

# Financial disincentives to formal work in Ecuador and Colombia

David Rodríguez <sup>a</sup><sup>b</sup>  
Xavier Jara

<sup>a</sup>SER, University of Essex

<sup>b</sup> Universidad Externado de Colombia

[david.rodriguez@essex.ac.uk](mailto:david.rodriguez@essex.ac.uk)

Quito, Ecuador,  
6<sup>th</sup> of July 2018

Important research on the effect of payroll taxes on labour informality (demand of formal work)

Informality is stubbornly high in Ecuador and Colombia

Less is known about how taxes disincentive the supply of formal work

What is the role of the tax-benefit system on financial incentives to enter formal work?

(i.e Formalization monetary costs for workers)

Is the tax-benefit system hampering formalization in Ecuador and Colombia?

# Informality (Definition)

Our paper follows the *legalistic view* which allows us to separate formal from informal workers depending on a component of the tax-benefit system: Social Insurance Contributions (SIC).

We consider formal workers those reporting contribution (affiliation) to Social Security in the survey in Colombia (Ecuador).

Social Security entitles among others to: health insurance, sickness, maternity and paternity leave payments and an old age pension under some additional conditions.

## Exclusion

Regulations hamper firms and workers, always eager to formalise, from doing it

De Soto (1989) Tokman (2007) Loayza and Rigolini (2011)

## Exit

Workers and firms choose optimally to be informal analysing expected returns and costs, taking into account low government's enforcement capacity and available non-contributory social security

Maloney (1999) Bosh and Maloney (2010)

## Income and Expenditure Household Surveys

Ecuador: National Urban and Rural Household  
Income and Expenditures Survey (ENIGHUR)

2011-2012

Monetary values uprated to 2014

Colombia: Quality of Life National Survey (ENCV)

2014

## Strategy

Make use of detailed multi-country tax-benefit microsimulation models.

Simulate transitions to the formal sector for informal workers

Estimate the proportion of earnings that will be taxed away in the form of

- Increased taxes
- Increased social insurance contributions
- or Reduced benefits

Analyse individual or HH welfare effects of simulated changes

- i.e Disposable Income

Microdata: HH Income and Expenditure surveys

Each country's Tax and Benefit Policy Rules

EUROMOD Interface

Market Income

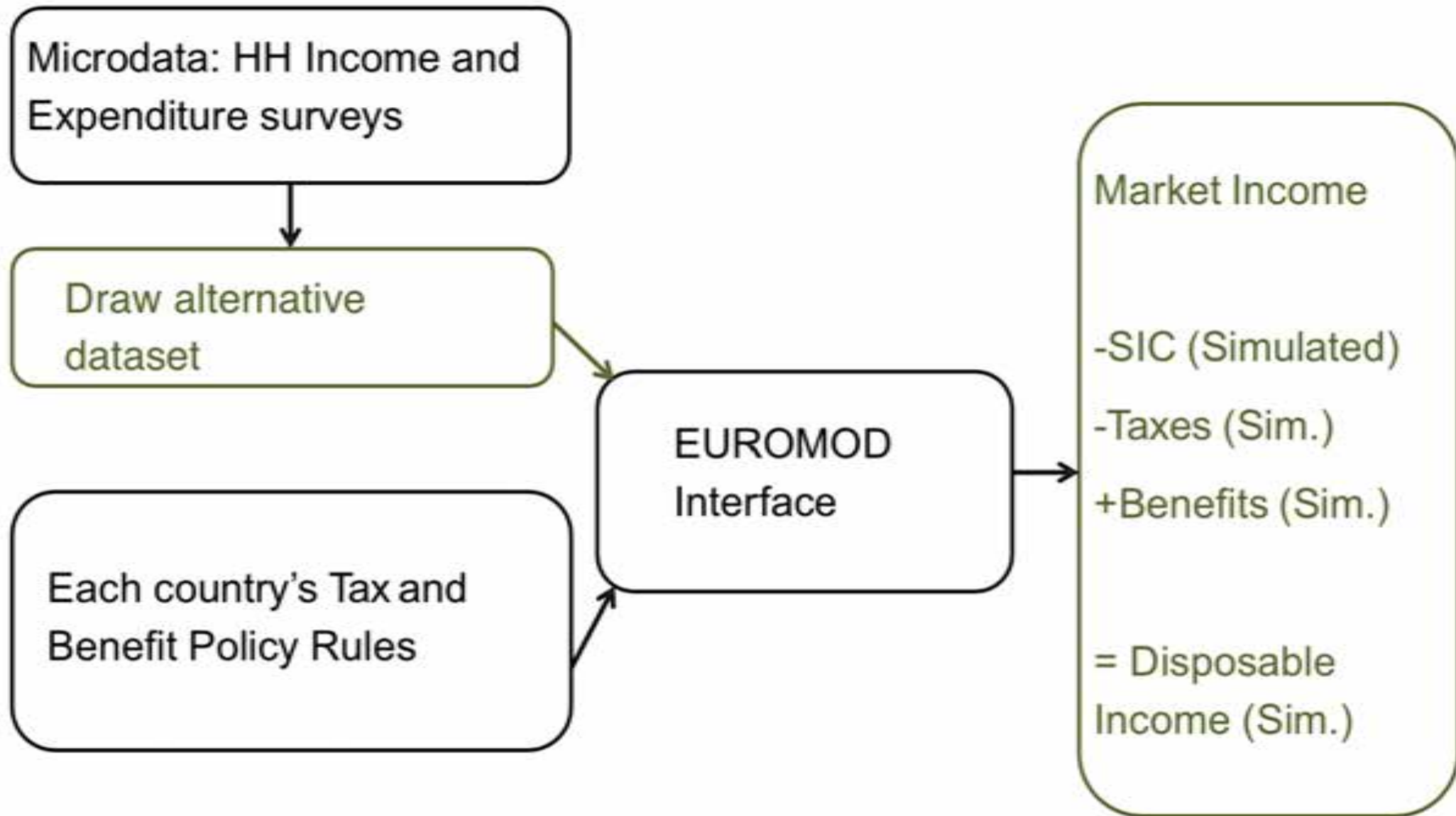
-SIC (Simulated)

