Wage Rigidity and Disinflation in Emerging Countries

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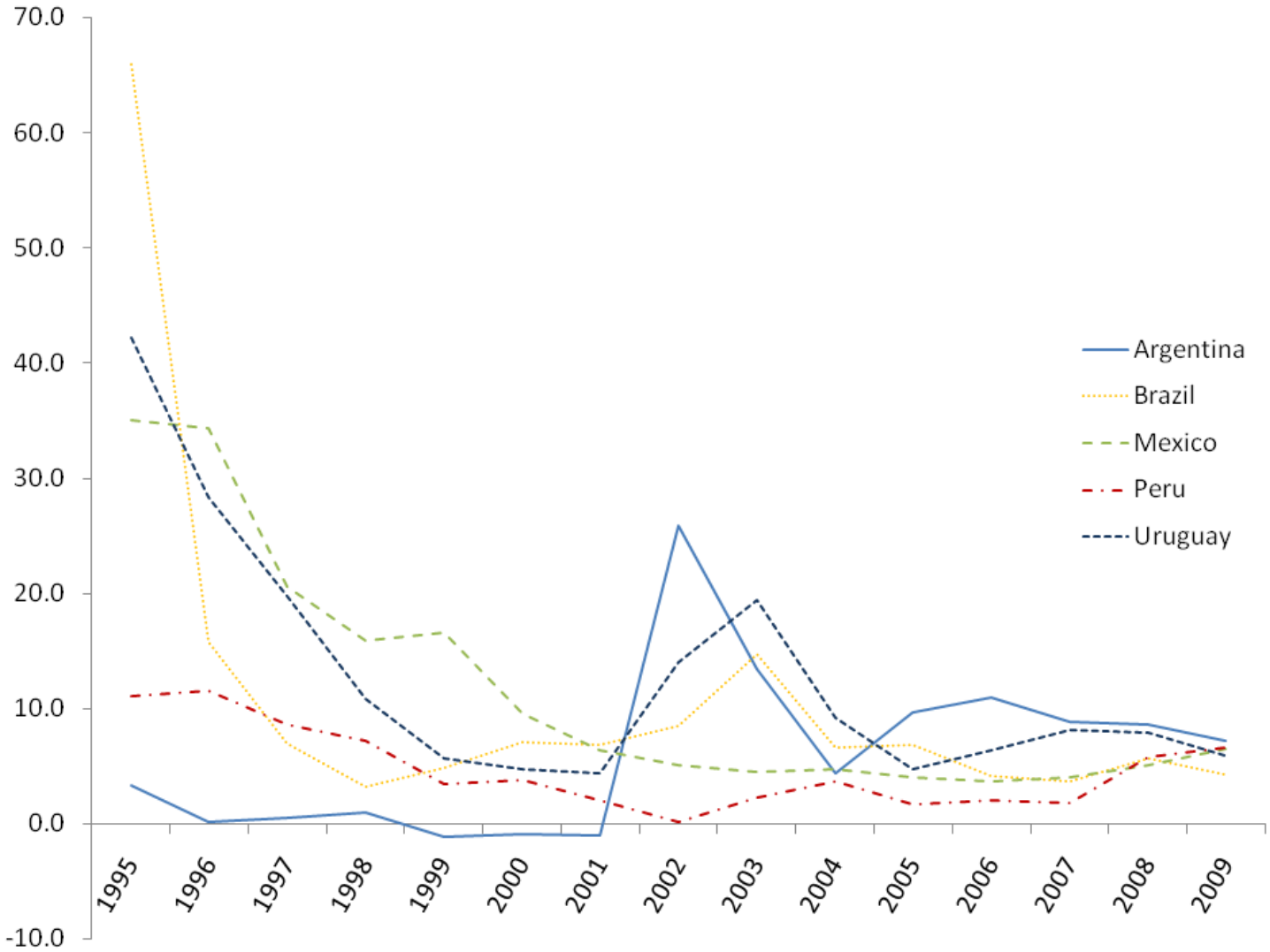
Motivation

