UNU-WIDER 2020 ANNUAL CONFERENCE OF THE INCLUSIVE GROWTH IN MOZAMBIQUE PROGRAMME: EVIDENCE TO ENHANCE INCLUSIVE GROWTH

Income Inequality and Economic Growth: Evidence from Sub-Saharan Africa

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Income inequality

- Significant gaps in income distribution across the wider population
  - Within country inequality
  - Cross country inequality

- Income inequality is closely connected to other dimensions of inequalities
  - Political inequality
  - Social inequality (access to health, education, settlements)
  - Opportunities inequality

Threats / effects of income inequality

- Inclusive growth

- Political, economic, and social instability

- 'Chronic' and worsening inequality

Income inequality and economic growth

- The notable Kuznet's hypothesis of inverted U-shape relationship
  - First stage - low income inequality across sectors

Primary Sector (agriculture)

- Low productivity
- Low income per capita

Modern Sector (industry and services)

- low productivity
- low income per capita

  - Second stage - high income inequality across sectors and in the modern sector

- Low technology
- High share of labour
- Low productivity
- Low income per capita

- High technology
- Low share of labour
- High productivity
- High income per capita
- Inequality in income levels in the sector

  - Third stage - income inequality declines across sectors and in the modern sector

- High technology
- labour share decline
- Income per capita increase
- Productivity increase

Labour move to

- Labour share increase
- High technology
- Inequality in Income levels declines

Other factors

- Technological innovation in modern sectors further increases economic growth but worsen income inequalities

- Inflow of foreign direct investment favour high productive areas which employ less labour

- Globalization increases competition which forces low income businesses out of jobs

- Exports and imports favour high-tech and productive industries. They have better terms of trade

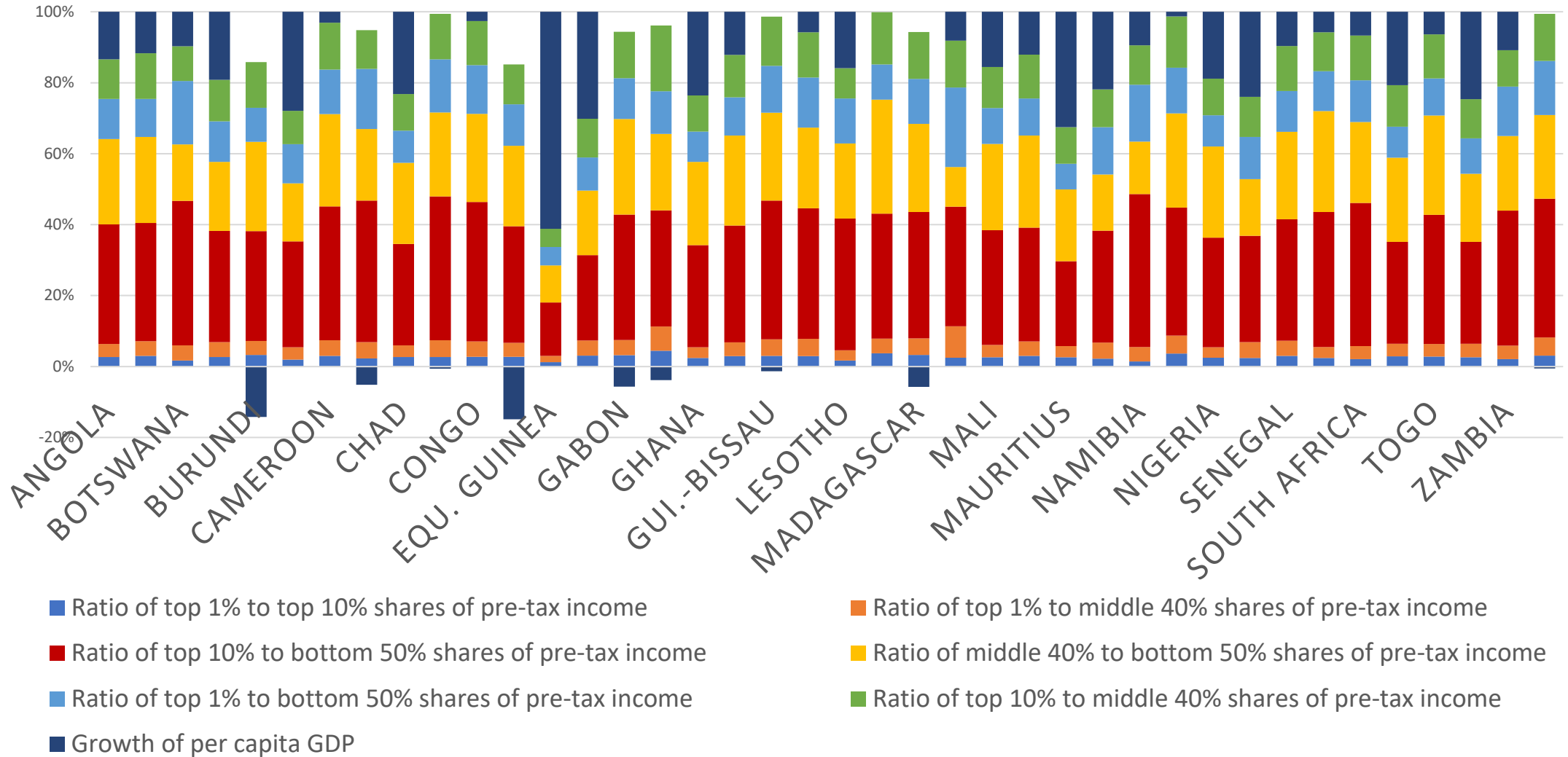## Measuring income inequality - Income decile ratio