-Taxes (Sim.)

+Benefits (Sim.)

= Disposable Income (Sim.)





# Transition Strategies

## Informal → Formal

(exit or exclusion?)

Mincer equation (Heckman selectivity correction)

Carneiro and Henley (2002)

$$\Pr(U_i^F - U_i^I \geq 0) = \Pr(\rho + \phi D_i + \eta F_i + \kappa X_i + e_i) = \Pr(\Psi_i + e_i) \quad (1)$$

$$\log(w_i) = \alpha + D_i' \beta + F_i' \gamma + J_i' \delta + \lambda \frac{\phi(\Psi_i)}{\Phi(\Psi_i)} + \epsilon_i \quad (2)$$

Estimated based on formal workers and predicts earnings for informal workers

Pooled employees and self-employed because we observe few formal self-employed

Alternative scenario accounts for Minimum Wage

# Formalization Tax Rate

Following Koettl and Weber, (2012): formalization costs could be defined as

$$FTR_i = \frac{Y_{h,i}^0 - Y_{h,i}^1}{w_i}$$

$i$ : informal worker;  $w_i$ : labour income;

$y_{h,i}$ : HH disposable income

However, this formulation does not account for earnings change after formalization.

Instead, we assume formal work disincentives are measured relative to changes in earnings due to formalization:

$$FTR_i = \begin{cases} \left( 1 - \frac{y_{h,i}^1 - y_{h,i}^0}{w_i^1 - w_i^0} \right) & \text{if } w_i^1 > w_i^0 \\ - \left( 1 - \frac{y_{h,i}^1 - y_{h,i}^0}{w_i^1 - w_i^0} \right) & \text{if } w_i^1 < w_i^0 \end{cases}$$

$FTR_i = 0 \rightarrow$  No effect of the tax benefits system

$FTR_i > 0 \rightarrow$  % of additional income taxed away

$FTR_i < 0 \rightarrow$  formalization “subsidy”

