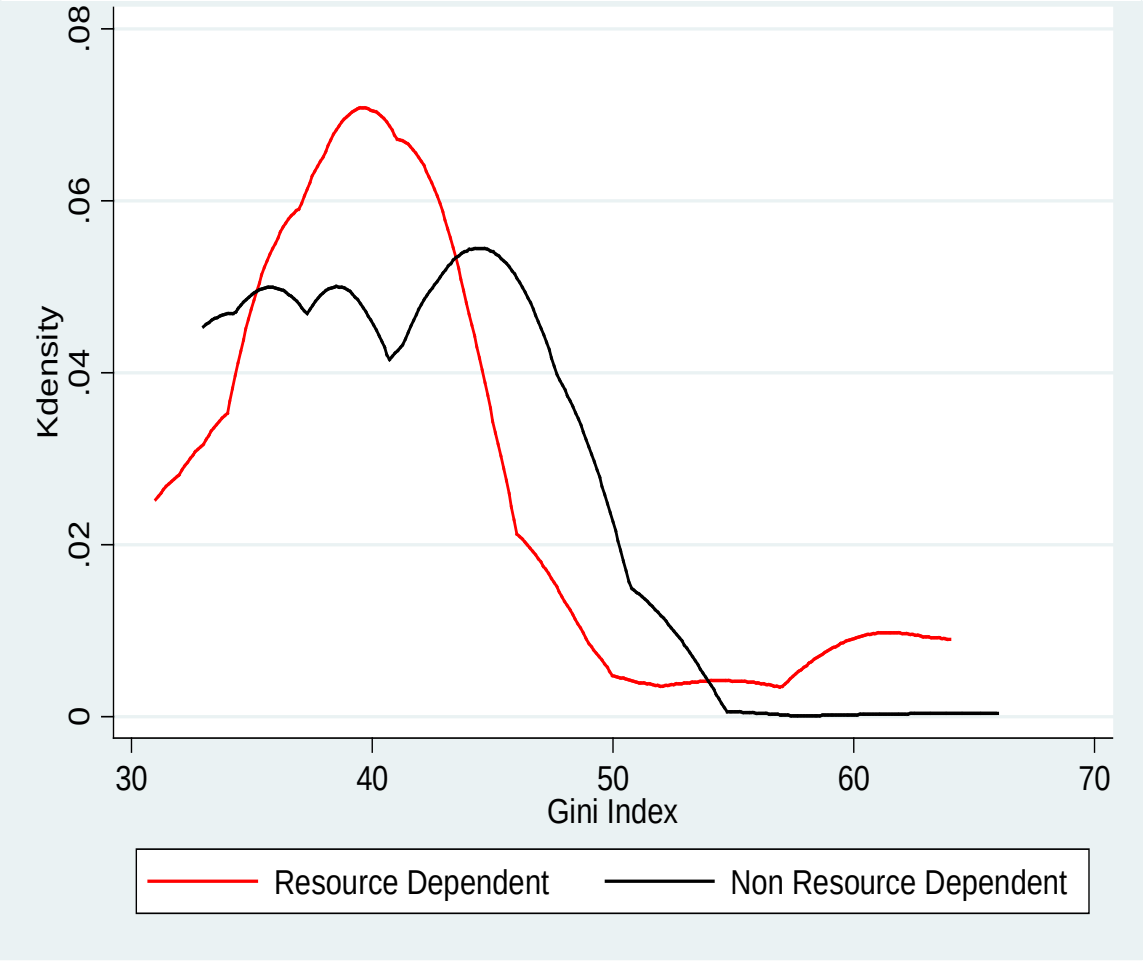
II: Resource Dependence and Inequality Outcomes in SSA:
Measures of Differences in the Gini



- **RD Gini Mean – 0.43**
- **Non-RD Gini Mean – 0.46**
- Number of RD countries with very high levels of inequality: Close to and above 60.
- Greater risk of high inequality outcomes in resource dependent economies?

Source: World Bank WDI, PovcalNet; Own calculations regarding the population weighting of the Gini coefficient
Notes: 1. Kolmogorov-Smirnov tests for equality of distributions cannot be rejected at the 5% level.
2. Data weighted by population, and based on latest available Gini coefficient

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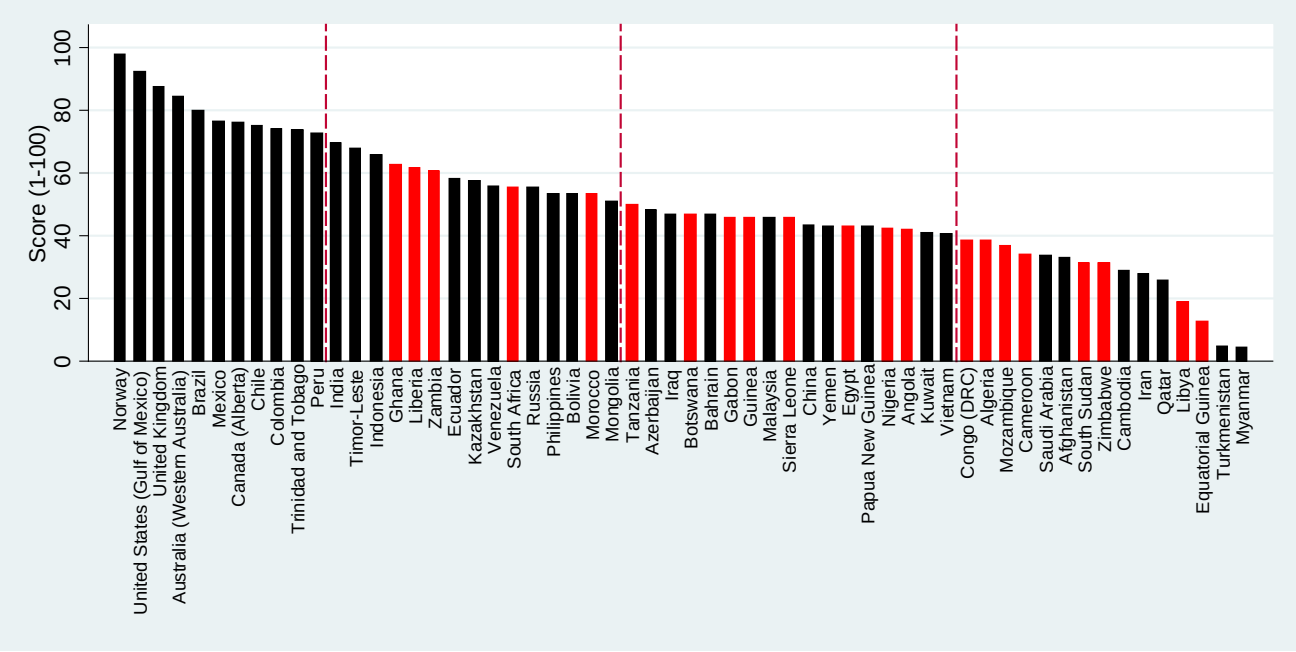
II: Resource Dependence and Inequality Outcomes in SSA: The Governance Channel

Resource Governance Index: Composite Scores for Developed and Developing Countries, 2013



- Over 75% of African countries included in index had *weak or failing* resource governance bodies.

Source: Own graph, Revenue Watch, 2013

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II: Drivers of Inequality in Resource-Rich Countries: The Governance Channel

- Some Evidence: High RD economies associated with lower levels of civil society engagement, less transparent electoral process, and less effective government.
- Not all RD countries undemocratic e.g Zambia & Ghana.
- Econometric understanding of causality in RD-governance link is poor:
  - Direction of Causality 1: Discovery of natural resources leads to weakened institutions given political capture of rents.
  - Direction of Causality 2: Institutions are weak, undermines inclusive growth from resources [*Also* means that strong governance can lead to inclusive natural-resource growth path e.g. Ghana.]
- Timing of Resource Discovery Pre- or Post-Independence.
- Process governing Licencing is key transmission mechanism allowing for political capture of rents.