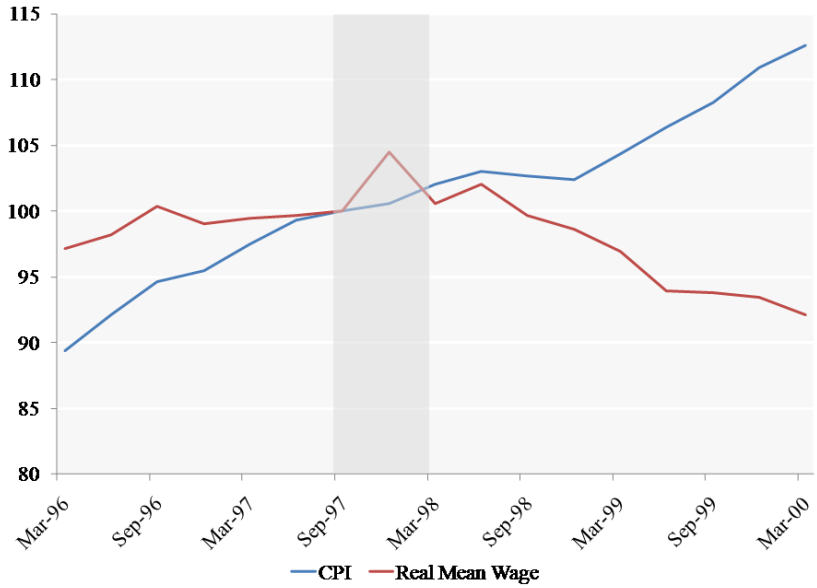
- Are downward wage rigidities important in LAC?
- 1980s to mid-1990s characterized by high inflation
  - Natural response of agents is indexation of wages
  - Downward nominal wage rigidities, if present, unlikely to be binding
- Since the mid-1990s, strong disinflation in the region
  - Have indexation clauses declined?
  - What role for downward nominal wage rigidities?

Disinflation in LAC



A role for downward wage rigidities in LAC? (I)

Brazil. Previous Crisis
Index (1997Q3=100)

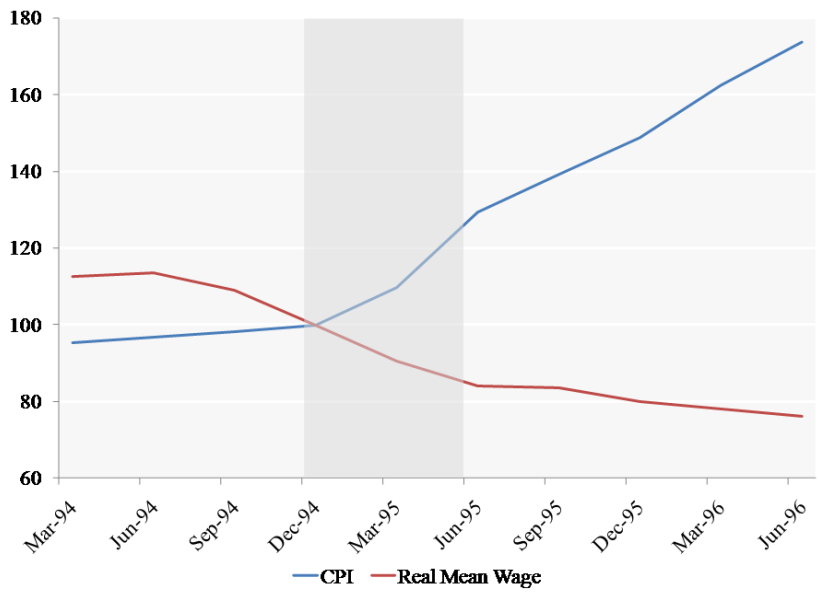


Brazil. Recent Crisis
Index (2008Q3=100)

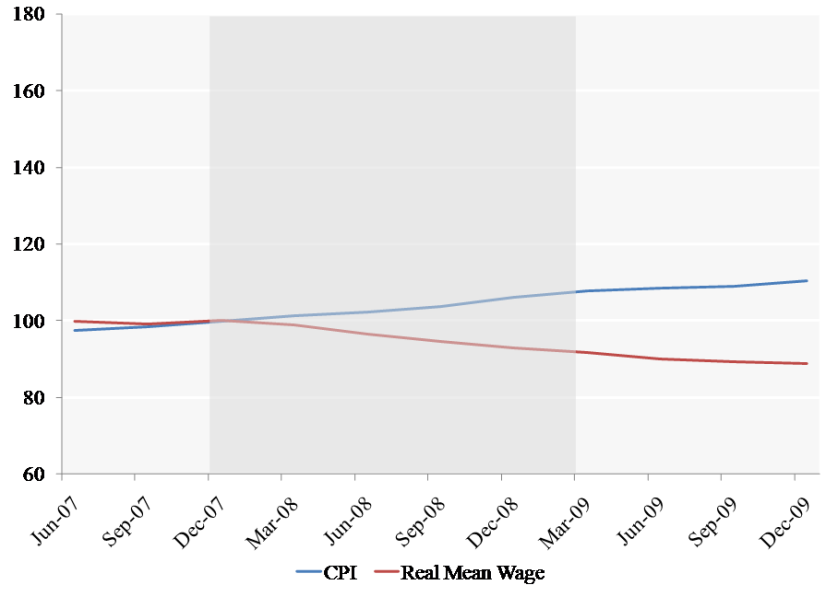
Source: Hourly real wages from Pesquisa Mensal de Emprego (PME)

