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Personal Income Tax Reforms and Income Inequality in African Countries

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Agenda

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- Focus on PIT in the mix of inequality-reducing measures
- Introduce Employment Income Taxes Dataset (Africa edition)
- Exploration of the role of PIT design and reforms & income inequality in African countries
- First findings / reflections

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Motivation & Literature

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- In many countries, both absolute and relative inequality risen in recent decades (Gradín and Oppel, 2021).
- PIT **powerful tool for addressing inequality**. Present in > 90% of countries (Seelkopf *et al.,* 2021) & often been framed as the **hallmark of progressive taxation** (Ganghof 2006; Aidt and Jensen 2009)
- **Policy design can play an important role** in affecting incentives on extensive and intensive margins.
  - Through, e.g., a progressive rate structure, or tax-free allowance
- In LMICS, PIT often applied to small share of labour force, thus redistributive capacity is constrained (Benedek *et al.* 2022).
  - Designed with equity in mind?

Motivation & Literature

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- Policy design of PIT in LMICS in practice not always – (at least anecdotally)– carried out with equity outcomes in mind.
  - In 1/4 African countries, an employee earning ≦ PPP$1.90 a day would be liable to pay some positive amount of PIT (McNabb & Granger, 2023)
    - i.e., no tax-free allowances.
  - Gupta and Jalles (2022) find that in comparison to other regions, **recent reforms to PIT design have worsened inequality** in Sub-Saharan Africa.

- We attempt to answer the question of **whether PIT tax reforms in African countries since the 1990s have been inequality-reducing by design**
  - Combine data from the Employment Income Taxes Dataset (McNabb, 2022) w/ World Inequality Database (World Inequality Lab, 2022).

Data: EITD

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- Employment Income Taxes Dataset (EITD)

- PIT reform in LICs : first question is sometimes *What do our neighbours do?*
  - A: we don't really know.

- No existing (publicly available) source presents data on PIT policy design systematically (across countries and over time) for LICs and MICs.
  - Data particularly poor for African countries over time. (Some better data for LAC, OECD sources).

- Panel dataset that included details of the policy design of all employment income taxes in every African country (worldwide *soon*)
- Available at www.odi.org

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Data: EITD

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- ***Employment Income Tax*?**

- Includes all mandatory income taxes, other taxes (surtaxes), and employee social security contributions levied on earnings from wages and salaries (i.e. **formal** employment).

- Often takes the form of what most of us know as Personal Income Tax, or Pay-As-You-Earn, but differs from country-to-country.

- Data included for all EIT tax rates and thresholds

- All personal deductions (either through a zero – rate, tax credit / rebate or personal allowance) are indicated

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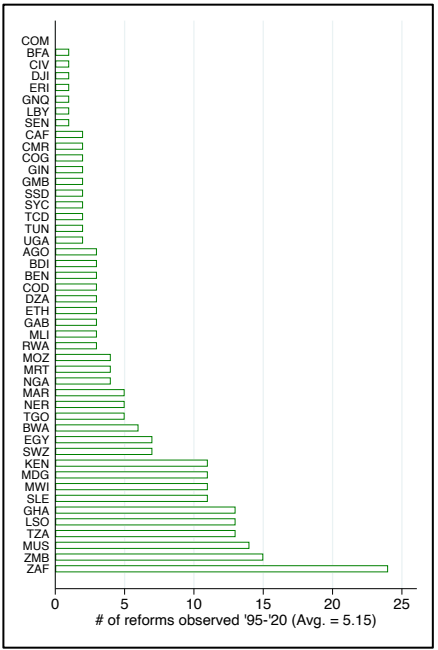
Data: PIT Design & Reform

- TaxDev EITD (McNabb, 2022)
- From EITD, we capture information related to reforms (type of reform, when occurs, etc.).
- Between 1995 and 2020, # of PIT reforms observed ranged from 0 (Comoros) to 24 (South Africa).
- Avg. around once every 5 years.
- We define a reform as any change to rates, thresholds, allowances or credits (available to all taxpayers).