# Contribution

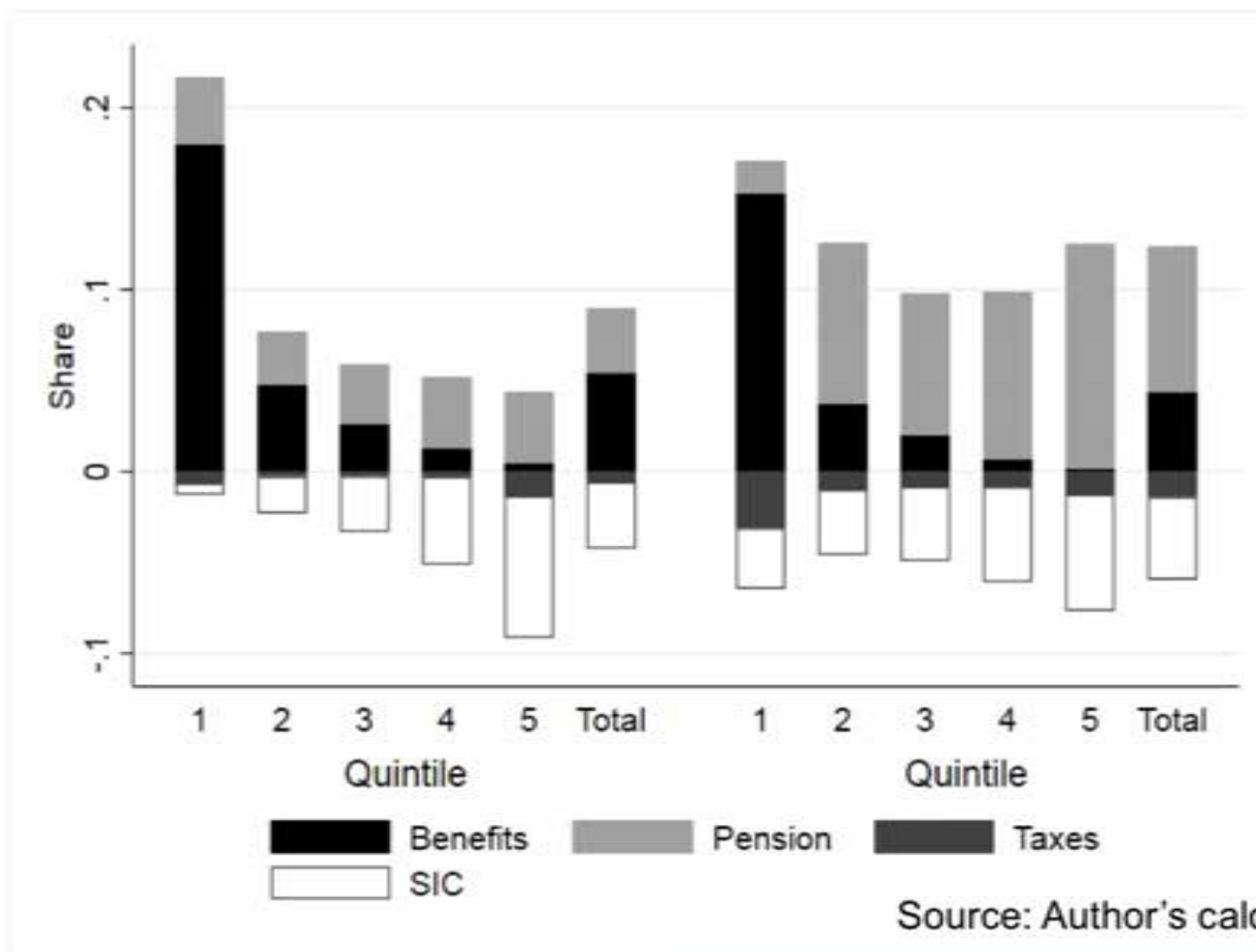
To the best of our knowledge, these are the first detailed tax and benefit microsimulation models for Latin American countries using representative microdata.

This is the first attempt to give an estimate of the Financial disincentives to formal work with data at the microlevel.