A role for downward wage rigidities in LAC? (II)

Mexico. Previous Crisis
Index (1994Q4=100)



Mexico. Recent Crisis
Index (2007Q4=100)



Source: Hourly real wages from ENOE and ENEU

Downward wage rigidity varies across countries

- A fairly large recent literature, based on micro data, suggests frictions in wage setting are important
- But the nature of downward wage rigidity is different across countries:
  - In the US, substantial resistance to nominal wage cuts (e.g., Kahn, 1997; Altonji and Devereux, 2000).
  - In Europe, different forms of indexation (Babecky et al. 2010) and union bargaining translate into downward real wage rigidity (DRWR) (Dickens et al. 2007, EJ feature in 2007)
- In middle-income countries, very little empirical work. Castellanos et al. (2004), Cobb and Opazo (2010)

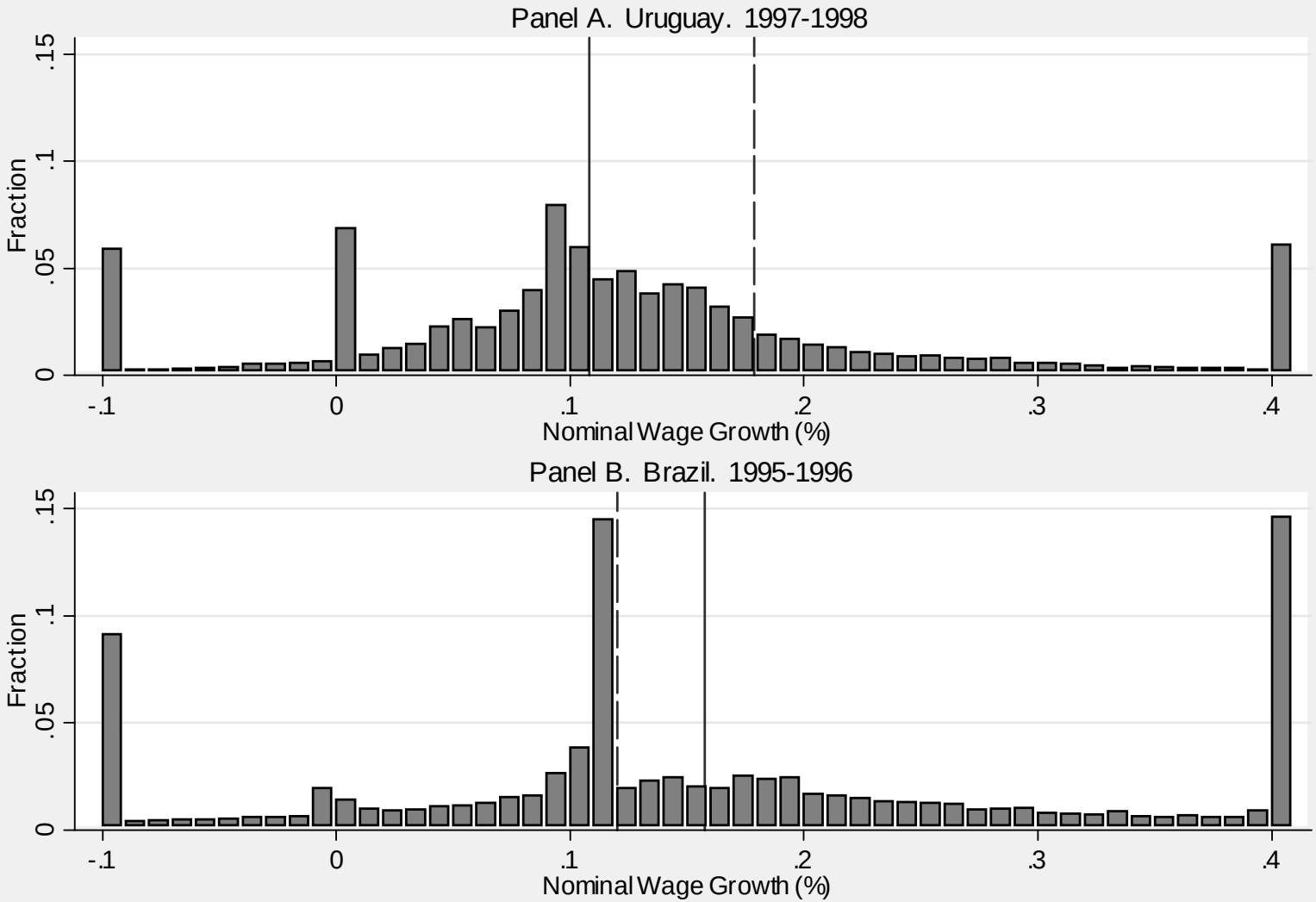
This paper

- We concentrate on two countries, Brazil and Uruguay
- High quality administrative data from both countries (in the case of Brazil, data is restricted to Minas Gerais)
- Important macro and policy changes:
  - Stabilization plans: Uruguay-1991; Brazil-1994
  - Strong disinflation process starting in the mid-1990s
  - Introduction of inflation targeting in Brazil - 1999
- *Question: Have these sharp changes altered the extent and nature of wage rigidities?*