Data: WID

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- We use data on *pre-tax* income distributions from World Inequality Database (WID)
- Start with pre-tax incomes (WID) at each percentile (*p1…p100*) for 54 countries, 1995-2019/20, matched with EITD
- After missing data, n =116,800
- Representative individual in each percentile earns the avg. wage of that percentile, no children, spouse, special circumstances etc.
- Apply statutory PIT incidence (EITD) to average pre-tax incomes (WID) at each percentile a country's distribution 1995-2020.
  - Compare pre- and post-tax inequality (Reynolds - Smolensky Index) and the rate of change in RS.

Δ Pre-Tax Gini in Africa 1995 - 2020

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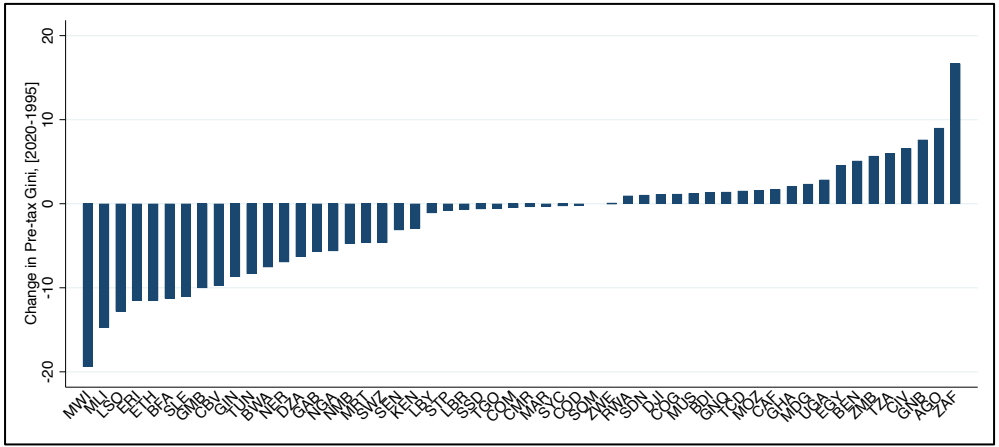

Source: Authors' calculations from the WID (2022)

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Example: Uganda 2015

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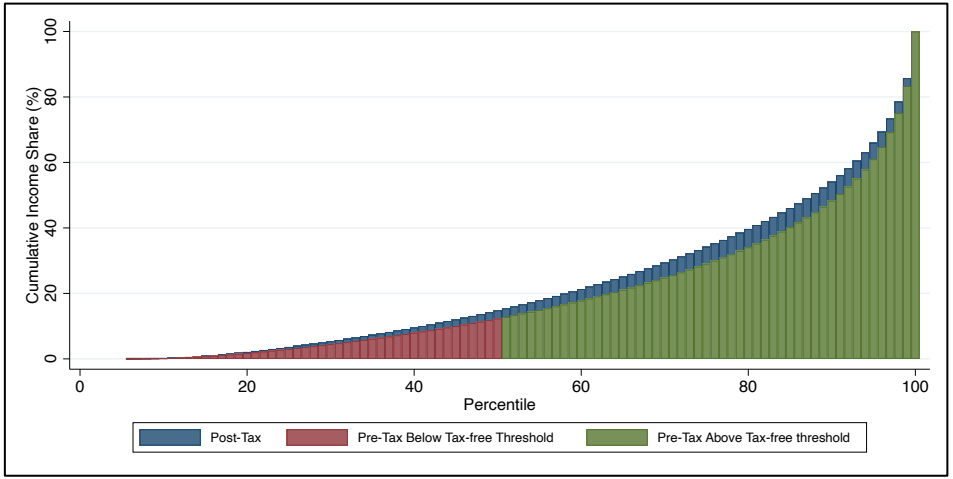

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Redistributive capacity: Changes in the Reynolds Smolensky Index and Palma Ratio