II: Drivers of Inequality in Resource-Rich Countries:
The Investment and Labour Market Channel

- **High initial capital cost of entry** into the natural resources markets can also lend itself to monopolistic or oligopolistic market structures:
  - Excess profit from higher prices (transferred from consumers to the monopoly) may result in inequitable distribution of income.
  - Monopoly control can also provide firm with economic conditions for ensuring greater political influence.
- **Dutch Disease** arises through appreciation of the currency:
  - Serves to disadvantage employment-intensive and export-oriented sectors such as agriculture and manufacturing.
- **Poor Employment Absorption**:
  - Relatively few jobs created within these extractive industries.
  - Job Created are often higher-skilled jobs, imported into these economies.
- **Downstream Industrial Policy** Not Pursued: Manufacturing as % of GDP declined by 7 and 4 perc. points, 2007-2011.

The African Manufacturing Malaise: Determinants and Attributes

III: The African Manufacturing Malaise: Determinants and Attributes

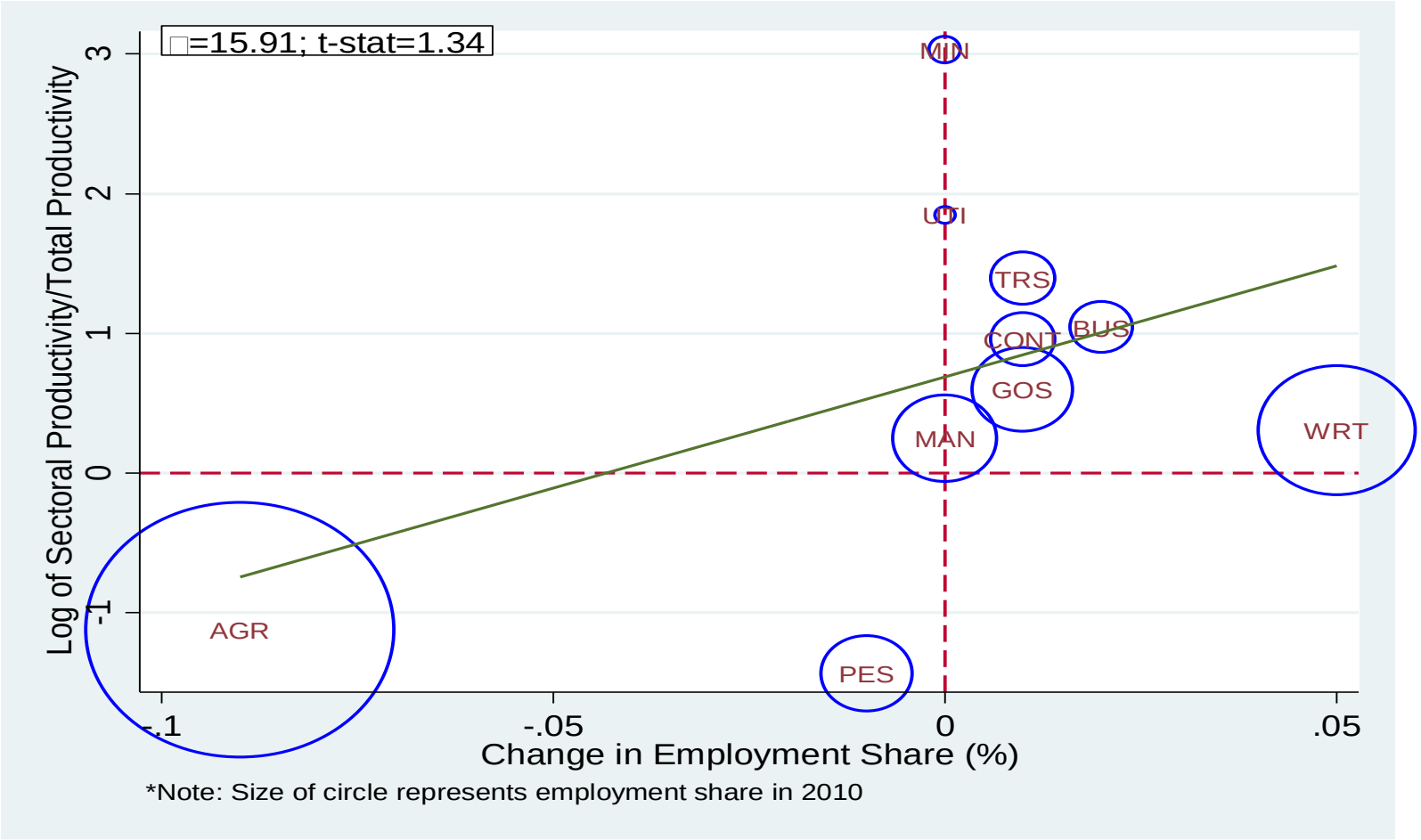
Sectoral Composition of Growth In Africa, By Region: 1980-2000s

Share of GDP	1980s	1990s	2000s	1980s-2000s % Change
Agriculture	27.4	27.5	23.4	-4.0
Industry	26.8	26.7	28.1	1.3
Of which: Manufacturing	11.3	11.9	10.6	-0.8
Services	45.8	45.8	48.2	2.4

Source: World Development Indicators (WDI) 2015 and own calculations.
Notes: 1. Columns 3, 4 and 5 represent the average sector share of GDP for the 1980s (1980-1989), the 1990s (1990-1999) and 2000s (2000-2013), respectively. 2. Due to missing data, not all African countries are included in calculations. This is done in order to provide a consistent set of countries over time and so as not to bias the sector shares by the inclusion of new countries as data becomes available. The following countries are excluded: Angola, Cote D'Ivoire, Eritrea, Equatorial Guinea, Gambia, Guinea-Bissau, Libya, Liberia, Mozambique, Somalia, South Sudan, Sao Tome & Principe, and Tanzania. 3. Industry corresponds to ISIC divisions 10-45 and includes manufacturing (ISIC divisions 15-37). It comprises value added in mining, manufacturing (also reported as a separate subgroup), construction, electricity, water, and gas.

III: The African Manufacturing Malaise: Determinants and Attributes

Sectoral Productivity and Employment Shifts, 1975-2010



Source: Own calculations using Groningen Growth and Development Centre 10-sector database (Timmer et al., 2014)
Notes: 1. African countries included: Botswana, Ethiopia, Ghana, Kenya, Malawi, Mauritius, Nigeria, Senegal, South Africa, Tanzania and Zambia. 2. AGR = Agriculture; MIN = Mining; MAN = Manufacturing; UTI = Utilities; CONT = Construction; WRT = Trade Services; TRS = Transport Services; BUS = Business Services; GOS = Government Services; PES = Personal Services.

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III: The African Manufacturing Malaise: Determinants and Attributes

Sectoral Productivity and Employment Shifts in **Asia**, 1975-2010

Source: Own calculations using Groningen Growth and Development Centre 10-sector database (Timmer et al., 2014)
Notes: 1. AGR = Agriculture; MIN = Mining; MAN = Manufacturing; UTI = Utilities; CONT = Construction; WRT = Trade Services; TRS = Transport Services; BUS = Business Services; GOS = Government Services; PES = Personal Services. 2. The estimated regression line, measuring the relationship between productivity and changes in employment share by sector, is not statistically significant.