Brazil and Uruguay. Institutional Differences

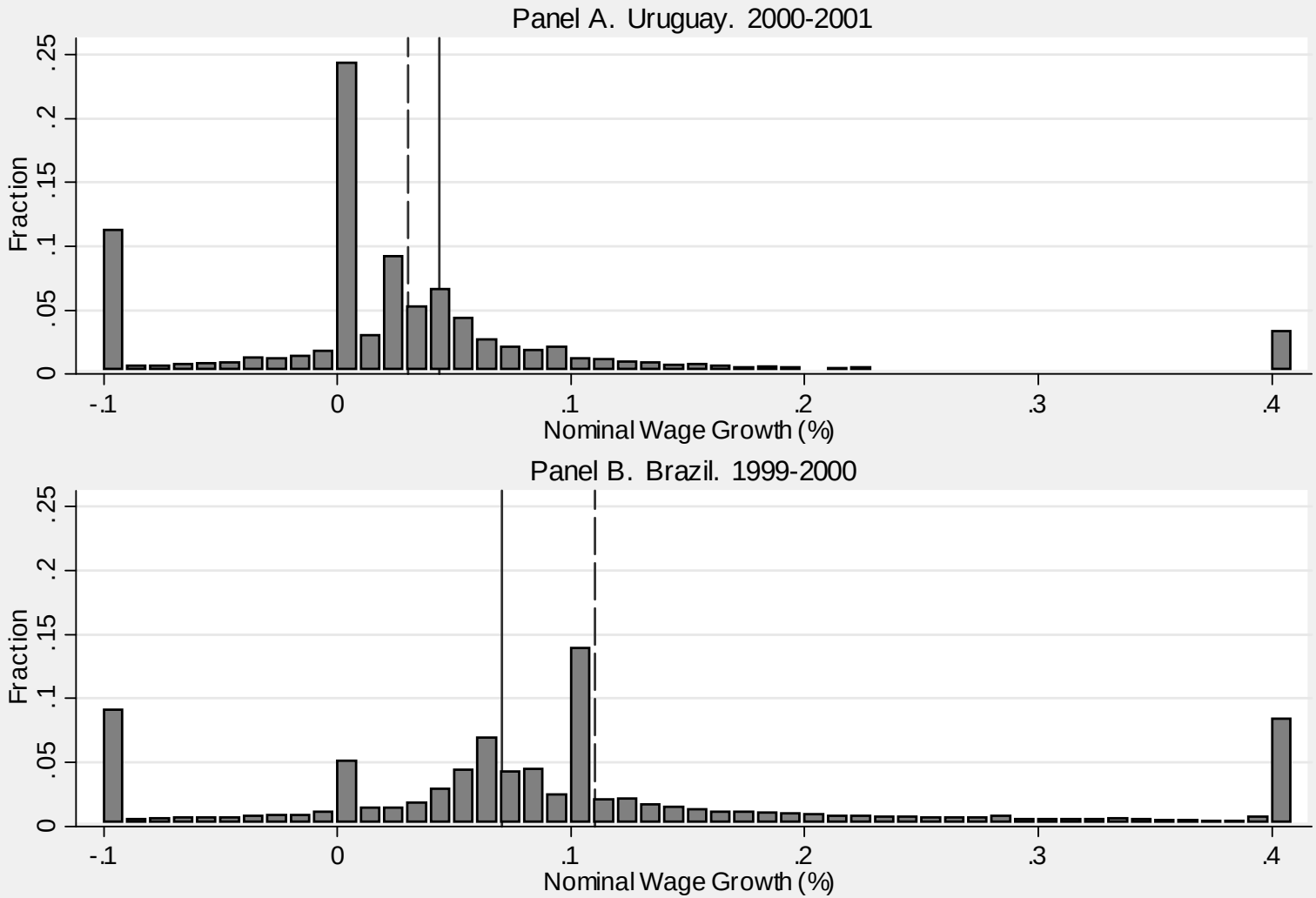
- Labor market
  - Minimum wage
    - Hardly binding in Uruguay
    - 6.9% of the formal workers earn the minimum wage in Brazil
  - Unions
    - Fairly strong and stable in Brazil
    - Weaken substantially in Uruguay during sample period
- Monetary policy
  - Uruguay: Exchange rate anchor up to 2002
  - Brazil: Inflation targeting from 1999 onwards

