

# **Financial Crises, the Great Recession and the Middle Class in the Americas, an Empirical Analysis**

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(IARIW) discussion of  
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**Session 2E: The Great Recession and the Middle Class**

# Motivation and questions

Evolution of «middle class» in 5 Latin American countries before/after the 2008 global financial crisis

No unambiguous definition of «middle class»

Explore evolution of «middle class» according to alternative definitions:

1. Bipolarization approach

- Foster and Wolfson (2009);

- Wang and Tsui (1999);

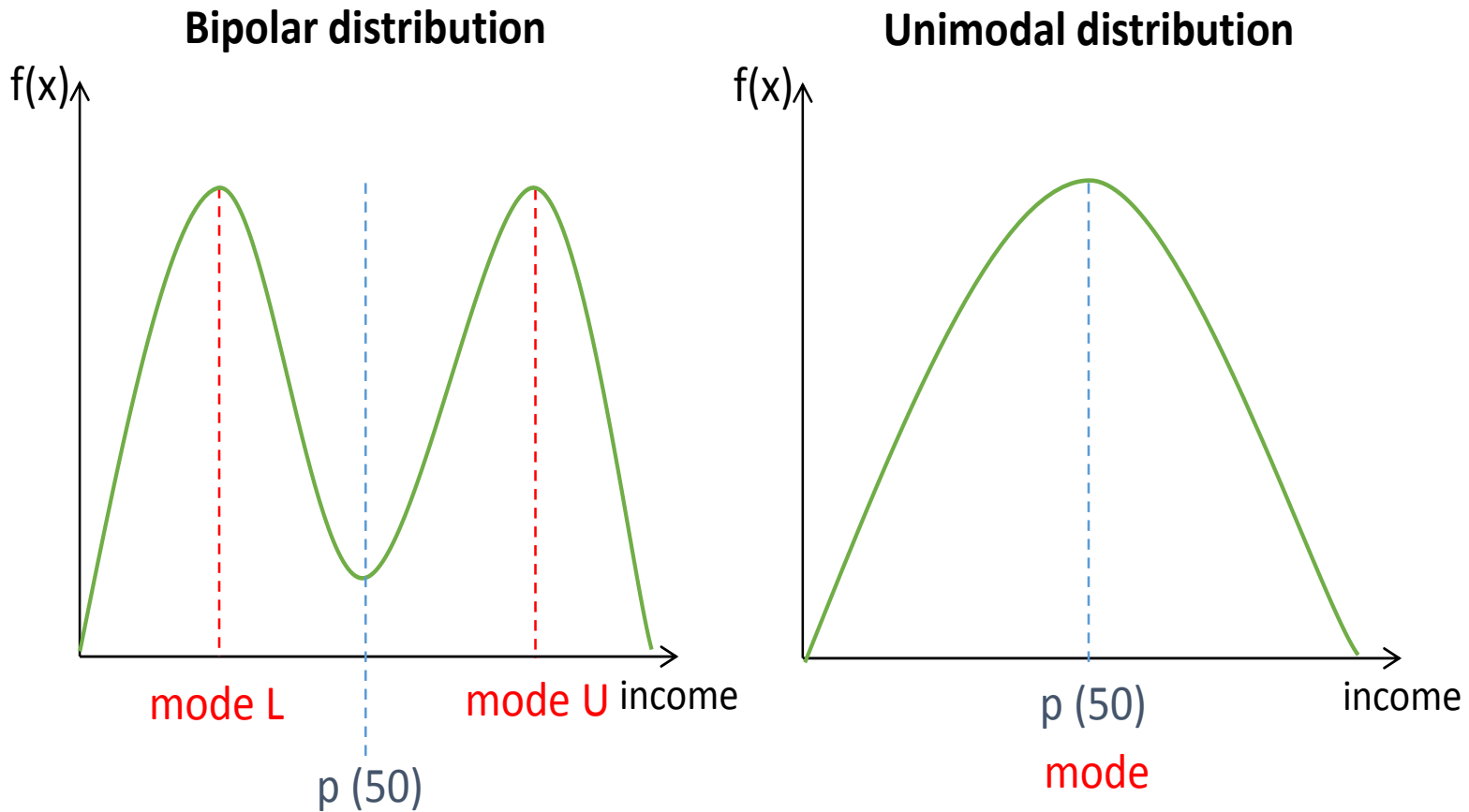
- Yalowitzky (2014)

2. Absolute thresholds

- Thurow (1984) - 75% and 125% median.