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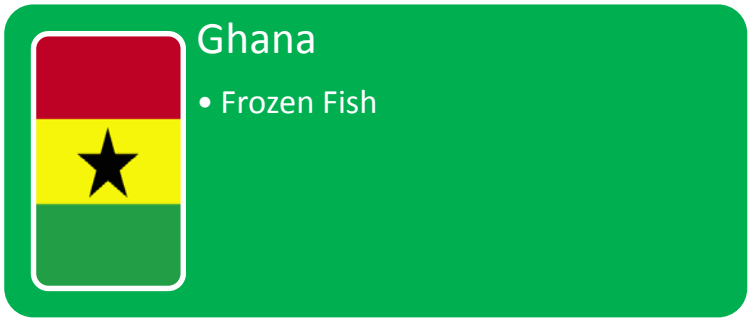
The African Inclusive Growth Malaise:
Economic Complexity

- ***Economic Complexity*** of Hausmann & Klinger (2006); Hidalgo et al. (2007); Hausmann & Hidalgo (2011).
- Economic Complexity and Economic Growth:
  - Building capabilities & implicit knowledge in production of goods leads, through adjacent product spaces, to increased economic complexity.
  - Increased economic complexity strongly associated with higher GDP per capita.
  - Building economic complexity key to pursuit of inclusive growth.
- Economic complexity viewed as equivalent to other determinants of growth such as HK, institutions etc.
- Caveats and Reminders:
  - Services Exports are Excluded in the Measure of Economic Complexity, but strong positive correlation between ECI in goods and ECI in services.
  - **Agriculture is included**, so this is a narrative about building economic complexity in manufacturing and agriculture.

The African Inclusive Growth Malaise
Understanding Economic Complexity I



- **Diversity (k_c,0)** is related to no. of products a country exports:
  - *Holland=5*
  - *Argentina=3*
  - *Ghana=1*
- **Ubiquity (k_p,0)** is related to no. of countries exporting a product.
  - *X-Ray =1*
  - *Pharma =1*
  - *Cheese=2*
  - *Fish=3*
- *Note that there are 34 product communities in this framework for example: Precious stones; coal; agrochemicals; cotton;soya; cereals; machinery; electronics.*

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The African Inclusive Growth Malaise
Understanding Economic Complexity II

Aggregate Diversity = $k_{c,0} = \sum_p M_{cp}$

Aggregate Ubiquity = $k_{p,0} = \sum_c M_{cp}$

Used to generate ***weighted average diversity of countries that make products, average ubiquity of products that a country exports.***
Thus derive:

$$k_{c,N} = \frac{1}{k_{c,0}} \sum_p M_{cp} . k_{p,N-1}$$

$$k_{p,N} = \frac{1}{k_{p,0}} \sum_c M_{cp} . k_{c,N-1}$$

With some manipulation we arrive at:

$$k_{c,N} = \sum_{c'} \widetilde{M_{cc'}} \, k_{c',N-2}$$

$\widetilde{M_{cc'}}$ corresponds to the eigen vector capturing the largest eigen value in the system.

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The African Inclusive Growth Malaise
Understanding Economic Complexity III

Eigen values represent quantum of *variance in the system*. Largest amount of variance in system = ***Measure Of Economic Complexity.*** More formally it is represented by:

$$\boldsymbol{ECI} = \frac{\vec{K} - < \vec{K} >}{Std.Dev\,(\vec{K})}$$

where <> represents an average and Std. Dev is the standard deviation. $\vec{K}$ in turn represents the eigen vector of $\widetilde{M_{cc'}}$ associated with the second largest eigen value.

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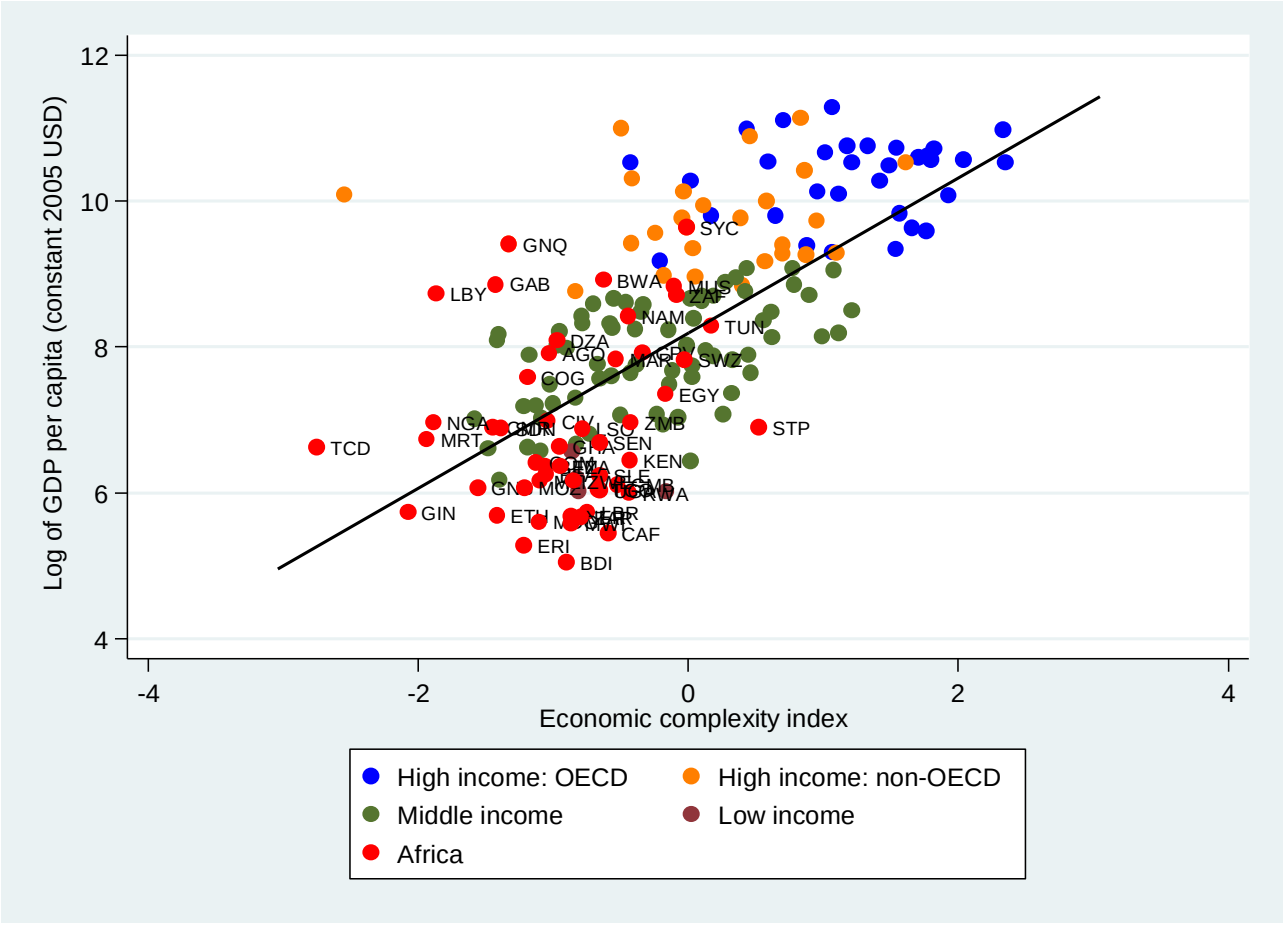
III: The African Manufacturing Malaise: Determinants and Attributes: Economic Complexity (ECI) & GDP p.c. ,2013



Source: Own calculation using data from The Economic Complexity Observatory (Simoes & Hidalgo, 2011)