Wage Changes. High (2 digit) inflation years



Note: Solid Line: Inflation rate. Dashed Line: Minimum Wage Growth

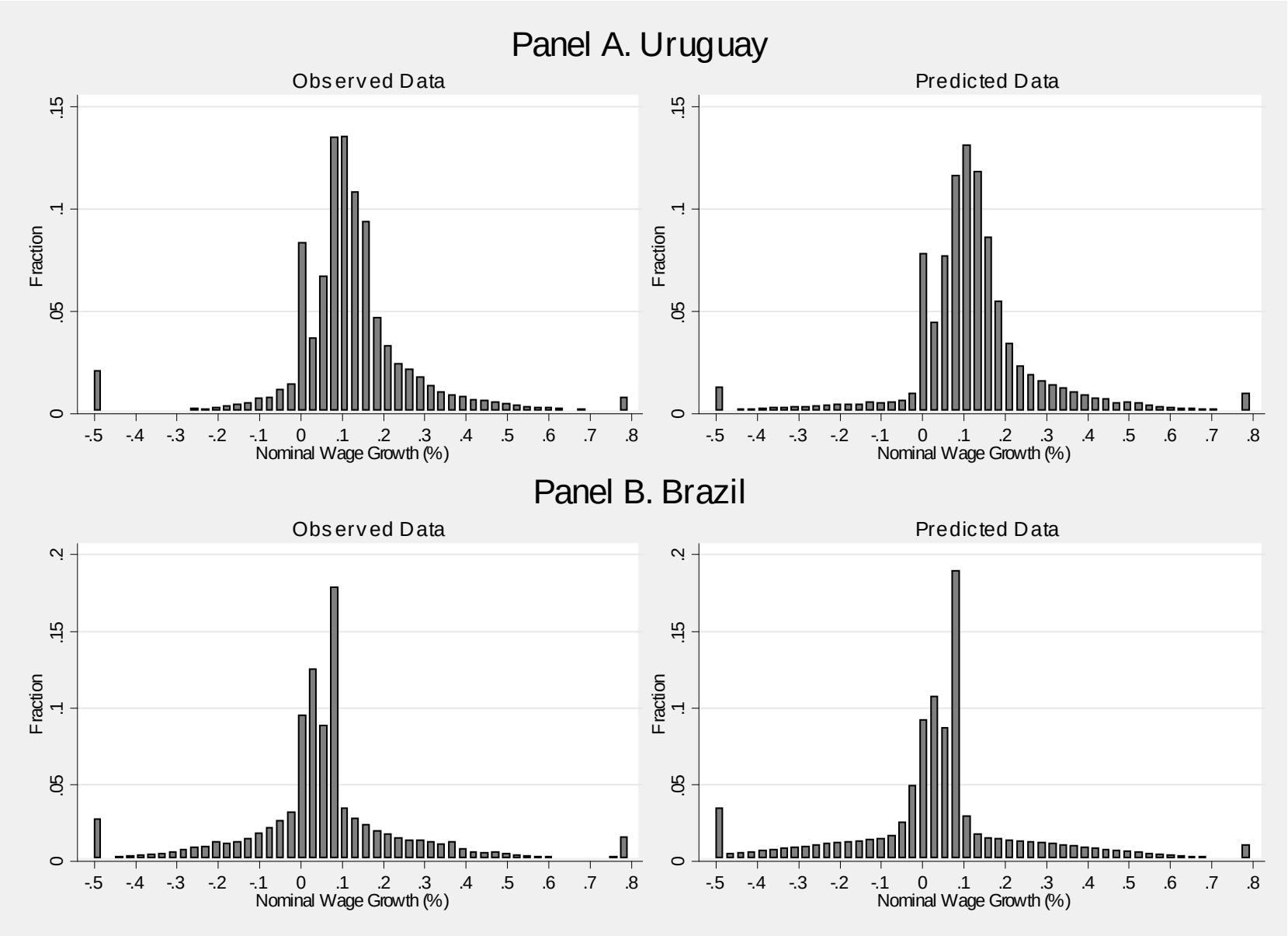
Wage Changes. Moderate (1 digit) inflation years