- Levy (1987) – 2<sup>nd</sup>-4<sup>th</sup> quintiles

# Bipolarization



Infer size of “middle class” from level of bimodality in a given distribution through modes around the median.

# Bipolarization, basic axioms

Index of bipolarization must fulfill (among other axioms):

Spread-decreasing transfer: transfer between two individuals on opposite sides of the median that make them closer must reduce bipolarization index

Clustering-increasing transfer: transfer between two individuals on same side of the median make them closer must increase bipolarization index.

# Foster and Wolfson (2010)

Original index:

$$FT = (G_B - G_W) \frac{\mu}{m}$$

$G_B$  Between-group Gini

$G_W$  Within-group Gini

$\frac{\mu}{m}$  mean/median

For this work, authors use non standardised version

$$FT = G_B - G_W$$

To ensure transfer axioms are fulfilled

## Wang and Tsui (2000)

$$WT = \frac{1}{N} \left[ \sum_{i=1}^{\frac{N}{2}} a_i y_i^L + \sum_{i=1}^{\frac{N}{2}} b_i y_i^U \right]$$

With:

$$y_{N/2}^L \leq \dots \leq y_1^L \leq \text{median} \leq y_1^H \leq \dots \leq y_{N/2}^H$$

and – to satisfy axioms – weights such that:

$$a_1 < a_2 < \dots < a_{N/2} < 0 < b_{N/2} < b_{(N/2)-1} < \dots < b_1$$

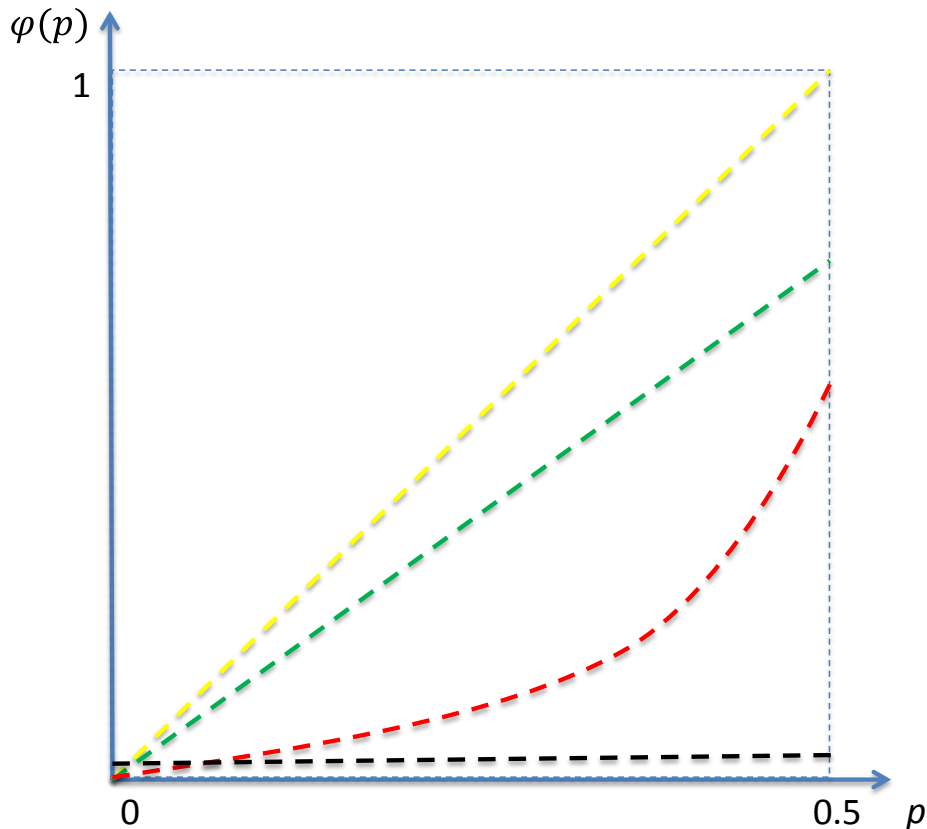
Along with other standardisation assumptions on a's and b's