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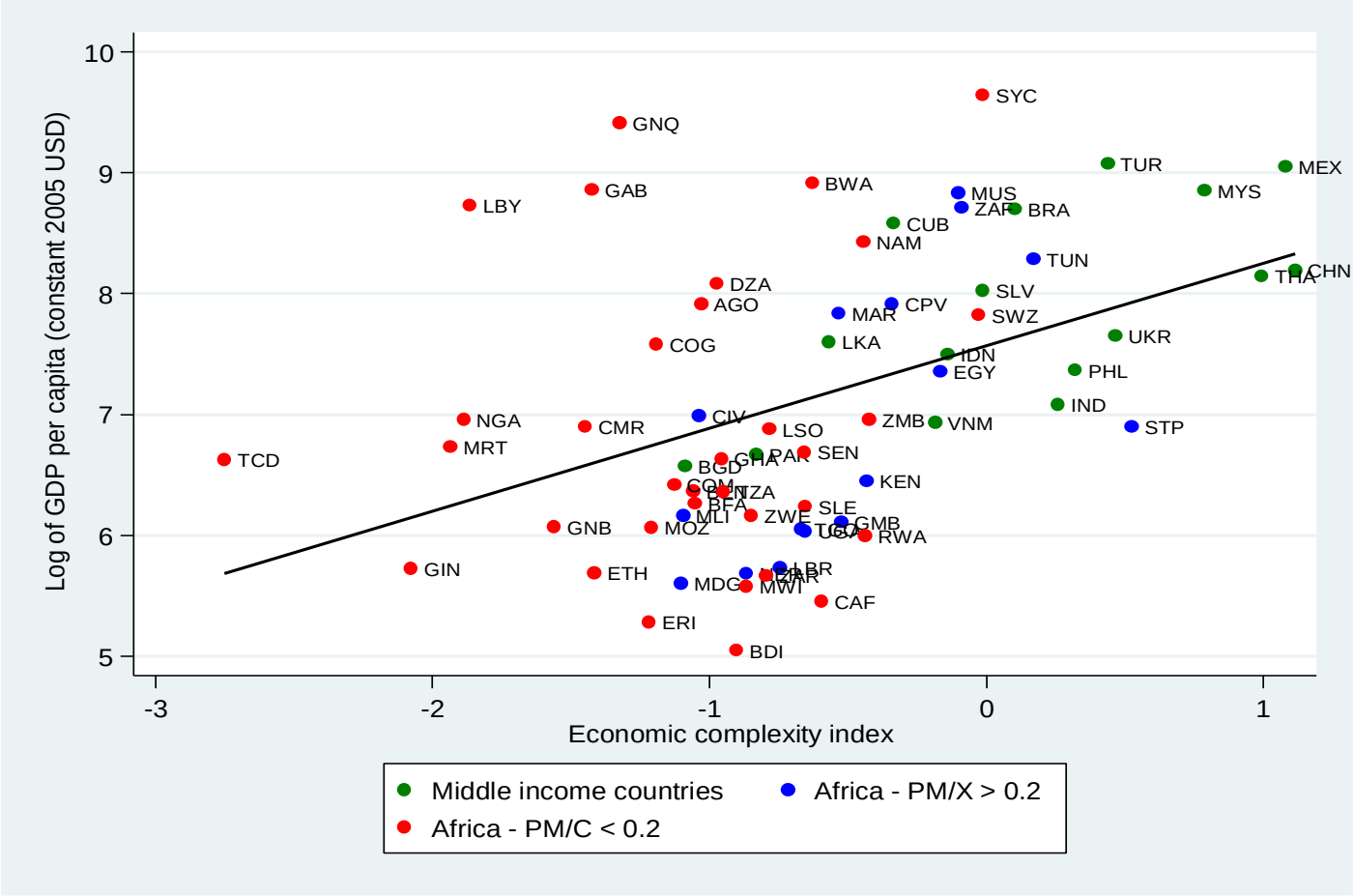
III: The African Manufacturing Malaise: Determinants and Attributes:
Economic Complexity Results For Africa

- African economies are associated with lower levels of economic complexity and thus lower levels of economic development.
- Crucial: African context is heterogeneous.
  - Cluster of African countries associated with low levels of economic complexity, and
  - a few African countries associated with higher levels of economic complexity and economic development.

III: The African Manufacturing Malaise: Determinants and Attributes:

Economic Complexity (ECI) & GDP p.c. MIC Sample only, 2013



Source: Own calculation using data from The Economic Complexity Observatory (Simoes & Hidalgo, 2011)
Notes: 1. The middle income country groups, depicted by the green markers refers to a sample of non-African middle income countries. 2. The blue markers refer to African countries whose pure manufacturing exports as a share of total exports exceeds 20 percent. 3. The red markers refer to African countries whose pure manufacturing exports as a share of total exports is less than 20 percent.

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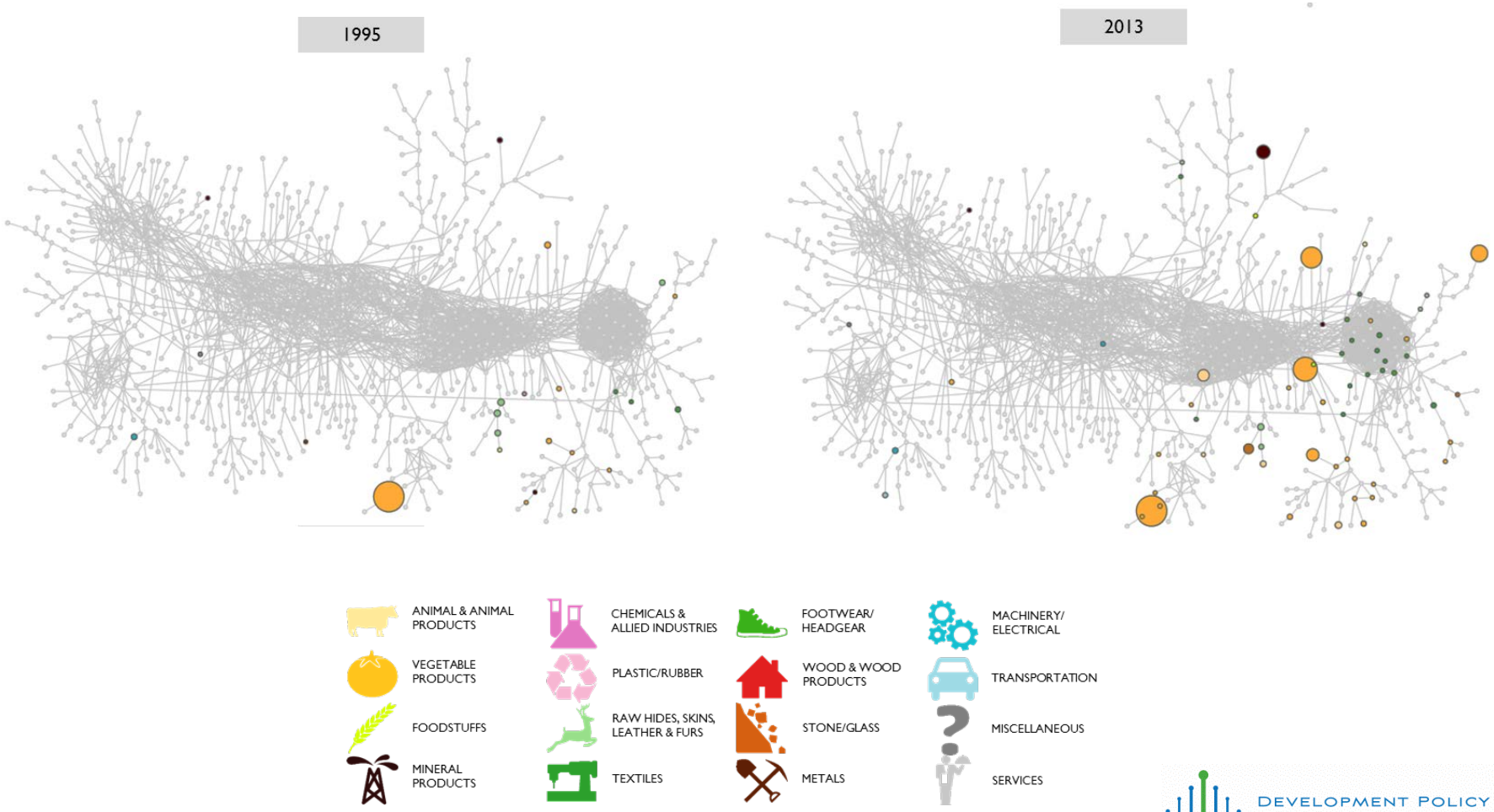
III: The African Manufacturing Malaise: Determinants and Attributes:
Economic Complexity Results For Africa

- 'Substantial African Manufacturing Exporters' (blue markers) are Mauritius, South Africa, Tunisia, Morocco and Egypt – have higher levels of economic complexity.
- Group of African countries 'substantial exporters' of manufactures, but lower levels of econ. Dev. (blue markers) – Cote d'Ivoire, Kenya, Uganda, Togo, Malawi and Madagascar.
- Relative to top-preforming emerging market countries, Africa's top manufacturing exporters have lower levels of economic complexity and hence lower levels of productive knowledge.
- Number of African countries have relatively high levels of economic development, measured in real GDP per capita, but low levels of economic complexity – Libya, Gabon, Equatorial-Guinea. ['The Resource Curse'?]

