Wealth Inequality and CO2 Emissions in Emerging Economies: The Case of BRICS

Goodness C. Aye

UNESCAP/UNU-WIDER Conference

September 2019

Outline

- ❖ Introduction/Literature review
- ❖ Methodology
- ❖ Results
- ❖ Conclusion

Introduction

- Inequality & climate change prominent in policy & research arena

- SDG goal #10 reducing inequality within & among countries by 2030

- Rising trend in equality

- Many countries unequal: income & wealth inequality

- E.g SA: Income Gini is 0.63 (World Bank, 2018)

- Wealth Gini is 0.84 (Shorrocks et al., 2015)

Introduction

❖ The level & trend of equality should be of a policy priority.

❖ Inequality has consequences on the economy.

❖ Recent debate: inequality is partly responsible for the increasing greenhouse gas emissions

❖ Richest 10% contribute about 50% of the world's global carbon emission

❖ While the poorest 50% contribute only 10% (Oxfam International, 2015).

Introduction

❖ Theoretical channels:

➢ **Labour & consumption dynamics-** Marginal propensity to emit approach (Ravallion et al., 2000; Zhang and Zhao, 2014; Jorgenson et al., 2017; Knight et al., 2017).

➢ **Veblen effect** (Veblen 1934; Bowles and Park, 2005; Fitzgerald et al., 2015; Knight et al., 2013).

➢ **Political economy** approach (Boyce,1994; Boyce, 2007; Downey, 2015; Cushing et al. 2015; Knight et al., 2017).

Introduction

❖ Empirical studies on effect of inequality on CO2 emission (Ravallion et al., 2000; Jorgenson et al., 2015; Jorgenson et al., 2016; Jorgenson et al., 2017; Knight et al., 2017).

❖ All except Knight et al. (2017) focused on income inequality.

❖ Knight et al. (2017) analysed HICs

❖ Objective: examine the role of wealth inequality on CO2 emission in BRICS.

Methodology

❖ A balanced panel dataset of annual observations from 2000 to 2014

❖ CO_2 emissions per capita (WDI).

❖ Wealth inequality-top decile of adults age >20 (Shorrocks et al., 2014).

❖ Control variables: GDP per capita, population & domestic credit to the private sector (WDI).

❖ Log transformation

❖ Both fixed and random effects panel models estimated

Methodology

❖ The fixed effects model:

$$Y_{it} = \beta X_{it} + \varphi_1 Z_{it} + ... + \varphi_k Z_{it} + \alpha_i + u_{it} \qquad (1)$$

❖ The random effects model:

$$Y_{it} = \beta X_{it} + \varphi_1 Z_{it} + ... + \varphi_k Z_{it} + \alpha + u_{it} + \varepsilon_{it} \qquad (2)$$

Results

❖ Table 1: Descriptive statistics of variables in log form

	CO2	TOP10	GDP	POP	FD
Mean	1.427	4.229	10.548	19.491	4.123
Median	1.674	4.250	10.707	19.068	3.949
Maximum	2.548	4.440	13.329	21.034	5.076
Minimum	-0.033	3.884	7.480	17.638	2.613
Std. Dev.	0.881	0.121	1.654	1.275	0.669
Skewness	-0.241	-1.236	0.051	0.019	-0.111
Kurtosis	1.476	4.186	2.343	1.479	1.821
Jarque-Bera	7.986	23.497	1.382	7.231	4.501
Probability	0.018	0.000	0.501	0.027	0.105

Results

❖ Table 2: Estimates of fixed and random effects models

VARIABLES	(1) Fixed Effects	(2) Random Effects
Top10	0.8526**	-5.9417***
	(0.0120)	(0.0000)
GDP	0.6621***	0.6035***
	(0.0000)	(0.0000)
Population	0.4882**	-0.2819***
	(0.0249)	(0.0000)
Financial Development	-0.1590***	0.5886***
	(0.0001)	(0.0000)
Constant	-18.0224***	23.2550***
	(0.0000)	(0.0000)
Observations	75	75
R-squared	0.9169	0.6460
F-Stat/Wald Chi2	182.03***	127.72***
	(0.000)	(0.000)
Number of id	5	5
Individual FE	YES	YES
Hausman test	69.18	
	(0.000)	

Conclusion

❖ Examined the relationship between wealth inequality and CO_2 emissions for the BRICS

❖ Wealth inequality, GDP per capita and population have positive effect on CO_2 emissions

❖ The concentration of income among the top of the distribution leads to environmental degradation

❖ Financial development has a negative effect.

❖ The need for pro-poor, inclusive economic growth and low carbon development policies is supported by these findings.

Conclusion

❖ Policies that combine equality-enhancing effects with direct reductions in emissions could be helpful.

❖ Perhaps the use of wealth tax, trading emission permits alongside with carbon tax among others may be promising.

❖ Environmental safety, efficiency and improvements + social policies cannot be overstressed

Thank you