# Yalonetzky (2014)

Standardized differences between (groups of) individuals above and below the distribution's mean

$$\psi(p) = \frac{\int_0^p [y_H(q) - y_L(q)] dq}{\mu}$$

$$p \in [0, 0.5]; y_L(0.5) \leq \dots \leq m \leq y_H(0) \leq \dots \leq y_H(0.5)$$



Compare levels of bipolarization between different distributions with no-crossing properties (e.g stochastic dominance)

# Study cases

Brazil: 2004-2014 (PNAD)

Chile: 2000-2011 (CASEN)

Peru: 2004-2014 (ENAEH)

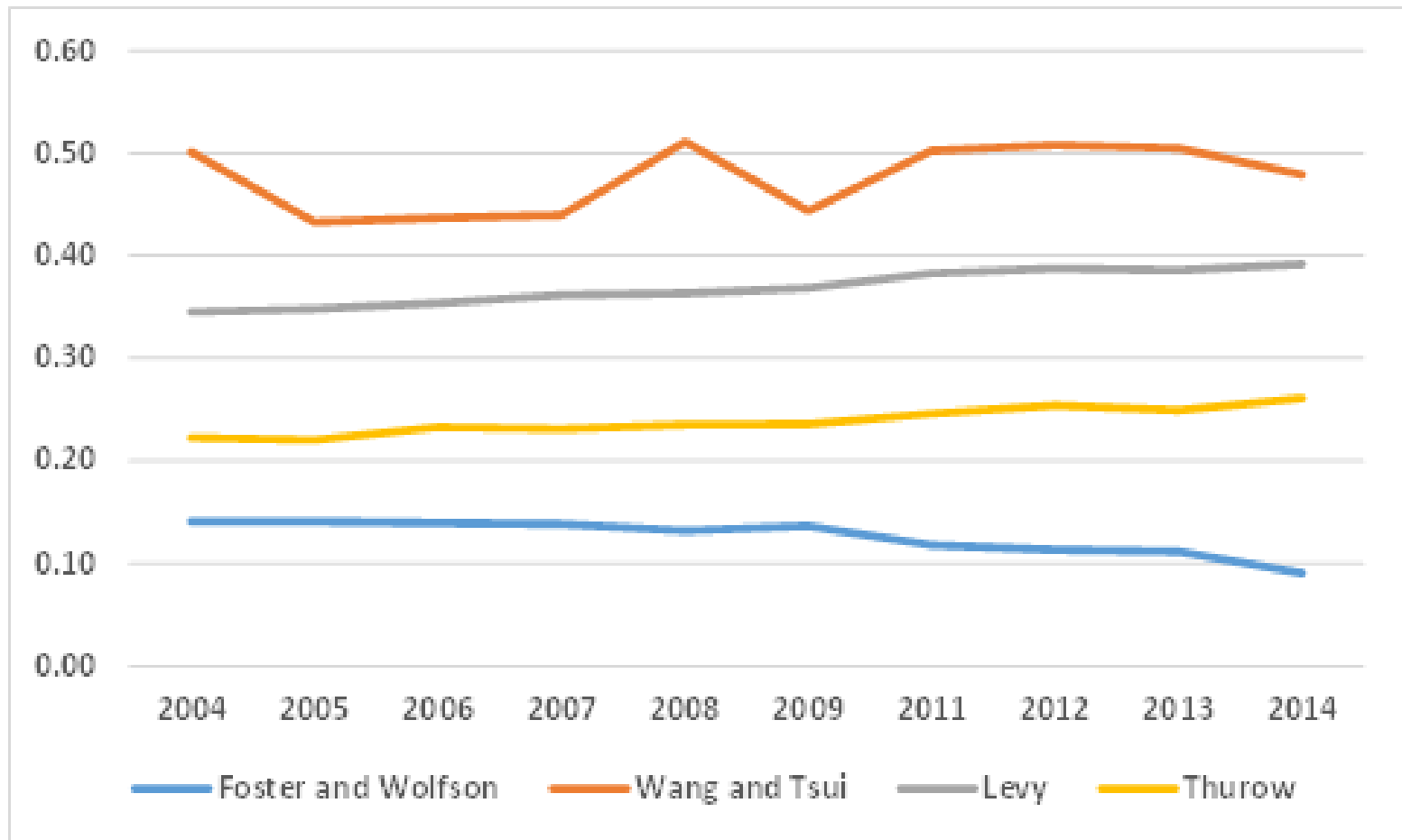
Mexico: 2000-2012 (ENIGH)

Uruguay: 2006-2015 (ECH)

Total household per capita incomes.