III: The African Manufacturing Malaise: Determinants and Attributes:

Product Space Analysis

Ethiopia, 1995 and 2013



Source: The Atlas of Economic Complexity," Centre for International Development at Harvard University, http://www.atlas.cid.harvard.edu

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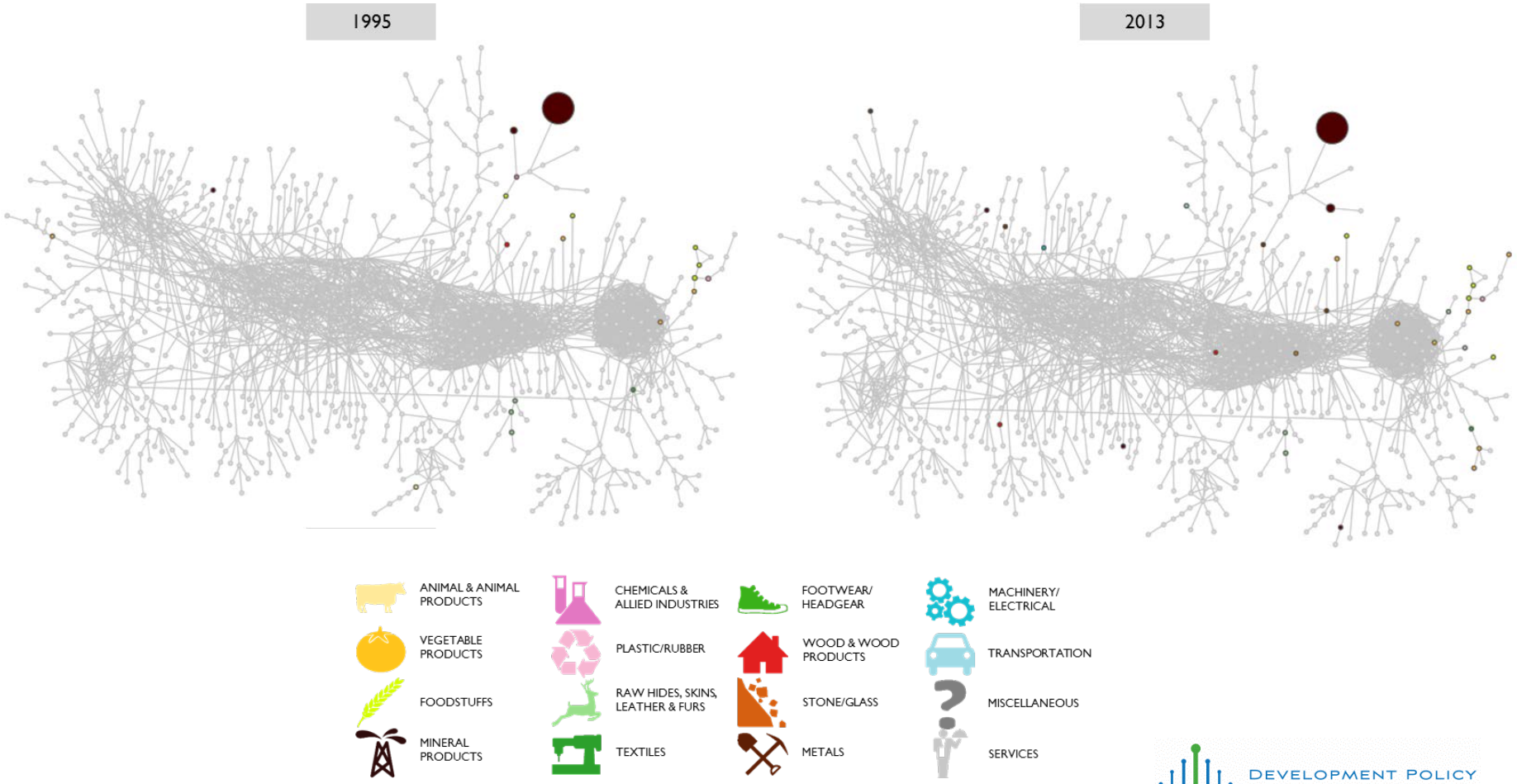
III: The African Manufacturing Malaise: Determinants and Attributes:

Product Space Analysis

Nigeria, 1995 and 2013



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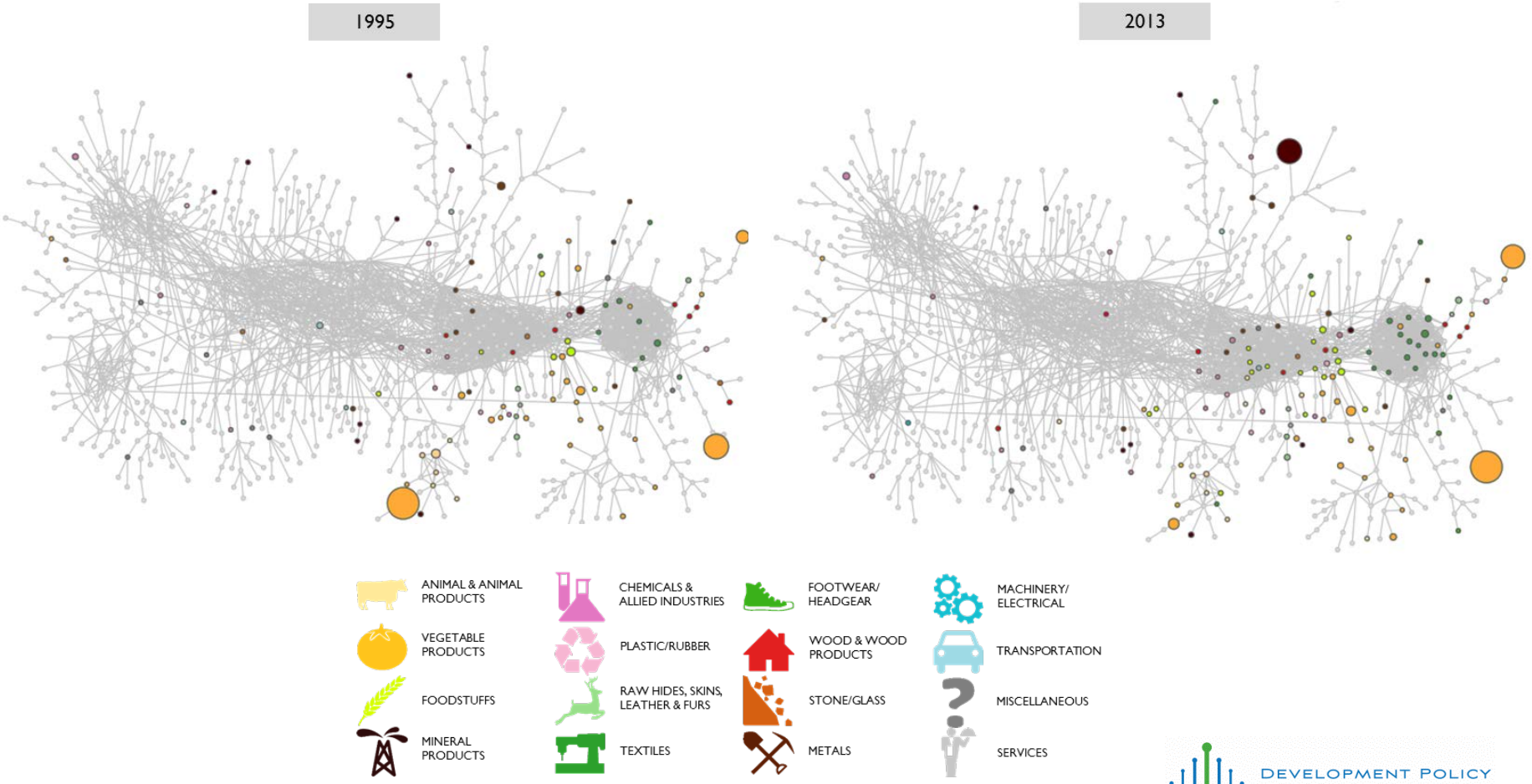
Product Space Analysis