We take into account wage differentials between sectors in the estimation of disincentives to formal work

# Results (Tax-Benefit System)

Share of Tax-Benefits in HH Disposable Income by quintiles (2014)  
Ecuador Colombia

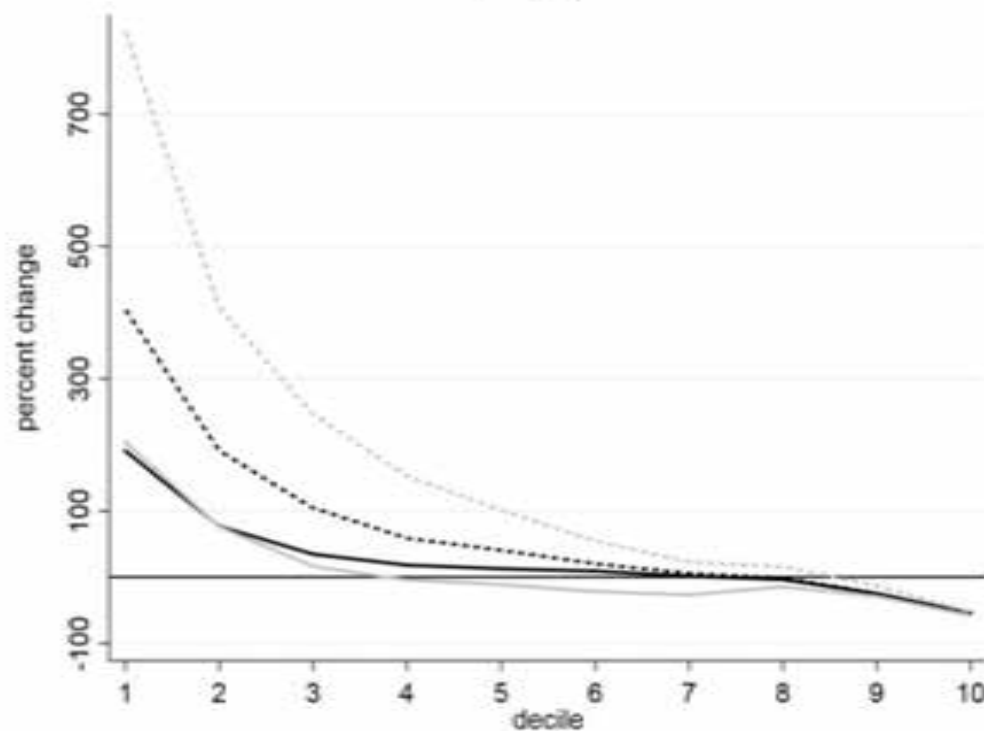
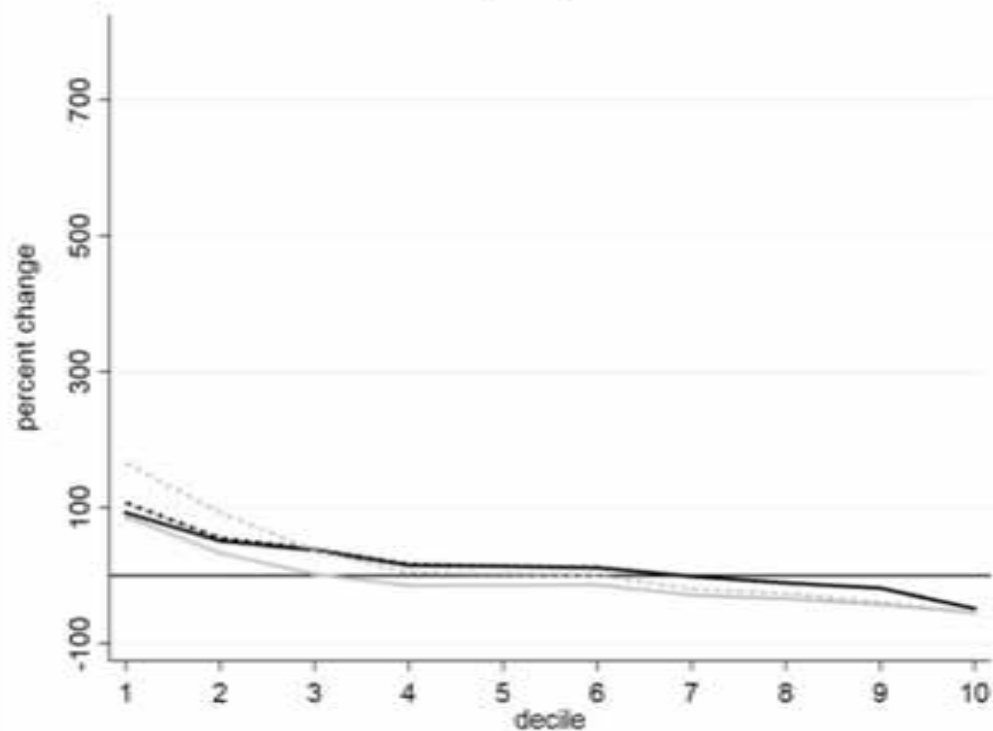