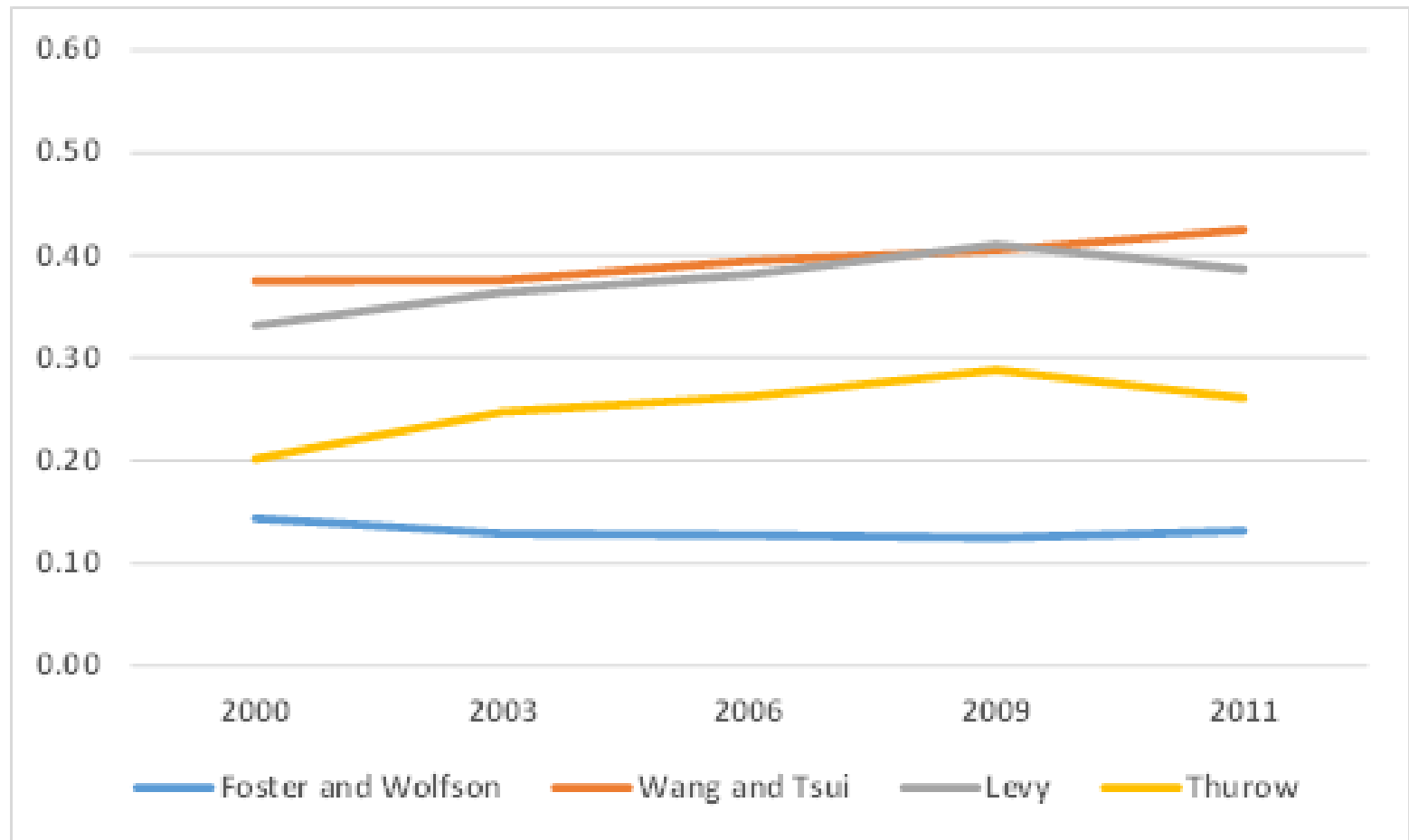


# Brazil, 2004-2014