The econometric model. In a nutshell

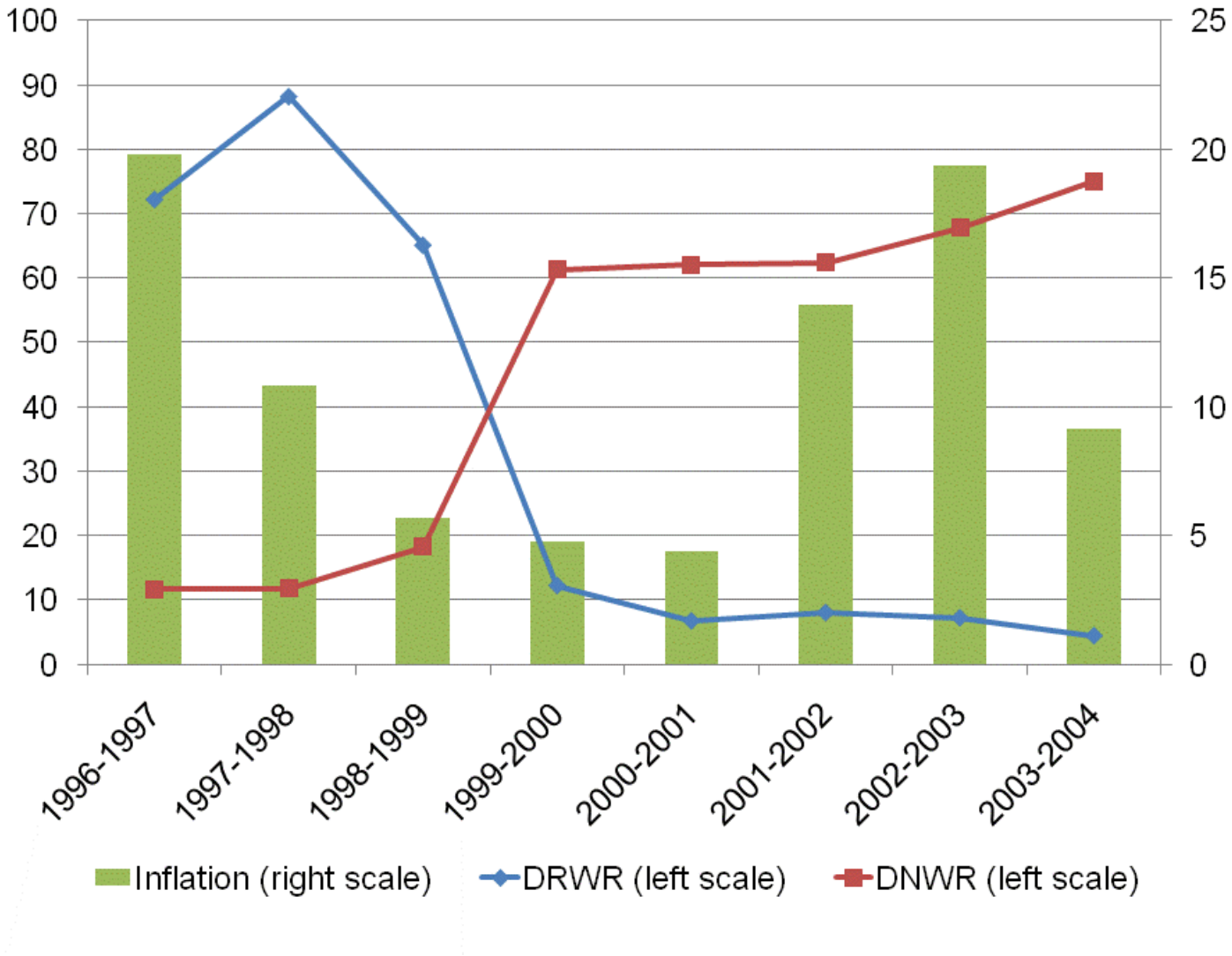
- Extension of Altonji and Devereux (2000) to include wage indexation, as in Goette et al. (2007)
- We assume that programmed wage changes in the absence of DWR depend on workers' and firms' observable characteristics
- But observed nominal wage changes is distorted because of
  1. *Measurement error:* Some hourly wages are reported with error
  2. *Downward nominal wage rigidity:* if desired wage change falls below zero, individual gets a wage freeze
  3. *Indexation:* if desired wage change $\left(\Delta w_{it}^{*}\right)$ falls below a threshold $\left(r_i\right)$, individual gets $\Delta w_{it} = r_i$
- Note that r_i is individual specific. In model $r_i \sim N\left(\mu_t, \sigma_t\right)$
- Model is estimated by maximum likelihood **period by period**

