Optimal Income Taxation in Developing Economies

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Motivation

- **Low tax revenues in developing countries.**
- **The structure of tax system: high indirect taxes and low income taxes.**
- **High informality.**

Figure 1: Tax Revenue components as % of GDP

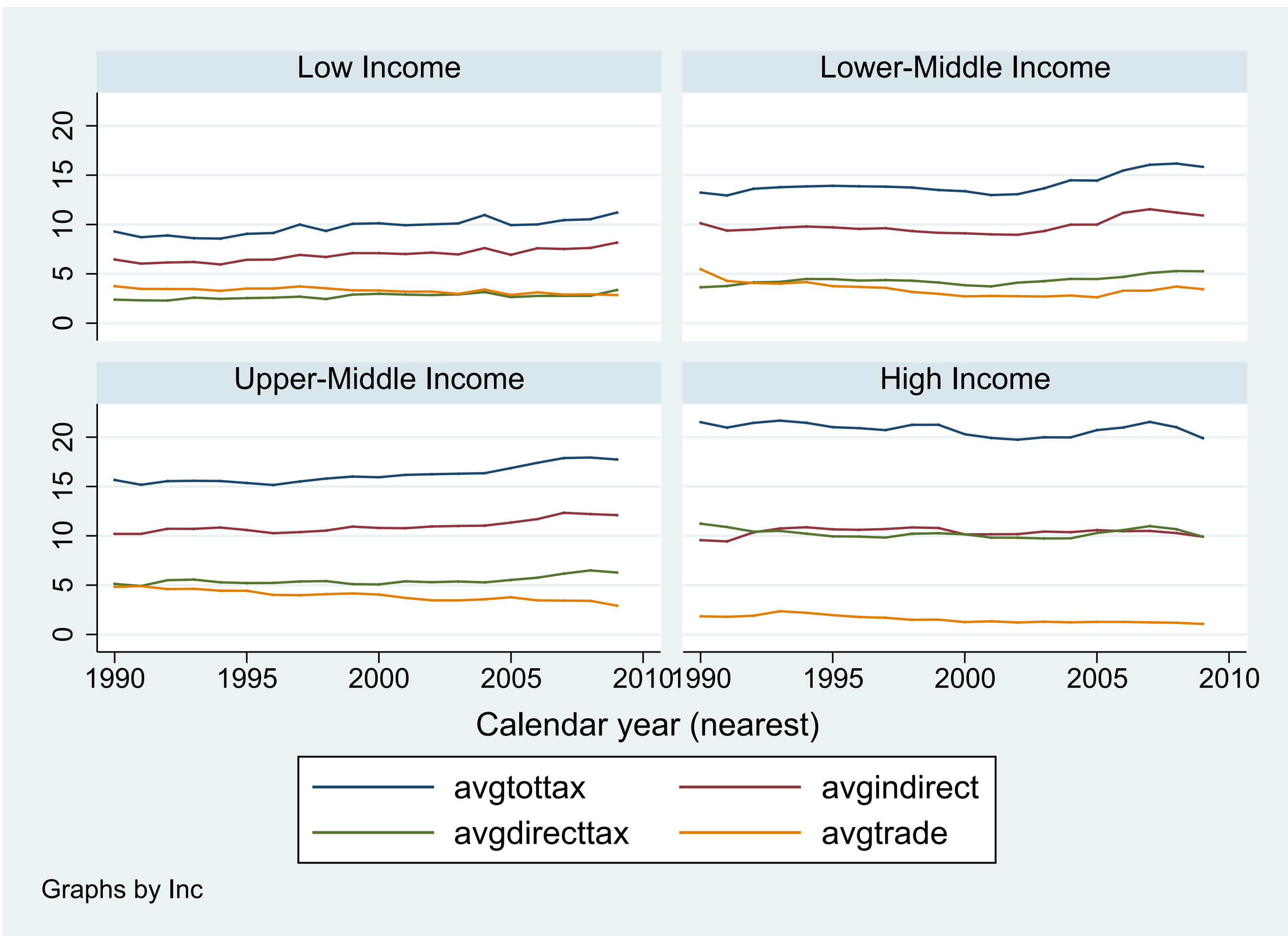
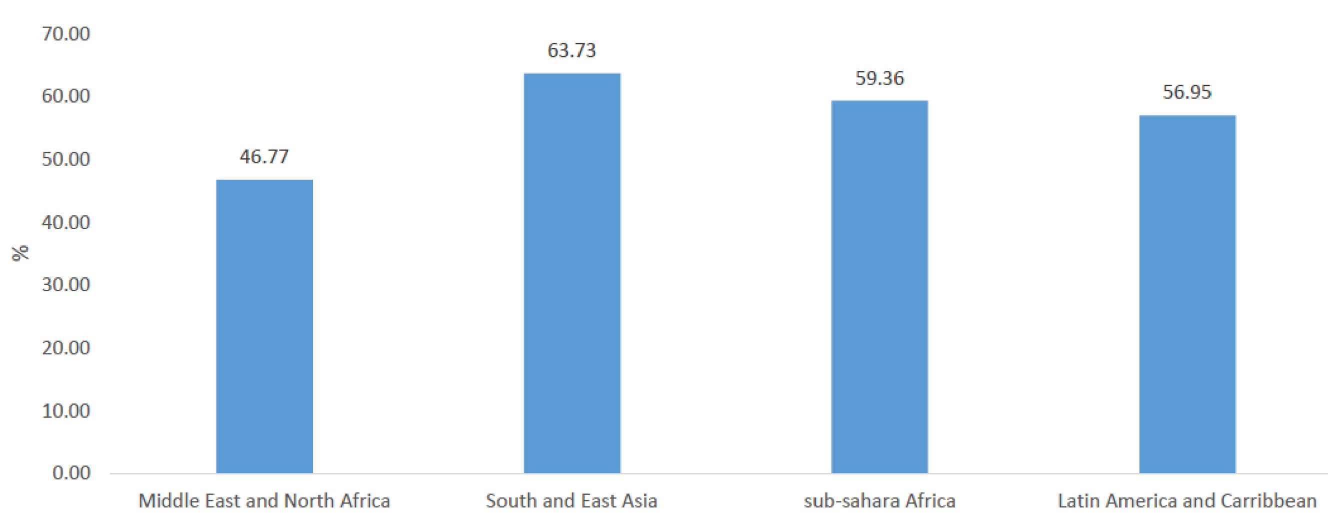