# Results (Income change)

Percent change in labour income (2014)  
by decile of pre-reform earnings

Employee

Self-Employment



— Ecuador without MW

- - - Ecuador with MW

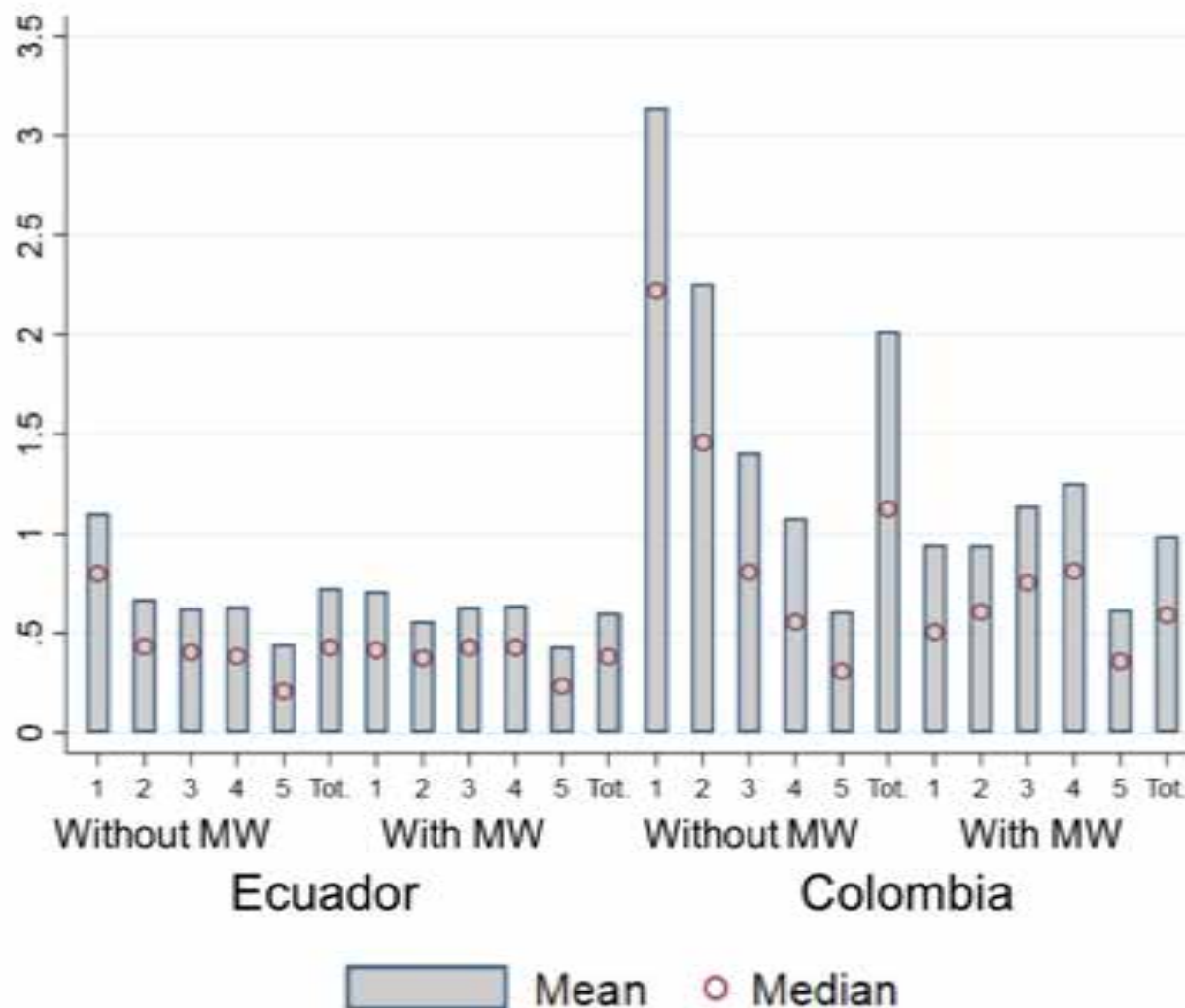
— Colombia without MW

- - - Colombia with MW

Source: Author's calculations

# Results (Formalization Tax Rate)

## FTR Self-Employed by quintile of pre-reform earnings

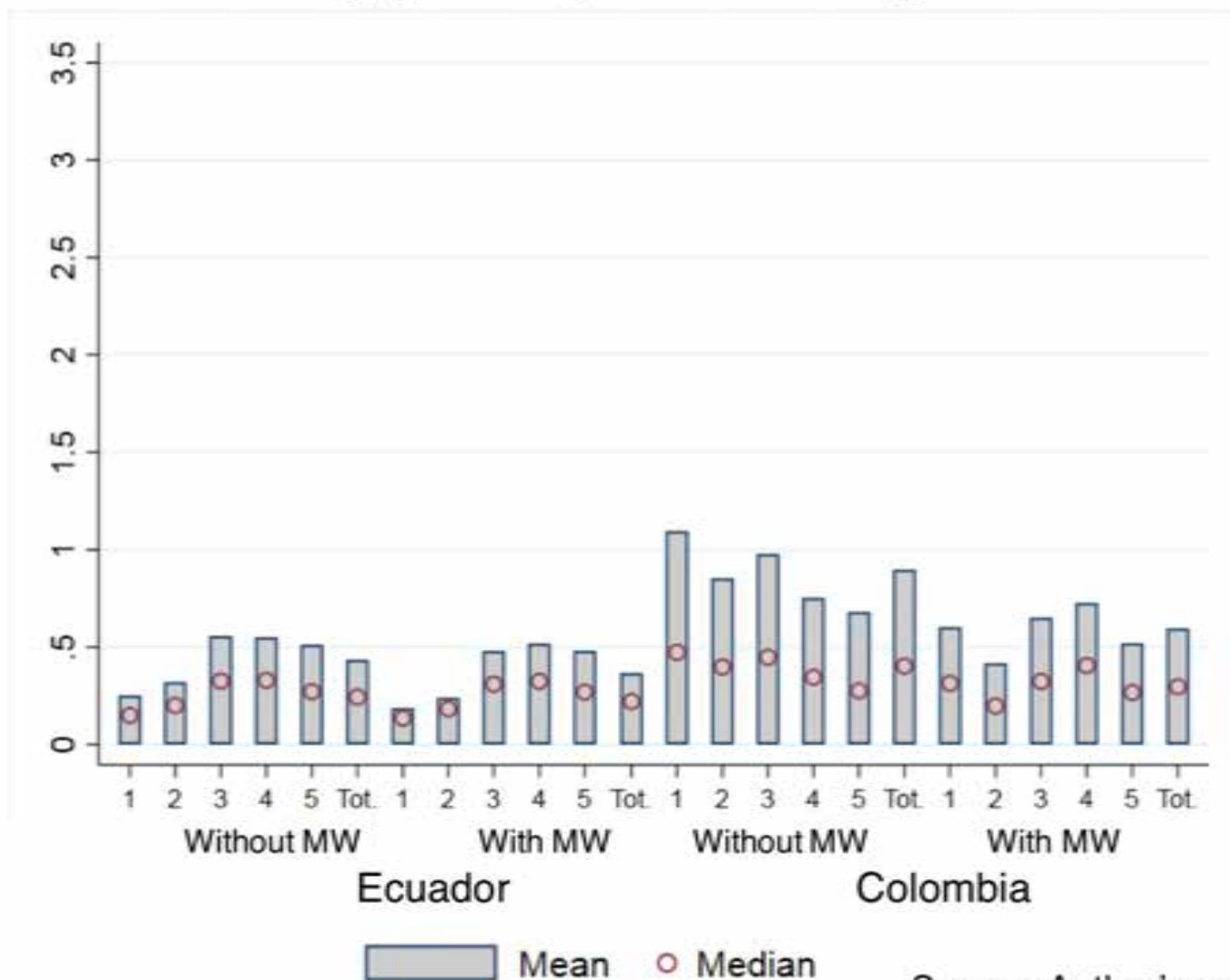


Source: Author's calculations



# FTR Employees

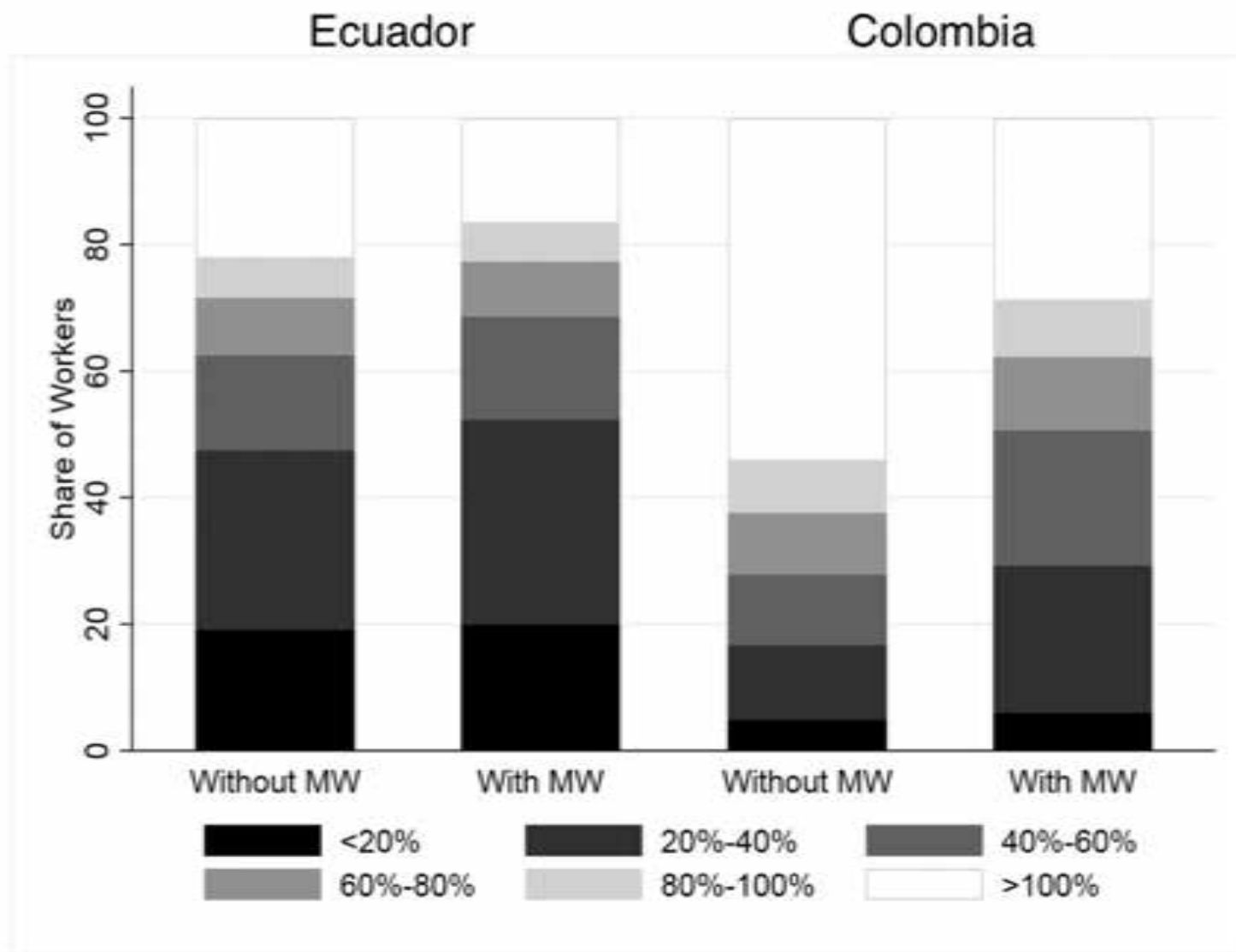
by quintile of pre-reform earnings



Source: Author's calculations

# Results (Formalization Tax Rate)

## FTR Self-Employed

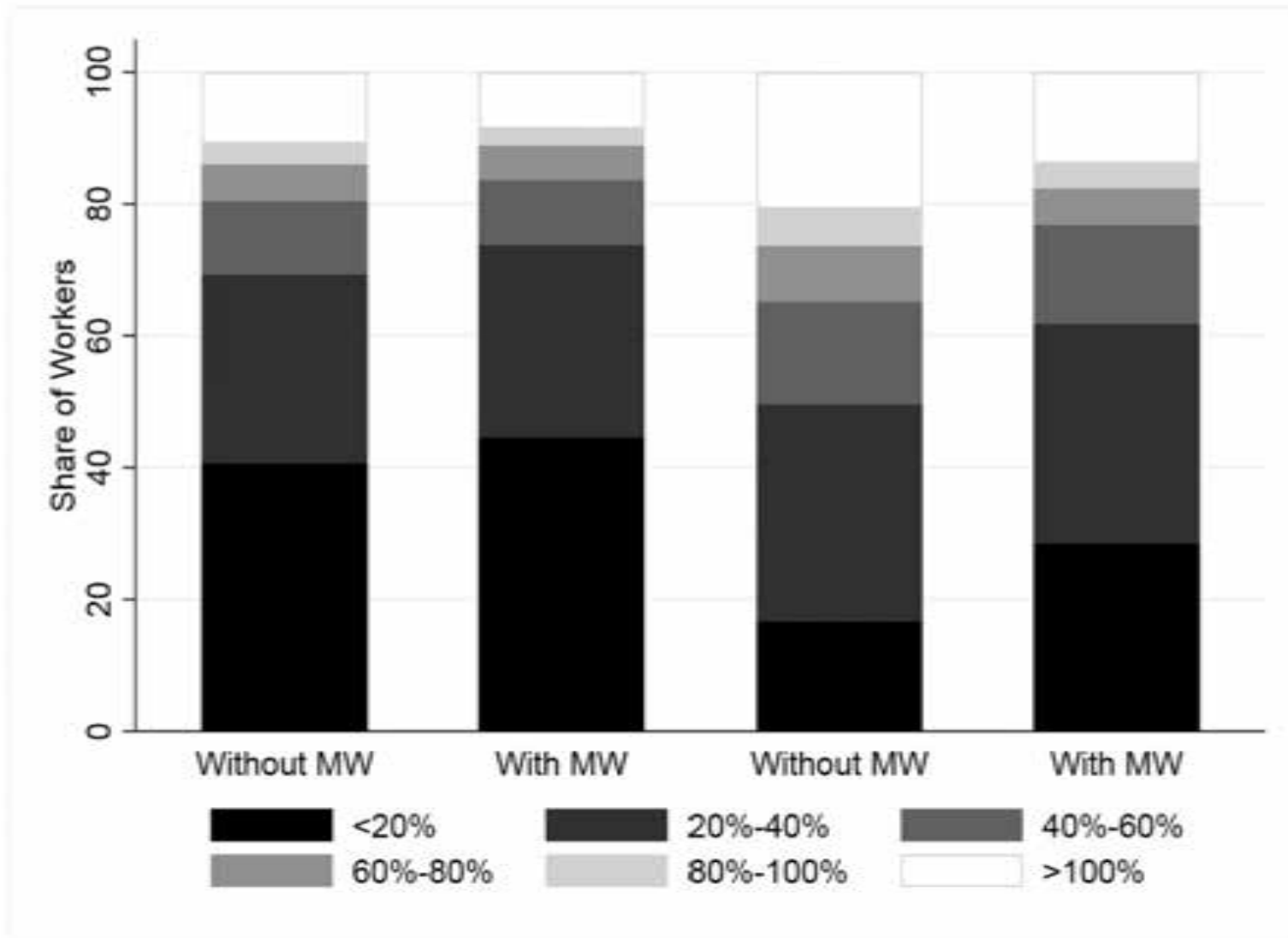


Source: Author's calculations

# FTR Employees

Ecuador

Colombia



Source: Author's calculations

# Results (Aggregate)

		Ecuador		Colombia	