Kenya, 1995 and 2013



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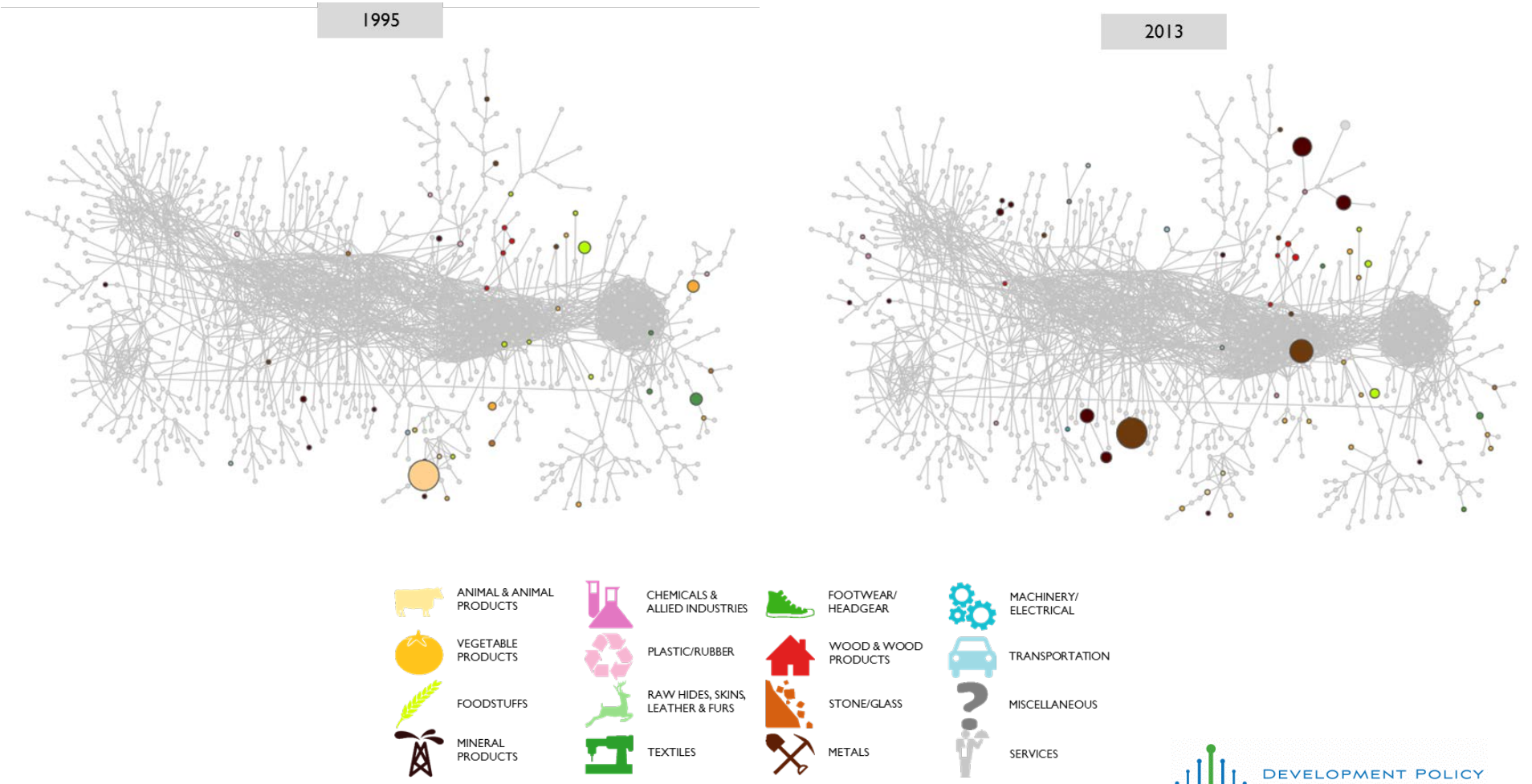
Product Space Analysis

Mozambique, 1995 and 2013



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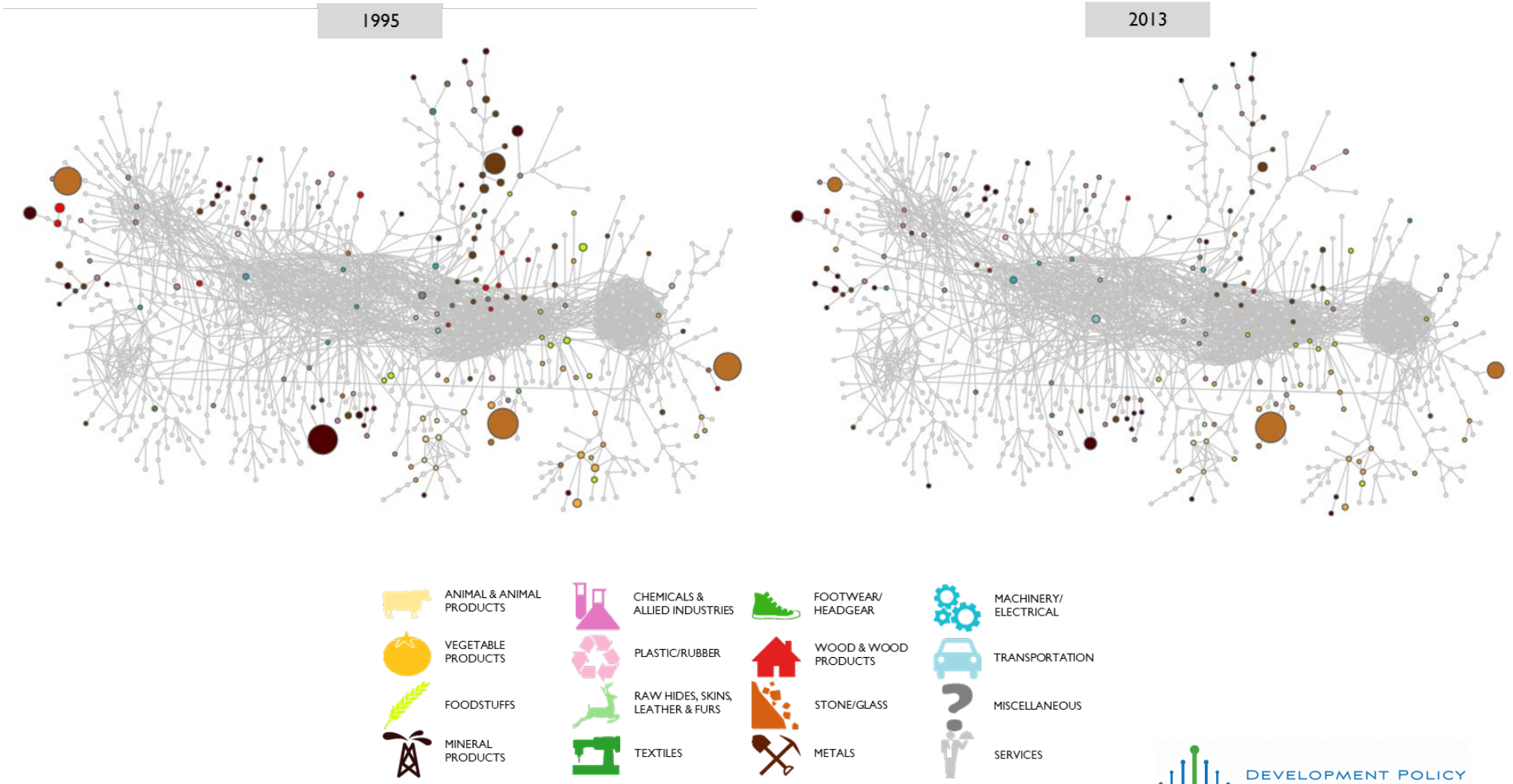
III: The African Manufacturing Malaise: Determinants and Attributes:

Product Space Analysis

South Africa, 1995 and 2013



Source: The Atlas of Economic Complexity," Centre for International Development at Harvard University, http://www.atlas.cid.harvard.edu

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III: Product Space Outcomes:
Key Results

- In general over 1995-2013, relatively little change in the productive structures of these African economies.
- The 'average African' productive structure is peripheral but:
  - Evidence of heterogeneity,
  - Ethiopia, Uganda, and Mauritius are examples of manufacturing success stories. In each of these cases,
  - The number of occupied nodes within the core of the product space has increased.
- Stagnation evident in a number of economies, such as South Africa and Nigeria.

III: Africa's Manufacturing Malaise: Econometric Results

DV: Log of product count of Total Manufacturing exports	Neo-Classical Model	Hausmann Model	Expanded (Hausmann) Model
Log of fixed capital per worker	0.255***	0.261***	0.247***
Total factor productivity	0.131	0.152*	0.190**
Nat. Resources rents (% of GDP)	0.002	0.003	0.002
Africa	-0.392*	-0.272	-0.266
Economic complexity index		-0.026	-0.044
Opportunity value index		0.151***	
OVI*LIC			0.361
OVI*MIC			0.227***
OVI* HI-OECD			0.095***
OVI* HI-non OECD			0.139*

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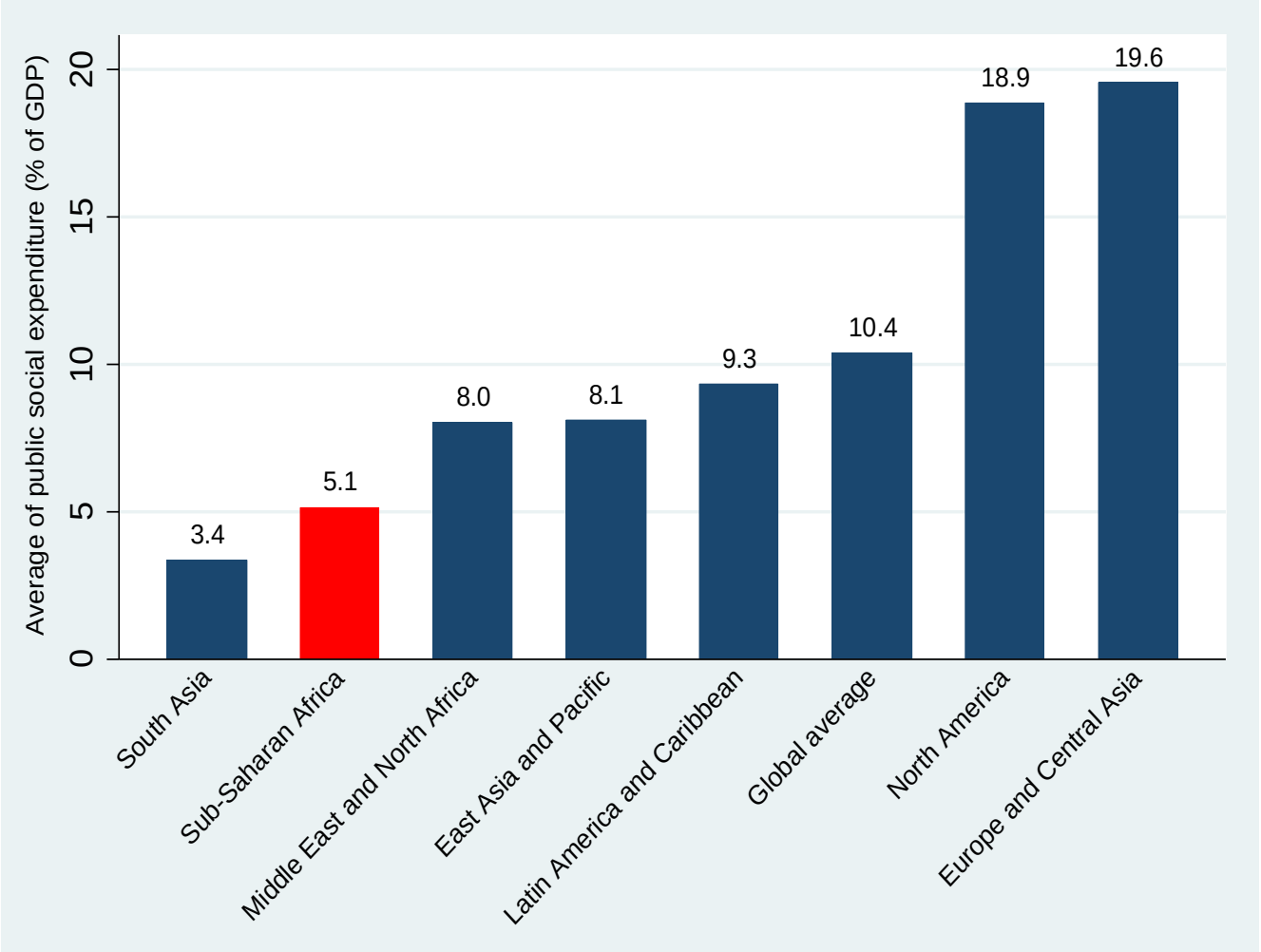
Social Protection in Africa: Key Features