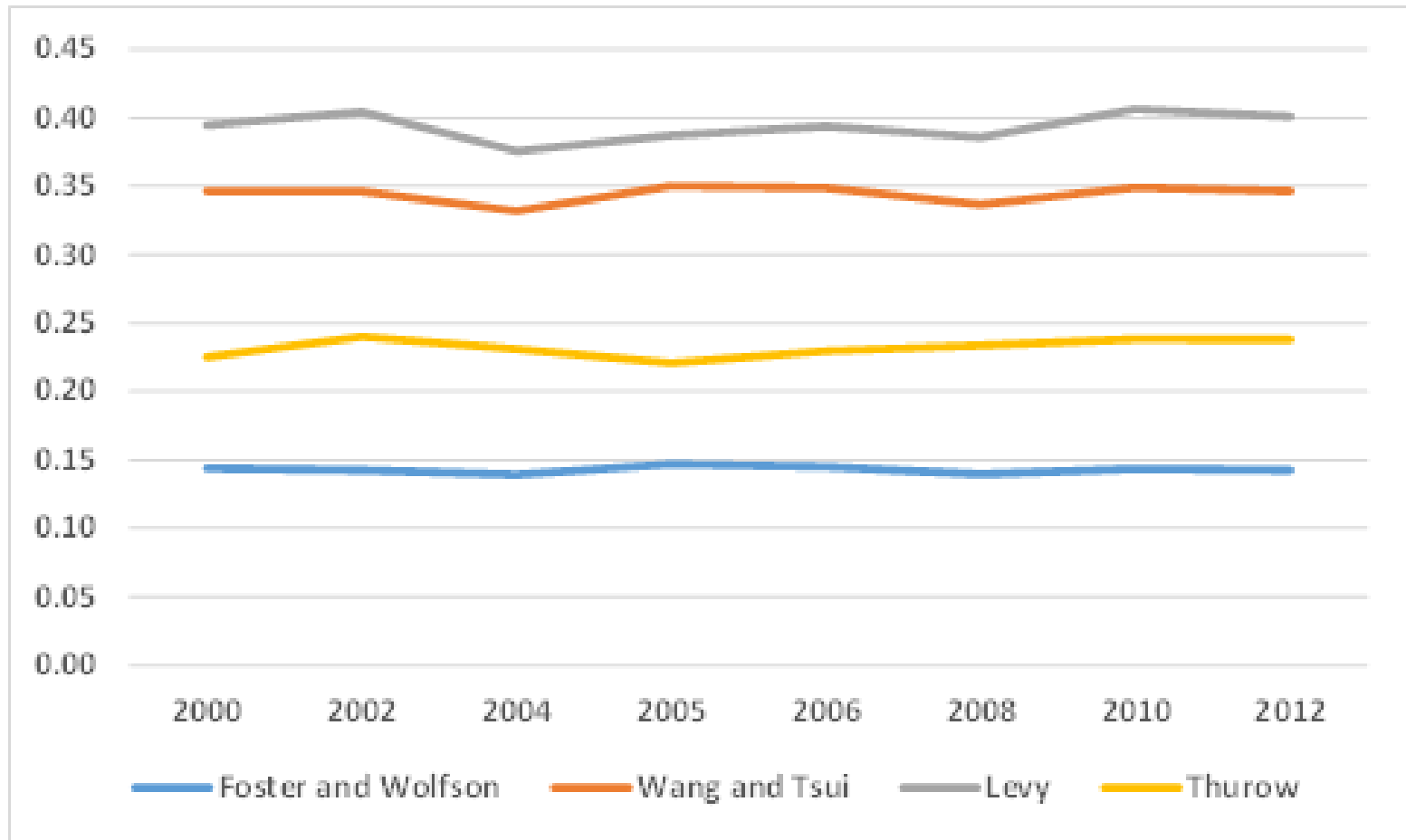
No RBL curve crossings: 2004-2011; 2005-2011; 2006-2012