Model fit

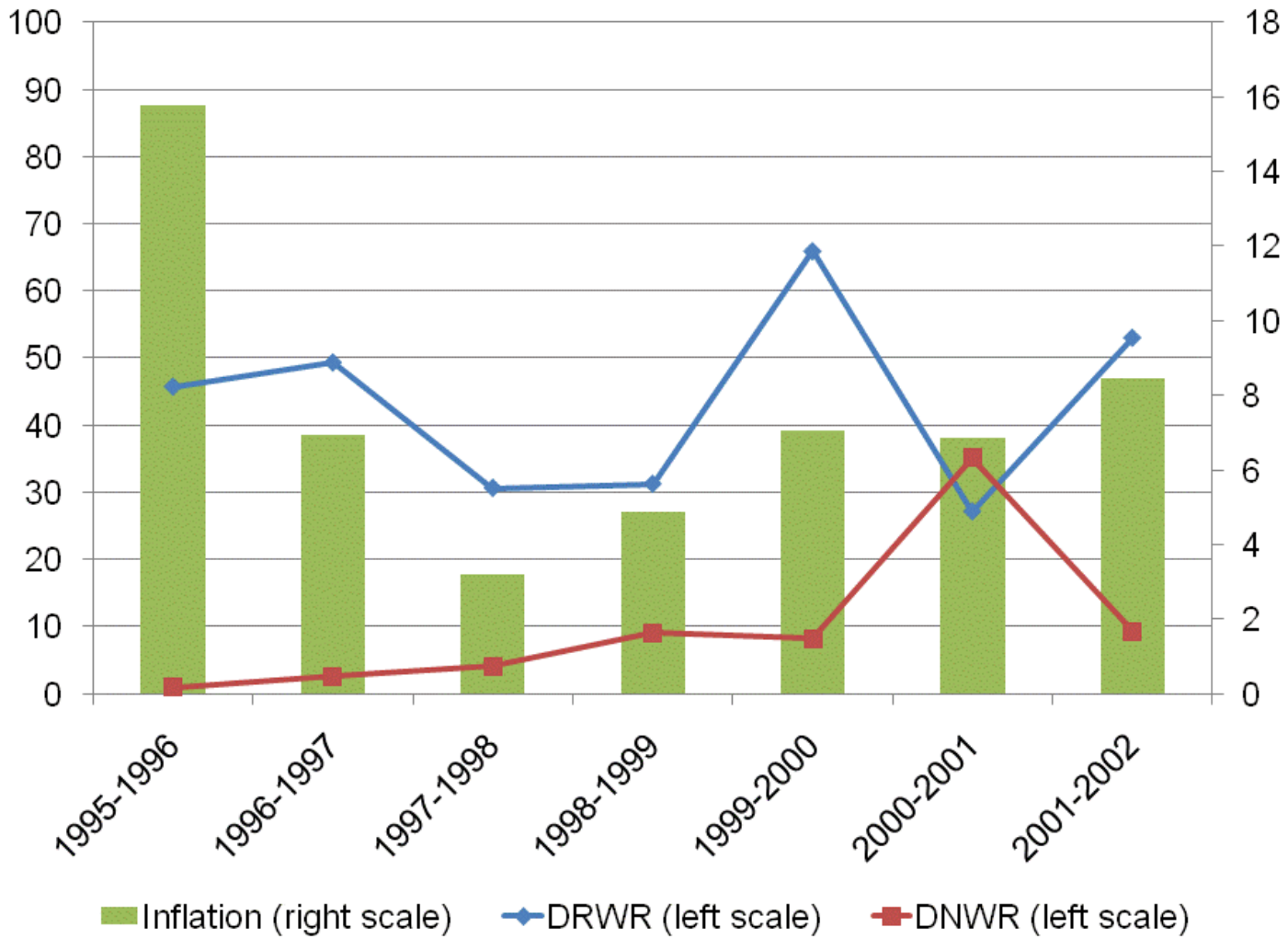

Panel A. Uruguay
Observed Data
Predicted Data
Fraction
0
.05
.1
.15
-.5 -.4 -.3 -.2 -.1 0 .1 .2 .3 .4 .5 .6 .7 .8
Nominal Wage Growth (%)
Panel B. Brazil
Observed Data
Predicted Data
Fraction
0
.05
.1
.15
.2
-.5 -.4 -.3 -.2 -.1 0 .1 .2 .3 .4 .5 .6 .7 .8
Nominal Wage Growth (%)