IV: Social Protection in Africa: Key Features

Social Spending as a Percentage of GDP by Region, 2005-2011



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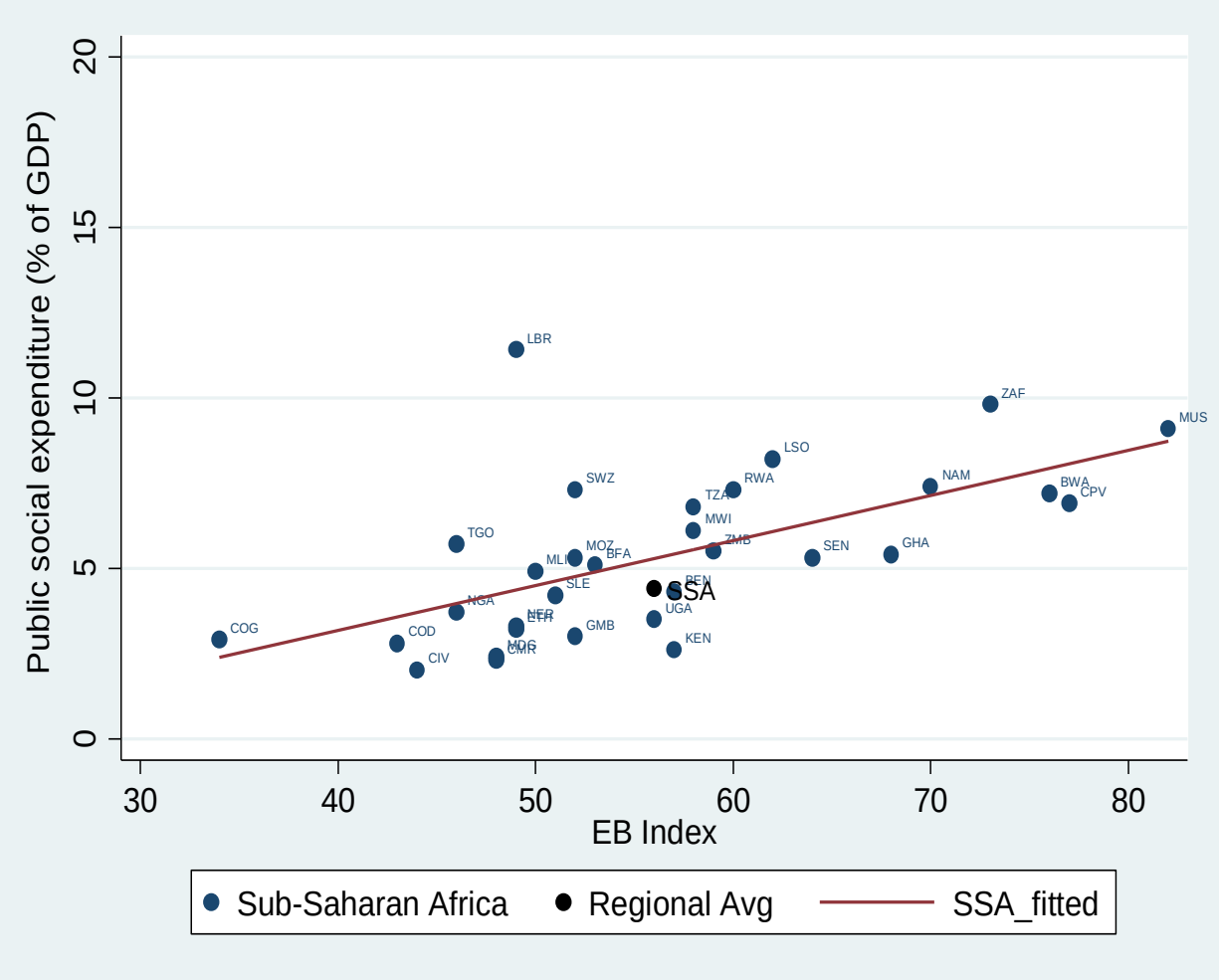
IV: Social Protection in Africa: Key Features

Public Social Expenditure and Mo Ibrahim Index, 2013



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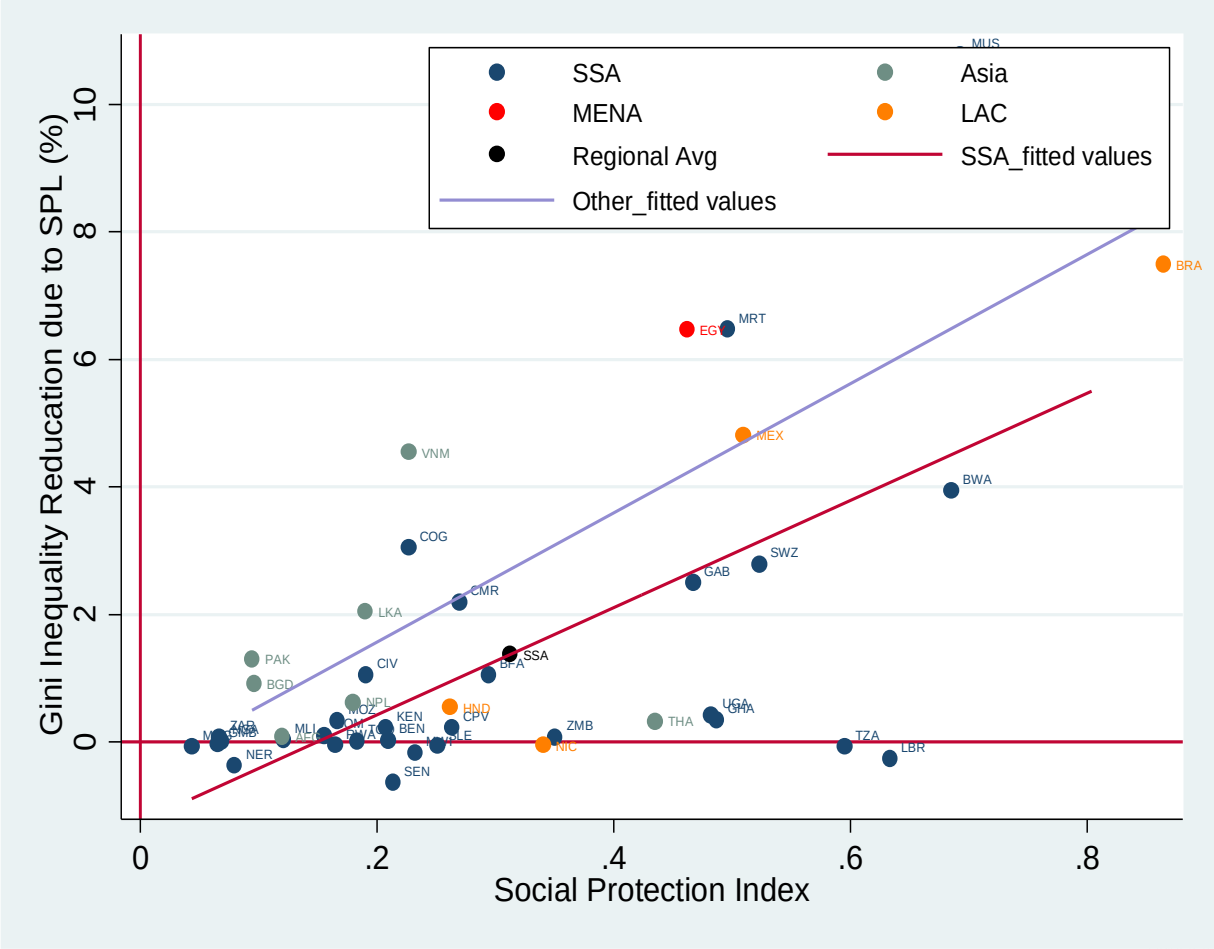
IV: Social Protection in Africa: Key Features

Social Protection Index and Gini Inequality Reduction due to Social Protection – SSA and other developing regions



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IV: Social Protection in Africa: Key Features

- SSA region spends significantly less on social expenditure as share of GDP than global average and other regions, with exception of South Asia.
- Positive correlation between social expenditure and presence of democratic regime.
- Spending on Social Welfare:
  - Anglophone > Francophone countries
  - Upper MICs > lower MICs > LIC African economies
  - Non RD > RD economies
- In terms of transfer value, SSA provides the second lowest transfer amount per day per capita ($0.51c/day per capita) of all the regions in the world.
- Econometric Results:
  - 1% decline in inequality results from an 8.4% increase in the social protection index.
  - Coverage of poorest quintile & increase in unit value of transfers significantly correlated with reduction in inequality.
  - Small transfers poor targeting limit impact on poverty and inequality.

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Inequality in Africa: Very Early Thoughts

Inequality in Africa:
Early Conclusions

- Inequality in SSA is higher than the mean for developing world.
  - Driven by the presence of 7 high inequality economies
  - A decline in inequality levels observed since the 1990s.
- Resource Dependence lends itself to poor outcomes for inequality reduction
  - General concern around governance, unequal growth within the orbit of license-based industries.
- Building economic complexity is key for employment generation in high productivity jobs in both Agriculture and Manufacturing in SSA
  - Interesting case of ‘Frontier Manufacturers’ in SSA.
- Social protection remains key instrument for potential quick wins to reduce national income inequality in many SSA economies.