		Without MW	With MW	Without MW	With MW
Percent Change of	Worker's SIC	67.1%	69.5%	120.9%	121.8%
	Employer's SIC	58.7%	59.8%	29.0%	31.7%
	Total SIC	63.7%	65.6%	60.0%	62.1%
	Income Tax	3.9%	4.0%	0.1%	0.1%
	Earnings	2.0%	6.1%	-1.9%	5.4%

Source: Author's calculations

Formalization improves aggregate SIC around 60%

Given informality distribution, different burdens between employee and self-employed in each country

Formalization improves tax revenue marginally

Much less in Colombia

Aggregate earnings are not always higher

Measure: Scenario	Ecuador				Colombia			
	Gini		20/20 Ratio		Gini		20/20 Ratio	
	Market	Disposable	Market	Disposable	Market	Disposable	Market	Disposable
Baseline	0.474	0.434	12.05	8.96	0.566	0.539	27.91	19.42
Without Minimum wage	0.458	0.428	11.60	9.11	0.557	0.576	27.19	44.17
With Minimum wage	0.442	0.411	10.47	8.21	0.511	0.519	17.41	17.29

Source: Author's calculations

Formalization improves original income distr.

Informal work: At the bottom of distr. increase income

Improves disposable income distr. in Ecuador

Mixed results for disposable income distr. in Colombia

(high burden of SIC)

# Conclusions

Tax and Benefit Systems are quite different for the two countries

They have a modest effect on income distribution (especially in Colombia)

Workers are likely to self select in informal activities

Strategies for transitions to formality matter for this kind of analysis

Informal workers face a heavy formalization burden

Especially self-employed in Colombia as a result of a minimum payment of social insurance contribution of around 28.5% of a minimum wage.