Wage cuts, freezes and measurement error. Uruguay

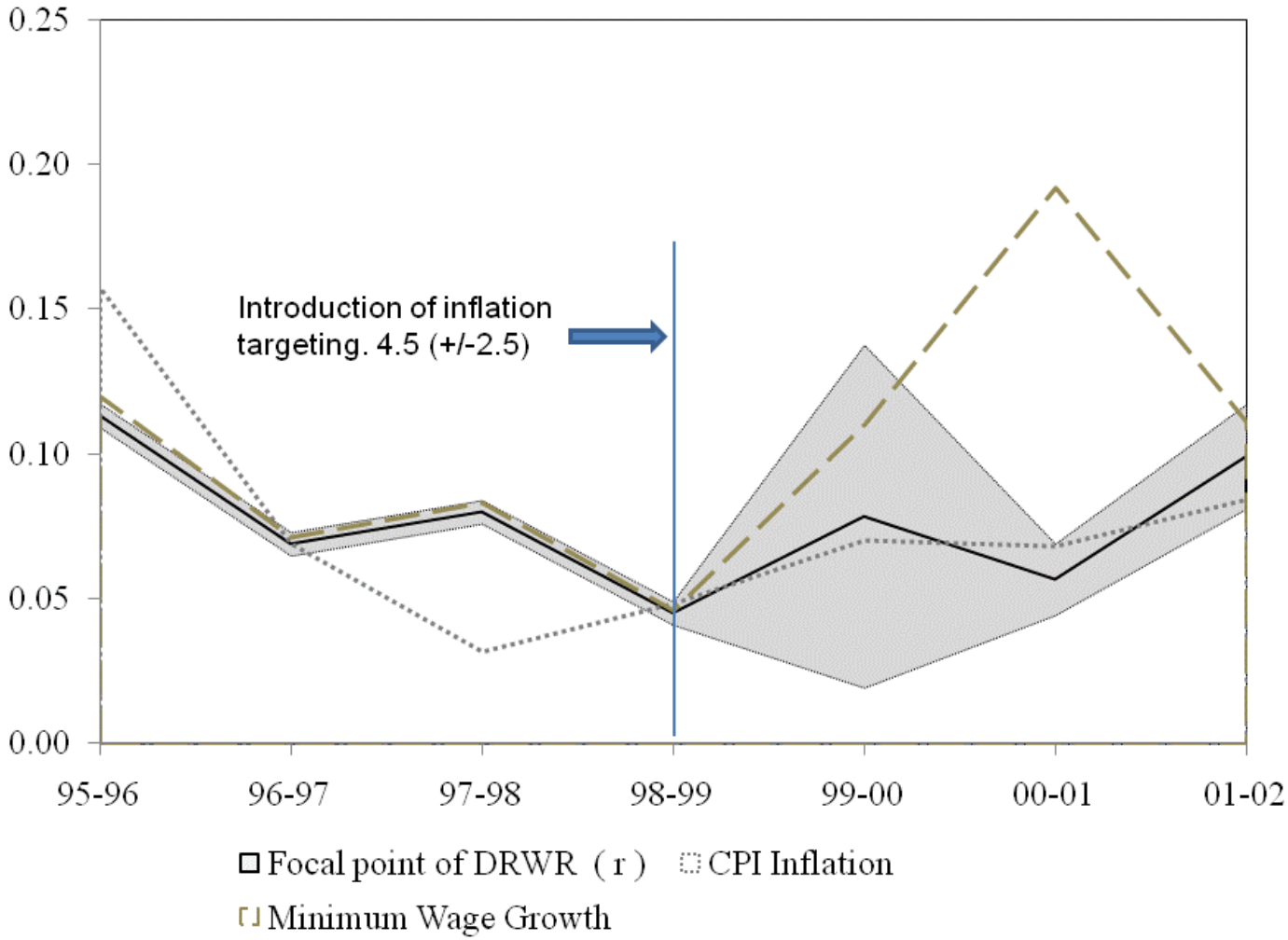
Inflation and wage rigidity regimes in Uruguay



Inflation and wage rigidity regimes in Brazil



Indexation, inflation and the minimum wage. Brazil



Note: Gray areas represent 95% confidence intervals of the focal point of DRWR (r)

Other exercises. Who is rigid?

- Estimate probability of belonging to each regime as function of worker and firm characteristics
- Wage rigidity declines with firm size
- Three facts are consistent with insider-outsider interpretation
  - Wage rigidity more important for white collars
  - Wage rigidity increases with worker's age
  - Wage rigidity increases with worker's tenure on the establishment
- Downward real wage rigidity in Brazil declines with the wage level, but is binding for a significant fraction of workers well above the minimum wage
- Results in Brazil are robust to the inclusion of worker-by-establishment fixed effects

Conclusions

- Substantial downward wage rigidity in the two countries considered
- The movement from high to low inflation regimes was associated with significant changes in the nature of wage rigidities
  - In Uruguay, low inflation brakes up with indexation, and DNWR arises
  - In Brazil, indexation is persistent, but focal point moves from the minimum wage to expected inflation
- Differences in incidence across workers and firms consistent with insider-outsider interpretation

Policy Implications and Future Research

- For a labor market reform agenda
  - Minimum wages play a fundamental role as a source of wage indexation in Brazil
  - Perhaps also true in other countries where the minimum is close to the median? (e.g. Colombia, Mexico)
- For macro modelers and monetary authorities
  - Regime changes challenge the view of rigidities as structural, in the sense of Lucas (1976)
  - Nature and incidence of downward nominal wage rigidities should be considered at the time of setting inflation targets
- For distribution?
  - How much of the recent reduction of inequality in Brazil is due to inflation targeting combined with the high growth of the minimum wage?