

# Wage Rigidity and Disinflation in Emerging Countries

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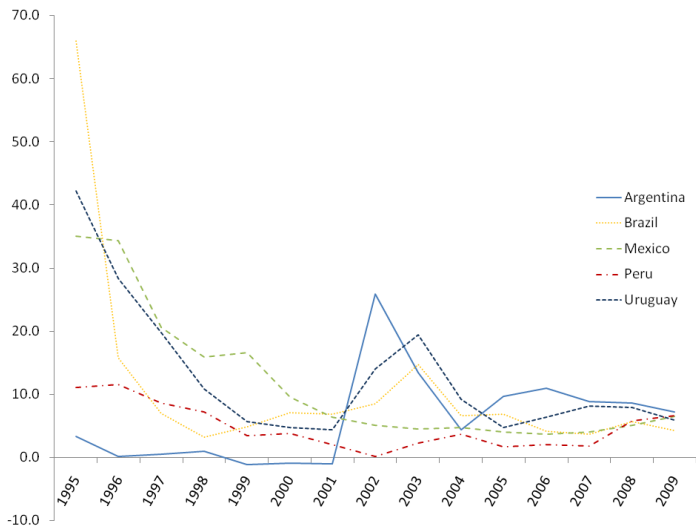
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# Motivation

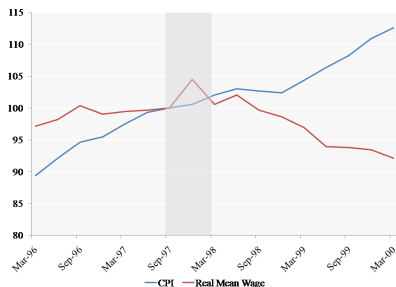
- Are downward wage rigidities important in LAC?
- 1980s to mid-1990s characterized by high inflation
  - Natural response of agents is indexation of wages
  - Downward nominal wage rigidities, if present, unlikely to be binding
- Since the mid-1990s, strong disinflation in the region
  - Have indexation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



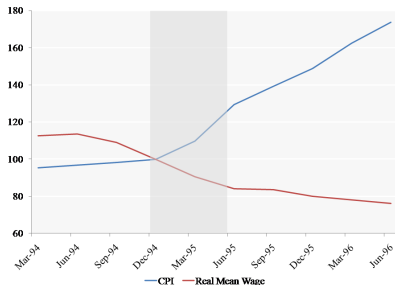
Brazil. Recent Crisis  
*Index (2008Q3=100)*



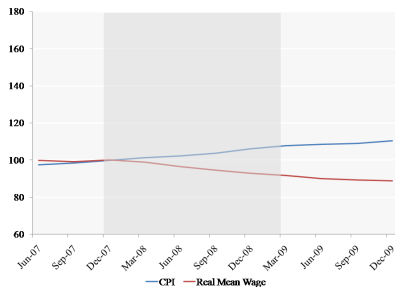
Source: Hourly real wages from Pesquisa Mensal de Emprego (PME)

# 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

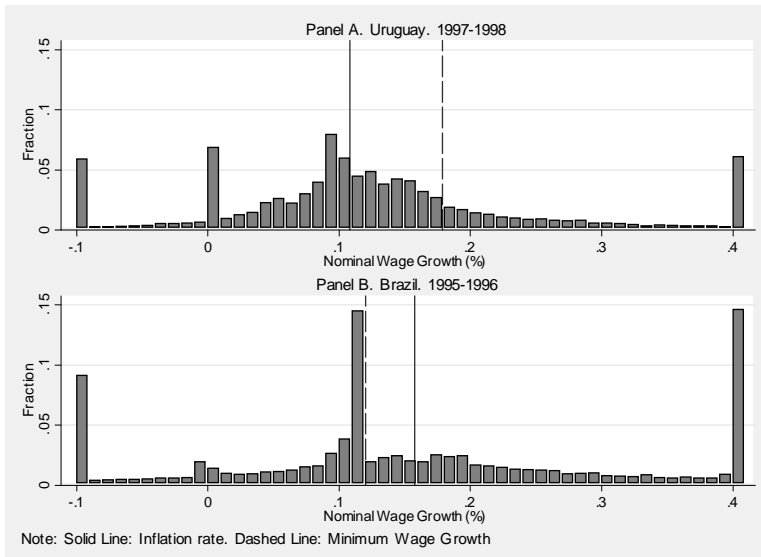
- We concentrate on two countries, Brazil and Uruguay
- High quality administrative data from both countries (in the case of Brazil, data is restricted to Minas Gerais)
- Important macro and policy changes:
  - Stabilization plans: Uruguay-1991; Brazil-1994
  - Strong disinflation process starting in 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