Figure 2: Informal Employment Share (non-agriculture)



Key Questions

- **How should the burden of income tax be distributed optimally between labor and capital in developing countries?**
- **What role does the informal sector plays?**
- **How does the human capital affect the optimal income tax mix?**

The Model

Demography: Three period overlapping generation model.
Production Structure:Two-sector economy- Formal and Informal.
Government: It collects taxes for wasteful spending.
Household's Problem

$$V_i(n_s) = \underset{c_i^y, c^{o\prime}, e_i, l_i \le \bar{l}_i}{Max} \left\{ u(C^y) + \beta u(C^{o\prime}) + \Psi \left(\pi_i(e_i) V_s(n_s') + (1 - \pi_i(e_i)) V_u(n_s') \right) \right\} \quad (1)$$

subject to

$$C_i^y + a_i' + e_i w_s^f = (1 - \tau_L) l_i w_i^f + (1 - l_i) w_i^h \quad (2)$$

$$C_i^{o\prime} = \left[1 + (1 - \tau_K) r' - \delta \right] a_i' \quad (3)$$

Calibration

In our quantitative analysis, Ghana is used as a representative economy.

RESULTS

- **Optimal income taxation requires low labor income tax and a high capital income tax.**
- **Higher capital income tax and lower labor income tax increase proportion of skilled workers but decrease capital-output ratio.**
- **But welfare improves due to higher after tax income and consumption of unskilled (poor) workers.**

Table 1: Optimal Tax vs Benchmark

Indicator	Benchmark	Optimal Tax	Change
Column	**1**	**2**	**3**
Capital income tax rate (%)	21	29.64	8.64
Labor income tax rate(%)	10	3.00	-7
Skilled Share (%)	25.0	25.55	0.55
K/Y	2.2152	2.113	-0.1022
Output per worker	3.3453	3.3768	0.0315
Skill premium	1.7961	1.8865	0.0904
Welfare Gain (CEV) (%)	-	0.37771	0.37771

Mechanisms

- **Labor income tax distorts education investment and labor allocation between sectors (allocative distortion)**
- **Capital income tax distorts capital accumulation and does not have allocative distortion.**

Effects of Distortions

- **Neglecting formal-informal labor reallocations leads to overestimation (underestimation) of labor (capital) tax rates.**
- **The presence of non-taxable informal sector limits the use of labor income tax to generate revenue.**
- **Substitution between physical and human capital suggests a higher capital income tax rate relative to labor tax is optimal.**

Table 2: Effects of Distortions

		Labor-Distortion			
Indicator	Baseline	Fixed labor	Fixed education	Both	Fixed Savings
Column	**1**	**2**	**3**	**4**	**5**
Capital income tax rate (%)	29.64	16.25	23.43	21.05	30.64
Labor income tax rate(%)	3.00	12.00	6.00	8.00	0.00
Skilled Share (%)	25.55	25.70	25.57	25.57	27.89
K/Y	2.113	2.0827	2.3053	2.2592	2.0681
Output per worker	3.3768	3.3715	3.4408	3.4199	3.4719
Skill premium	1.8865	1.7726	1.9087	1.8635	1.8393

Conclusions

- **In this paper, we determine optimal capital income tax and labor income tax rates in developing countries with large informal sector using Ghana as a case study.**
- **We find that optimal capital income tax should not be lower than labor income tax in a developing country with large informality.**
- **Capital income tax may be less distortionary compared to labor tax with both intertemporal and intratemporal distortions.**
- **Neglecting informal sector in optimal tax design will lead to overestimation of labor income tax and underestimation of capital income tax in developing countries.**