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- 1st outcome of interest is the Reynolds - Smolensky Index,(1977).
- Simply: Post-tax Gini – Pre-tax Gini

$$RS_i = G_{N_i(X_i)} - G_{(X_i)}$$

- *[Avg. 0.041 or 4.1% pts]*
- 2nd outcome of interest is the **change** in the RS, namely

$$D_i = RS_i - RS_{i-1}$$

- Particular interest of how the RS changes around PIT reform episodes…

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RS_i: Tunisia

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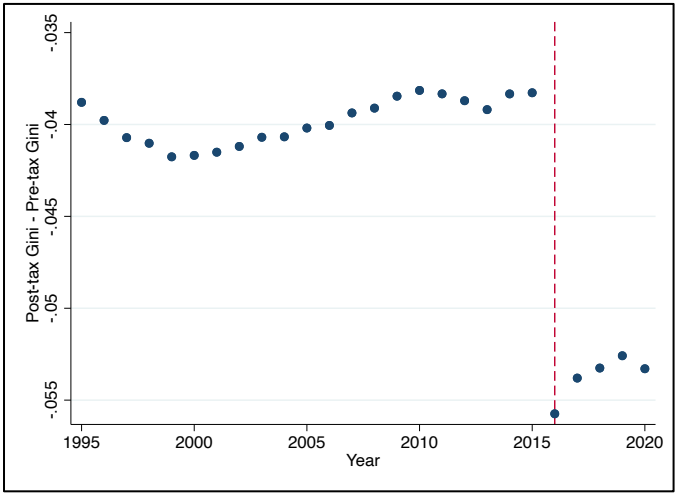
- E.g., **Tunisia.**
- Gini measured [0,1]
- Y axis RS_i
- Major PIT reform in 2016.
  - Thresholds adjusted; rates changed; # of bands reduced
- *RS* index falls sharply
- **But this is not typical!**



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RS_i: Cameroon

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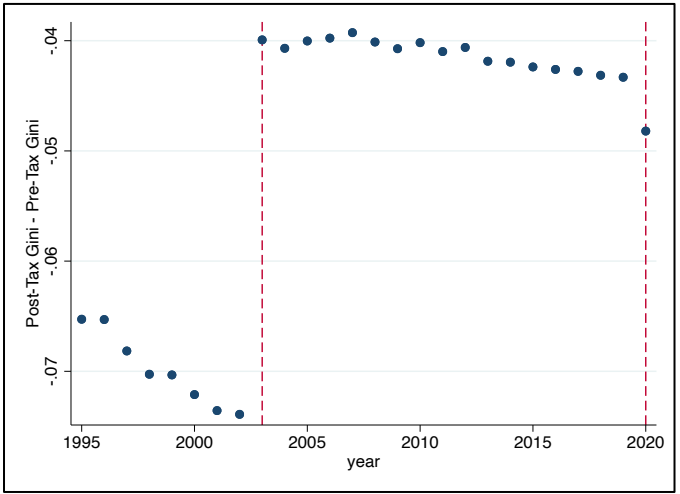
- E.g., **Cameroon.**
- Major PIT reform in 2003.
  - Thresholds adjusted; rates changed; # of bands reduced (11 -> 4)
- *RS* index **rises** sharply
- In this case we see a decrease in the redistributive potential of the PIT, by design.



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Regression Analysis

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- We regress, in turn, $\boldsymbol{RS_i}$ and $\boldsymbol{D_i}$ on a set of PIT design features to better understand the influences on both outcomes.

- Fixed Effects Regression

$$Y_i = \beta_0 + \beta_1 T_i + \beta_2 R_i + \beta_3 RT_i + \beta_4 X_i + \delta_i + u_i + v_i$$

- $\mathbf{T_i}$: Vector of Tax System features
- $\mathbf{R_i}$: Reform dummies
- $\mathbf{RT_i}$: Captures specific kinds of reform (first as dummy, then Δ).
- $\mathbf{X_i}$: Country-level controls (economic, demographic, governance factors).