(Calculated from pre-tax income shares data obtained from World Inequality Database)

Income decile ratio are the ratio of the share of income of one income class to another

- Ratio of pre-tax national income share of top 1% to top 10%
- Ratio of pre-tax national income share of top 1% to middle 40%
- Ratio of pre-tax national income share of top 10% to bottom 50%
- Ratio of pre-tax national income share of top 10% to middle 40%
- Ratio of pre-tax national income share of middle 40% to bottom 50%
- Ratio of pre-tax national income share of top 1% to bottom 50%

Income inequality and economic growth in SSA

MEAN INCOME DECILES AND ECONOMIC GROWTH IN SUB-SAHARAN AFRICA, 1991-2015

Legend:
- Ratio of top 1% to top 10% shares of pre-tax income
- Ratio of top 1% to middle 40% shares of pre-tax income
- Ratio of top 10% to bottom 50% shares of pre-tax income
- Ratio of middle 40% to bottom 50% shares of pre-tax income
- Ratio of top 1% to bottom 50% shares of pre-tax income
- Ratio of top 10% to middle 40% shares of pre-tax income
- Growth of per capita GDP

Methodology

- Single equations

$$PTY_{it} = \alpha_1 lnY_{it-1} + \alpha_2 W_{it-1} + \pi_i + \delta_t + \mu_{it} \qquad (1)$$

$$Ineq_{it} = \varphi_1 lnY_{it-1} + \varphi_2 Y_{t-1}^2 + \varphi_3 W_{it-1}\pi_i + \delta_t + \mu_{it} \qquad (2)$$

- Simultaneous equation

$$lnY_{it} = \beta_1 lnIY_{it-1} + \beta_2 Ineq_{it-1} + \beta_3 Ineq_{t-1}^2 + \beta_4 W_{it-1} + \pi_i + \delta_t + \mu_{it} \quad (3)$$

$$Ineq_{it} = \gamma_1 Ineq_{it-1} + \gamma_2 lnY_{it-1} + \gamma_3 Y_{t-1}^2 + \gamma_4 W_{it-1} + \pi_i + \delta_t + \omega_{it} \qquad (4)$$

- where PTY is pre-tax income shares, Y is growth of per capita income, $Ineq$ is income inequality measured by the income deciles, IY is the initial levels of income to control for convergence, W is other control variables (shares of sectoral employment, net FDI, net trade, and polity), π_i and δ_t are country and year fixed effects respectively.

- Data Sources: WID, World Bank, UN database, Polity IV Project, and ILO.

Data and estimation

- The data covers 40 sub-Saharan African countries over the period 1991-2015.

- All variables are measured at an average of five-year sub-period: 1991-95, 96-2000, 2001-05, 2006-2010, and 2011-15.

- Equation 1 and 2 are estimated as single equations. They are estimated with the LSDV approach in the framework of SUR

- Equation 3 and 4 are estimated as simultaneous equation using three-stage least squares

Results

Table 1: Determinants of pre-tax income shares in sub-Saharan Africa: fixed effect estimation.