# Chile, 2000-2011



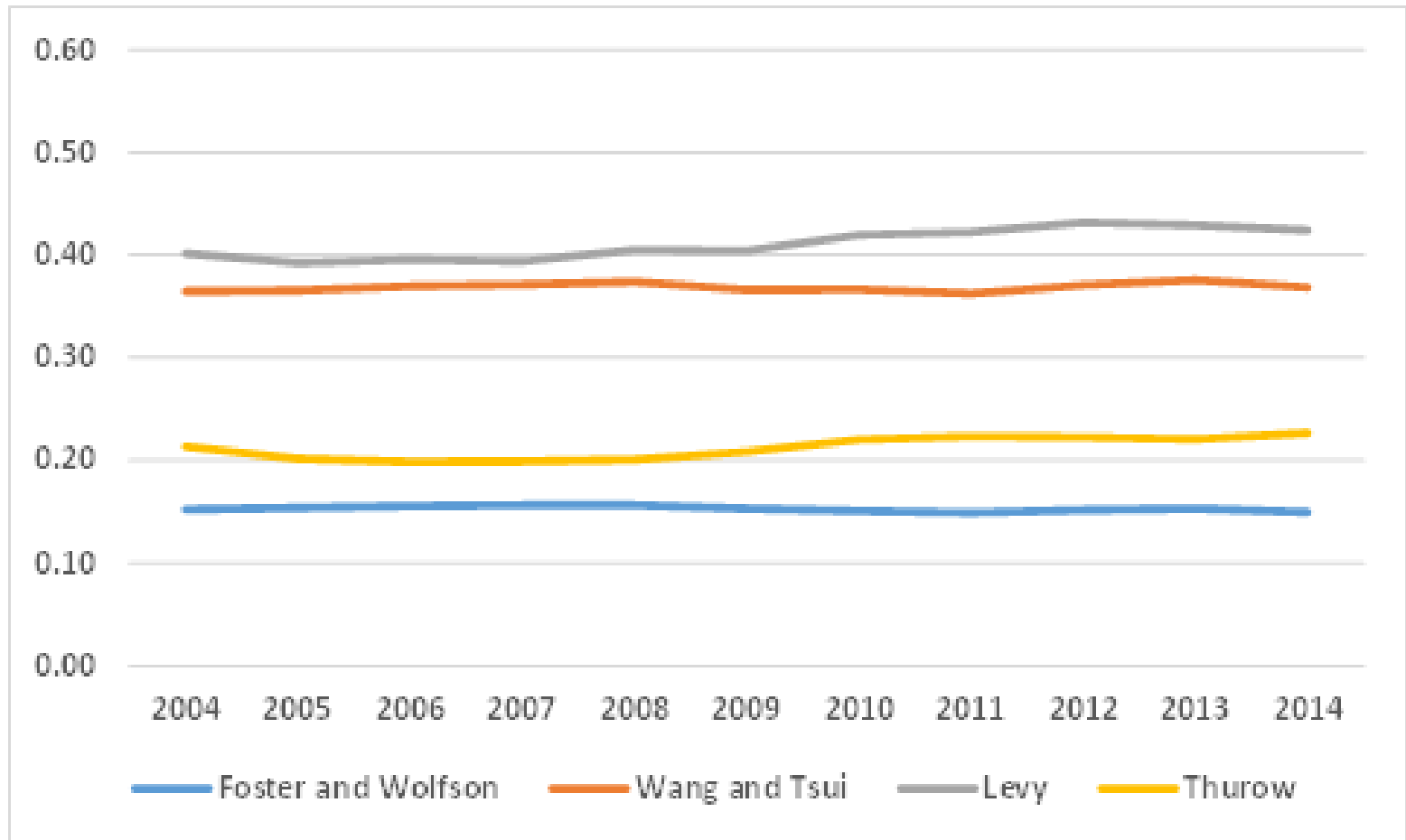
All pairwise comparisons display crossings of RBL curves