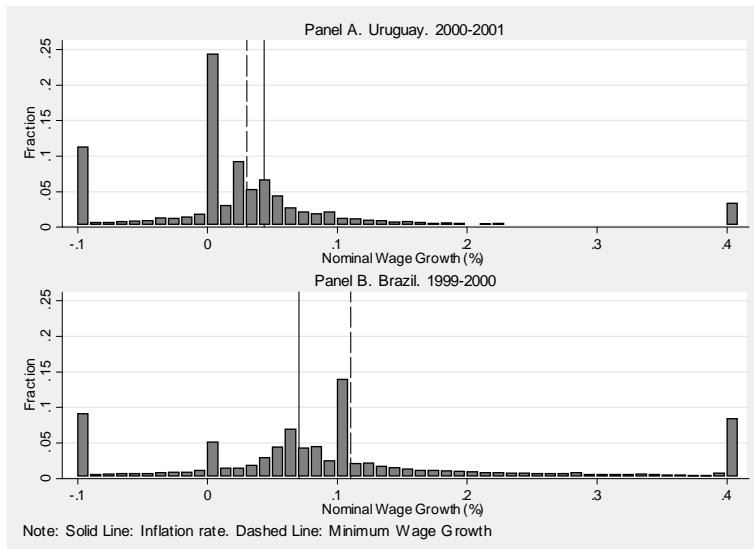
- Labor market
  - Minimum wage
    - Hardly binding in Uruguay
    - 6.9% of the formal workers earn the minimum wage in Brazil
  - Unions
    - Fairly strong and stable in Brazil
    - Weaken substantially in Uruguay during sample period
- Monetary policy
  - Uruguay: Exchange rate anchor up to 2002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



# Wage Changes. High (2 digit) inflation years



# Wage Changes. Moderate (1 digit) inflation years

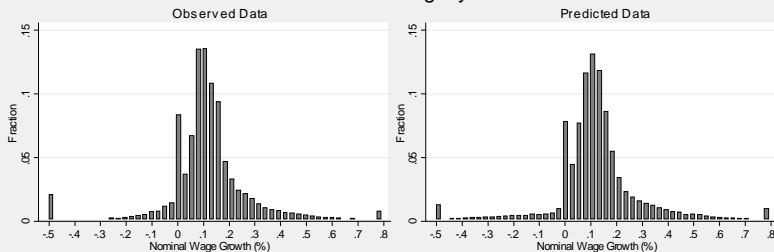


# The econometric model. In a nutshell

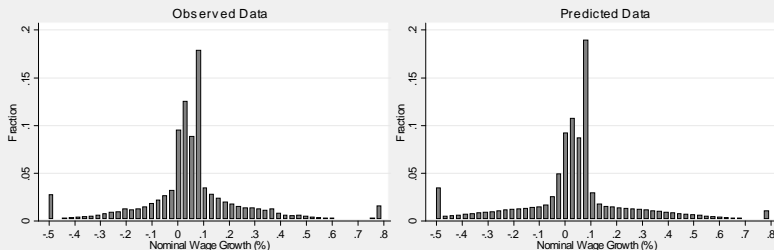
- Extension of Altonji and Devereux (2000) to include wage indexation, as in Goette et al. (2007)
- We assume that programmed wage changes in the absence of DWR depend on workers' and firms' observable characteristics
- But observed nominal wage changes is distorted because of
  - ① *Measurement error*: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