Regression Analysis: Results snapshot

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- (No tables!)
- Regarding effects on Redistributive Potential (Rs_i)
  - A higher top PIT rate, presence of ceiling positively associated with increased redistributive potential of PIT
  - A PIT that 'kicks in' at a higher point in the income dist. has the opposite effect: lesser potential to be redistributive.

- Regarding effects of reform (D_i)
  - Reform Dummy (=1 in reform year) is positive and significant.
  - Reforms to the top marginal rate (and where it is applied) also hold explanatory power

Accounting for informality

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- World Banks's Informal Economy Database (IED) (Elgin et al., 2021)
  - Estimates the share of national income earned informally
- We apply this estimate to the cumulative incomes of each *p1…p100* and assume that any incomes earned by individuals in percentiles below this level are informal.
- Example: Uganda in 2015
  - IED estimates that 40% of national income is earned informally
  - This equates to individuals in percentiles *p1-p84*

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Accounting for informality

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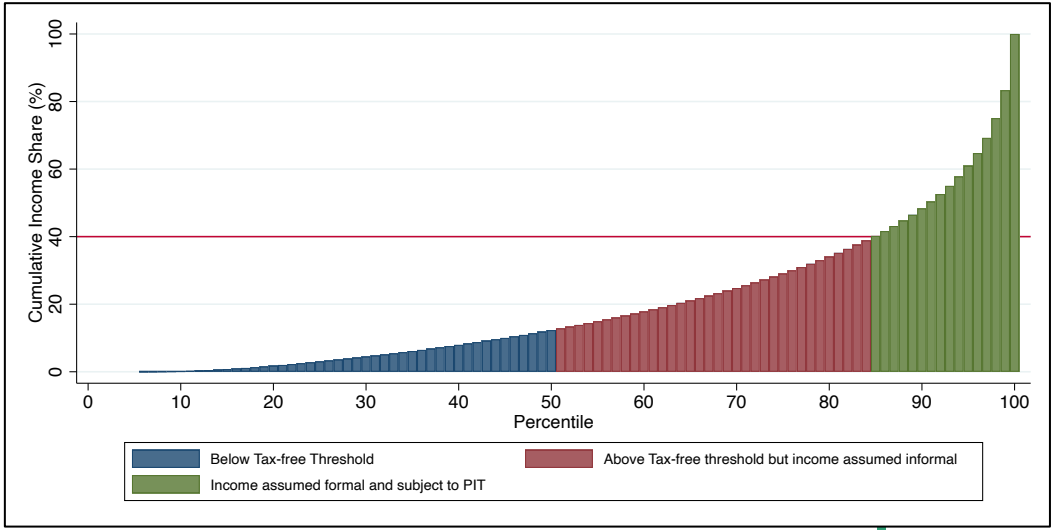

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- Example: Uganda in 2015
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- Summary stats before and after 'adjustment'

Variable (Y_i)	Obsv.	Mean
RS_i Gini	1,118	**-0.041**
RS_i Gini Adjusted Income	1,030	**-0.047**
RS_i Palma	1,128	**-1.55**
RS_i Palma Adjusted Income	1,030	**-1.76**

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Discussion / reflections

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- When applied to the entire income distribution, the redistributive capacity of the personal income tax can, on average and by design, yield a 4.1 point reduction in the Gini coefficient
- However, PIT reforms have generally worsened redistributive capacity of PIT.
  - Contrast African countries with other regions.
- Maximizing revenue versus equity considerations?
- Some drawbacks despite data improvements:
  - Large shares of informality – attempt to correct for
  - NNI including capital income – difficult to account for
  - Tax avoidance – don't currently model evasion behaviour or control for capacity of revenue authority
- Some countries PIT might exist as part of a fiscal *system* designed with redistributive goals in mind – this is just one part. ('Partial fiscal incidence' analysis).

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