# Mexico, 2000-2012



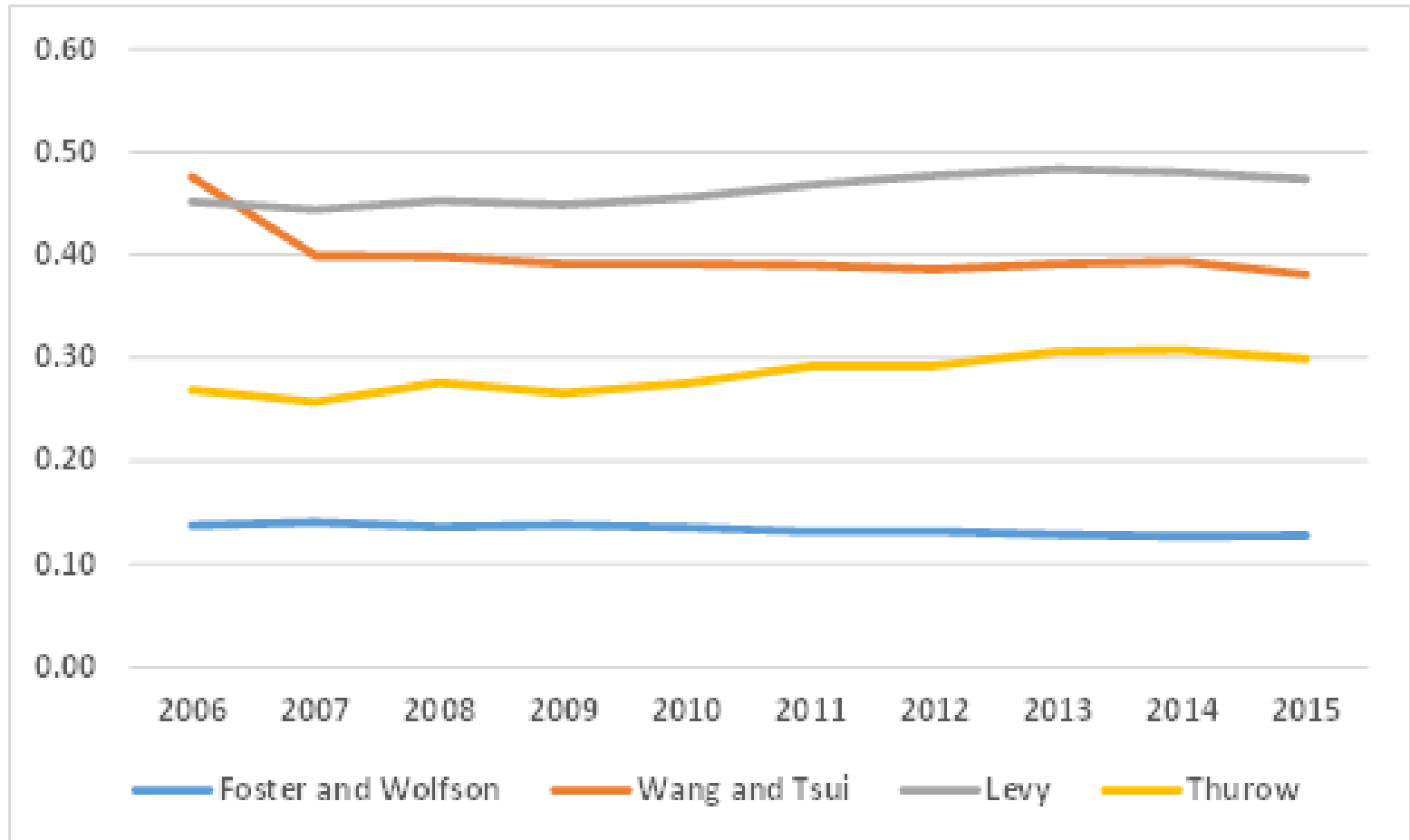
All pairwise comparisons display crossings of RBL curves

# Peru, 2004-2014



No RBL curve crossings: 2005-2014; 2006-2010

# Uruguay, 2006-2015



No RBL curve crossings: 2006-2010; 2010-2012; 2007-2008;  
2007-2012; 2008-2013; 2012-2013

# Conclusions

Describe evolution of middle class in 5 LA countries before and after 2008 and compare evidence from alternative definitions.

RB curves analysis shows (robust evidence of) reduction of bipolarization (increase in middle class) over time in Brazil, Peru, Uruguay; less clearcut reduction of bipolarization in Chile and Mexico, although evidence do espoint to increase in size of middle class.

Evidence from RBL curves broadly consistent with that from other traditional measures.

# My Comments

Well written paper, clear in its goals and strategy.

→ Strengthen link with macro developments: are country level developments of middle class consistent with macro developments given what we know of country economies?

→ Can we say more on statistical significance of differences over time also in other measures of middle class analysed in paper?

→ Pairwise comparisons of RBL curves are informative; unfortunately do not yield a clear monotonic ranking of all periods based on stochastic criteria. Yet they highlight a time pattern. Can more be said on how this pattern towards strict stochastic dominance (in this case neat increase of middle class) unfolds over time? Does middle class increase from lower income becoming better off of (maybe because of global crisis) well off segments becoming poorer?

**Thanks to the organizers for giving the chance of reading this paper and to Jose Martin for sharing his material ...**

**... and thanks to you for your attention.**