Introduce behavioural responses of workers by means of a labour supply model featuring:

- informality choice

- labour demand restrictions

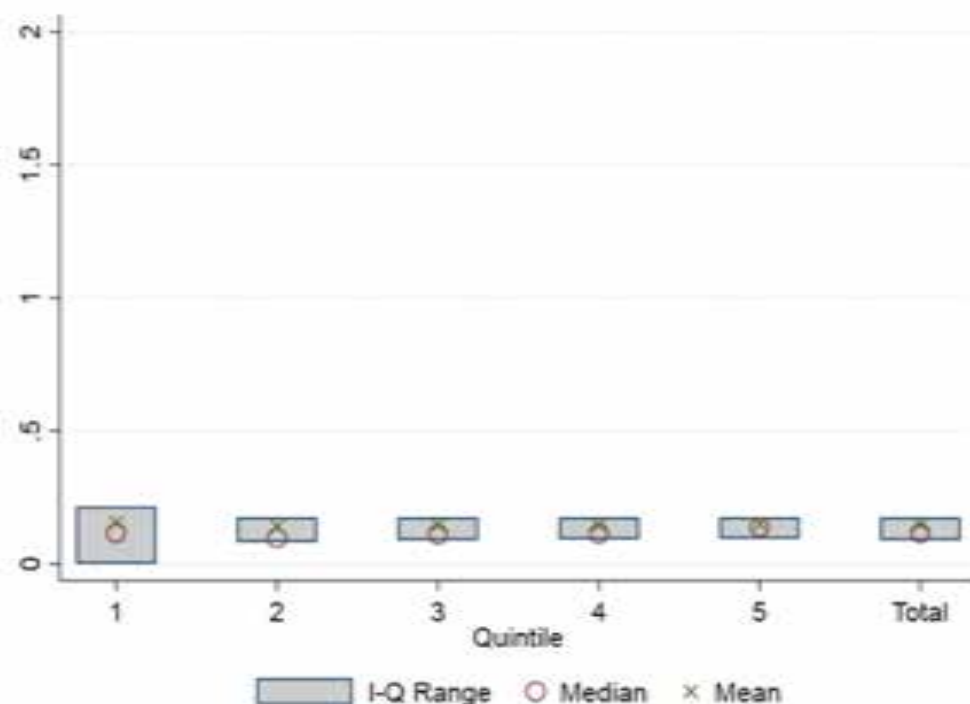




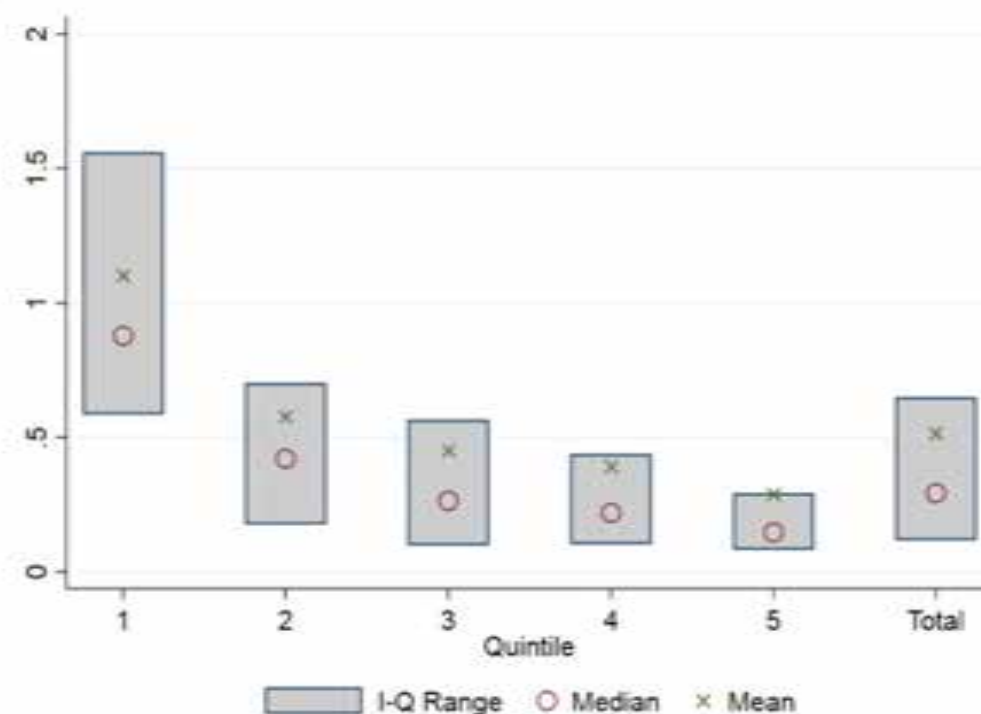
In the case of no income change

$$FTR_i = \frac{Y_{h,i}^0 - Y_{h,i}^1}{w_i}$$

Ecuador



Colombia



Source: Author's calculations