	Top 1% shares of pre-tax income	Top 10% shares of pre-tax income	Middle 40% shares of pre-tax income	Bottom 50% shares of pre-tax income
Growth rate of per capita GDP [Lagged]	0.002** (0.001)	0.002*** (0.001)	-0.002*** (0.001)	-0.001* (3.39e-04)
Log of share of total employment in agriculture [Lagged]	-0.042* (0.022)	-0.078*** (0.021)	0.038*** (0.014)	0.032*** (0.009)
Log of share of total employment in industry [Lagged]	-0.010 (0.017)	-0.005 (0.016)	0.009 (0.011)	0.001 (0.007)
Log of share of total employment in services [Lagged]	-0.072* (0.038)	-0.123*** (0.037)	0.073*** (0.025)	0.049*** (0.015)
Net trade [Lagged]	0.001** (3.50-04)	0.001 (3.44e-04)	-3.10-04 (2.26e-04)	-1.44e-04 (1.42e-04)
Foreign direct investment [Lagged]	-3.02-04 (0.001)	-0.001 (0.001)	0.001* (0.001)	1.87e-04 (3.33e-04)
Polity	-0.003* (0.001)	-0.005*** (0.001)	0.003***(0.001)	0.002*** (0.001)
Observations	158	158	158	158
R-Squared	0.741	0.834	0.809	0.862

Results

Table 2: Determinants of Income Inequality in SSA: Fixed Effect Estimation.

	Ratio of top 1% to top 10% shares of pretax income	Ratio of top 1% to middle 40% shares of pre-tax Income	Ratio of top 10% to bottom 50% shares of pretax income	Ratio of middle 40% to bottom 50% shares of pre-tax income	Ratio of top 1% to bottom 50% shares of pre-tax income	Ratio of top 10% to middle 40% shares of pretax income
Growth rate of per capita GDP [Lagged]	0.003** (0.001)	0.019** (0.008)	0.089*** (0.031)	0.005 (0.007)	0.058*** (0.021)	0.026*** (0.009)
Squared Growth rate of per capita GDP [Lagged]	-3.95e-05 (2.54e-05)	-2.51e-04 (1.60e-04)	-0.001 (0.001)	1.23e-05 (1.43e-04)	-0.001* (4.40e-04)	-3.30e-04 (1.96e-04)
Log of share of total employment in agriculture [Lagged]	-0.033 (0.023)	-0.257* (0.146)	-3.441*** (0.601)	-0.868*** (0.131)	-1.392*** (0.402)	-0.514*** (0.179)
Log of share of total employment in industry [Lagged]	-0.016 (0.018)	-0.083 (0.113)	0.007 (0.466)	0.068 (0.101)	-0.098 (0.312)	-0.083 (0.139)
Log of share of total employment in services [Lagged]	-0.046 (0.041)	-0.288 (0.258)	-4.214*** (1.060)	--0.944*** (0.231)	-1.613** (0.710)	-0.739** (0.316)
Net trade [Lagged]	0.001** (3.77e-04)	0.005* (0.002)	0.011 (0.010)	-0.001 0.002)	-0.011 (0.007)	0.005* (0.003)
Foreign direct investment [Lagged]	1.80e-04 (0.001)	-3.12e-04 (0.006)	-0.018 (0.023)	--0.002 (0.005)	-0.003 (0.016)	-0.004 (0.007)
Polity	-0.003* (0.002)	-0.006 (0.010)	-0.097** (0.041)	-0.025*** (0.009)	-0.033 (0.027)	-0.019 (0.012)
Observations	158	158	158	158	158	158
R-Squared	0.746	0.624	0.865	0.895	0.759	0.754

Table 3: Simultaneous Equation Estimation of Economic Growth and Income Inequality.