# Model fit

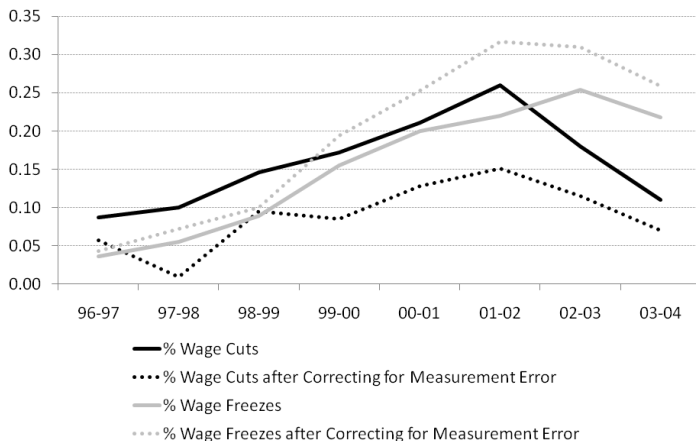
## Panel A. Uruguay



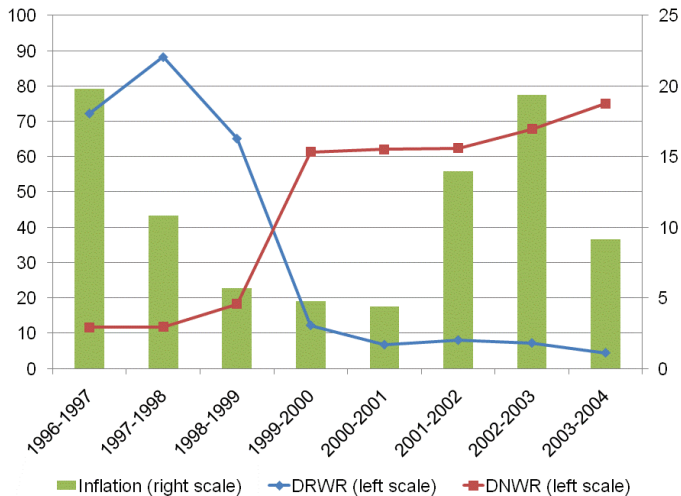
## Panel B. Brazil



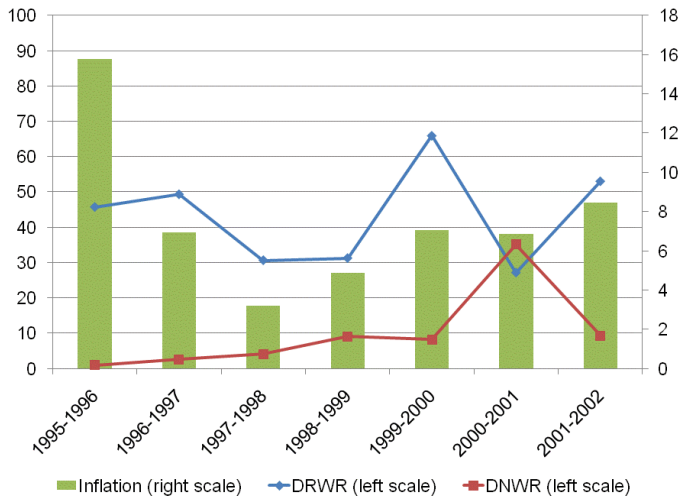
# Wage cuts, freezes and measurement error. Uruguay



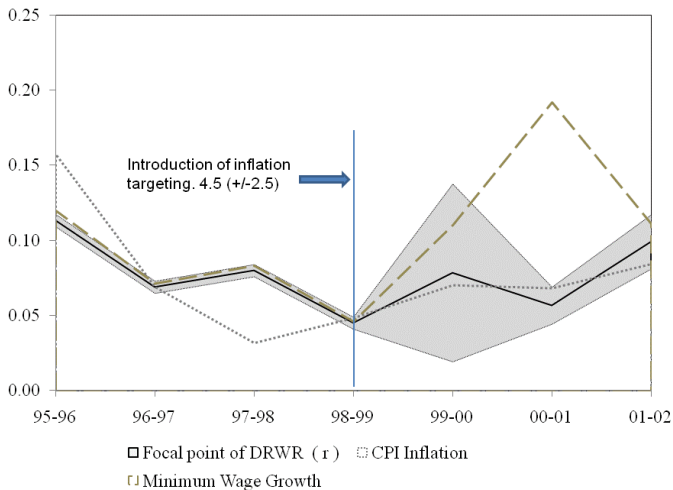
# Inflation and wage rigidity regimes in Uruguay



# 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?