	Growth rate of per capita GDP	Growth rate of per capita GDP	Growth rate of per capita GDP	Growth rate of per capita GDP	Growth rate of per capita GDP	Growth rate of per capita GDP
Growth rate of per capita GDP [Lagged]	-0.212*** (0.070)	-0.210*** (0.070)	-0.207*** (0.069)	-0.234*** (0.070)	-0.209*** (0.070)	-0.209***(0.070)
Log of per capita GDP at the beginning of the sub-period	0.571*** (0.041)	0.561*** (0.041)	0.538*** (0.041)	0.550*** (0.040)	0.551*** (0.041)	0.549*** (0.041)
Log of share of total employment in agriculture [Lagged]	1.971 (1.844)	2.105 (1.843)	2.497 (1.859)	2.724 (1.797)	2.234 (1.823)	2.315 (1.851)
Log of share of total employment in industry [Lagged]	-2.463* (1.393)	-2.428* (1.386)	-2.422* (1.379)	-2.228 (1.366)	-2.442* (1.379)	-2.440* (1.382)
Log of share of total employment in services [Lagged]	5.954* (3.141)	5.938* (3.183)	6.452** (3.171)	6.791** (3.113)	6.176* (3.159)	6.195* (3.214)
Net trade [Lagged]	-0.076** (0.030)	-0.077**(0.030)	-0.082***(0.030)	-0.086***(0.030)	-0.079***(0.030)	-0.080***(0.030)
Foreign direct investment [Lagged]	-0.013 (0.069)	-0.009 (0.069)	2.15e-04 (0.069)	0.009 (0.069)	-0.005 (0.069)	-0.006 (0.069)
Polity	0.105 (0.124)	0.111 (0.123)	0.136 (0.123)	0.105 (0.121)	0.119 (0.123)	0.121(0.123)
Ratio of top 1% to top 10% shares of pre-tax income [Lagged]	-19.188 (18.356)					
Ratio of top 1% to middle 40% shares of pre-tax income [Lagged]		-1.572 (2.281)				
Ratio of top 10% to bottom 50% shares of pre-tax income [Lagged]			0.177 (0.630)			
Ratio of middle 40% to bottom 50% shares of pre-tax income [Lagged]				4.164 (4.073)		
Ratio of top 1% to bottom 50% shares of pre-tax income [Lagged]					-0.317 (0.699)	
Ratio of top 10% to middle 40% shares of pre-tax income [Lagged]						-0.345 (2.108)
Observations	158	158	158	158	158	158
R-squared	0.794	0.793	0.794	0.798	0.794	0.794

Table 3: (continued): Simultaneous Equation Estimation of Economic Growth and Income Inequality.

	Ratio of top 1% to top 10% shares of pre-tax Income	Ratio of top 1% to middle 40% shares of pre-tax income	Ratio of top 10% to bottom 50% shares of pre-tax income	Ratio of middle 40% to bottom 50% shares of pretax income	Ratio of top 1% to bottom 50% shares of pre-tax income	Ratio of top 10% to middle 40% shares of pre-tax income
Growth rate of per capita GDP [Lagged]	0.002* (0.001)	0.010* (0.006)	0.055** (0.028)	0.005 (0.006)	0.033* (0.017)	0.012 (0.008)
Squared growth rate of per capita GDP [Lagged]	-3.74e-05 (2.28e-05)	-1.30e-04 (1.17e-04)	1.71e-04 (0.001)	8.39e-05 (1.20e-04)	-3.15e-04 (3.52e-04)	-8.30e-05 (1.58e-04)
Log of share of total employment in agriculture [Lagged]	-0.004 (0.022)	-0.074 (0.108)	-2.792*** (0.534)	-0.800*** (0.113)	-0.907*** (0.324)	-0.255* (0.146)
Log of share of total employment in industry [Lagged]	-0.001 (0.016)	0.029 (0.083)	0.221 (0.409)	0.074 (0.088)	0.140 (0.249)	0.039 (0.112)
Log of share of total employment in services [Lagged]	-0.041 (0.037)	-0.292 (0.189)	-3.842*** (0.931)	-0.964*** (0.200)	-1.611*** (0.564)	-0.581**(0.253)
Net trade [Lagged]	3.25e-04 (3.51e-04)	2.63e-04 (0.002)	0.001 (0.009)	-0.001 (0.002)	0.001 (0.005)	4.67e-04(0.002)
Foreign direct investment [Lagged]	-3.40e-05 (0.001)	-0.003 (0.004)	-0.031 (0.021)	-0.005 (0.004)	-0.011 (0.013)	-0.007 (0.006)
Polity	-0.004*** 0.001)	-0.016** (0.007)	-0.110*** (0.036)	-0.020*** (0.008)	-0.056** (0.022)	-0.029*** (0.010)
Ratio of top 1% to top 10% shares of pre-tax income [Lagged]	0.357*** (0.060)					
Ratio of top 1% to middle 40% shares of pre-tax income [Lagged]		0.496*** (0.043)				
Ratio of top 10% to bottom 50% shares of pre-tax income [Lagged]			0.386*** (0.055)			
Ratio of middle 40% to bottom 50% shares of pre-tax income [Lagged]				0.311*** (0.042)		
Ratio of top 1% to bottom 50% shares of pre-tax income [Lagged]					0.451*** (0.047)	
Ratio of top 10% to middle 40% shares of pre-tax income [Lagged]						0.475*** (0.050)
Observations	158	158	158	158	158	158
R-Squared	0.793	0.799	0.896	0.922	0.847	0.843

Policy recommendation

- Structural change (reallocation of labour to industry and services) could reduce income inequality and promote inclusive growth

- Retributive, progressive taxes, and pro-poor policies.

- Low income producers need to be safeguarded from the negative effects of unfair competition so as to maintain or increase the income levels of the poor income classes.

Thank you