Pegs in Latin America, Lessons for Europe?

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Iván Werning
MIT

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Argentina’s Crisis and Recovery: A Demand Side Story 1998-2006

Ariel Burstein  UCLA
Iván Werning  MIT
This Paper

- Deep recessions with fixed exchange rates
  - Argentina 1998-2001
  - Europe 2009-today

- **Goal:** re-examine Argentina through the lens of open economy macro model
  - isolate shocks to organize facts
  - demand-side story
1. Facts
GDP components
GDP components
GDP components

- Y
- C
- G

Years:
- 1993
- 1994
- 1995
- 1996
- 1997
- 1998
- 1999
- 2000
- 2001
- 2002
- 2003
- 2004
- 2005
- 2006

Values:
- 20
- 40
- 60
- 80
- 100
- 120
- 140
- 160
GDP components

- Y
- C
- G

Years: 1993 to 2006
Prices and Wages

- PPI
- CPI
- Wages

Year:
- 93
- 94
- 95
- 96
- 97
- 98
- 99
- 00
- 01
- IV 01
Argentina Disaggregated CPI

1999-2001

1997-1999
Europe Disaggregated CPI

Greece

Spain

Shocks: Sudden Stop

- Current Account / GDP98
- Trade Balance / GDP98

Years: 1993 to 2006
Shocks: Terms of Trade

- Terms of Trade (left)
- Soy ($/ton, right)
Deposits

- Blue line: Deposits (billions, right)
- Red line: % Peso (left)

Jan-98 to Jul-01
2. Model
Model

- Open economy model
- Goods...
  - differentiated non-traded goods
  - differentiated traded goods
  - commodities
- Sticky plans prices and wages (Mankiw-Reis)
- Fraction hand-to-mouth agents (Campbell-Mankiw)
- Capital flows
  - risk premia
  - borrowing constraints
# Calibration

<table>
<thead>
<tr>
<th></th>
<th>value</th>
<th></th>
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<tbody>
<tr>
<td>imports / GDP</td>
<td>12.5%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>% commodities</td>
<td>50%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>annual interest rate</td>
<td>6%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>export elasticity</td>
<td>2</td>
<td></td>
<td></td>
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<tr>
<td>N vs T elasticity</td>
<td>0.5</td>
<td></td>
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<tr>
<td>H vs F elasticity</td>
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<td></td>
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<td>1</td>
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<tr>
<td>% hand to mouth</td>
<td>40%</td>
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<td>% adjusting plans</td>
<td>25%</td>
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<td>sudden stop</td>
<td>10% interest rate</td>
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</tr>
<tr>
<td>sudden stop II</td>
<td>3% TB / GDP</td>
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<td>appreciation</td>
<td>20%</td>
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<td>dY / dG</td>
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<td>20%</td>
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<td>50% export value</td>
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Sudden Stop: Risk Premium
Sudden Stop: Risk Premium

- **Interest Rate**
  - Flex (blue)
  - Rigid (red)
  - Partial (brown)

- **Trade Balance**
  - Flex (blue)
  - Rigid (red)
  - Partial (brown)

- **Consumption**
  - Flex (blue)
  - Rigid (red)
  - Partial (brown)

- **Labor**
  - Flex (blue)
  - Rigid (red)
  - Partial (brown)
Sudden Stop: Borrowing Constraint

![Graph showing trade balance with flex, rigid, and partial lines]

- Flex line peaks at 0.04 and then drops to 0.
- Rigid line remains at 0 throughout.
- Partial line shows a small peak at 0.013 before stabilizing.

Y-axis: Trade Balance
X-axis: Time (0, 5, 10, 15)
Sudden Stop: Borrowing Constraint

- Trade balance over time for different consumption and labor scenarios.
- Consumption and labor trends are shown separately, with different flexibility and rigidity levels.

Graphs illustrate the impact of borrowing constraints on economic indicators over time.
Appreciation

- flex
- rigid
- partial

![Graph showing exchange rate appreciation](image-url)
Appreciation

- Exchange rate
  - Flex
  - Rigid
  - Partial

- Consumption
  - HM
  - Low intra elast
  - Low inter elast

- Labor
Terms of Trade Shock

commodity price

0 0.5 1 1.5 2 2.5

0 5 10 15
Terms of Trade Shock

- Commodity price
- Consumption
- Labor

Lines indicate different market conditions:
- Blue: Flexible
- Red: Rigid
- Brown: Partially Rigid
Terms of Trade Shock

- Flex
- Rigid
- Partial

Commodity Price

\[
\text{Consumption} = (X_t - X_0) / M_0
\]

Consumption

Hand to Mouth
4. Corralito
4. Corralito
Corralito Model

- Corralito/Corralón…
  - limits on extractions
  - bank holiday
  - “pesification” of dollar deposits
- Big, uncertain and slow redistribution

- At t=0 announced that
  - savers will be taxed at t=1
  - hand to mouth get transfer at t=1
optimizers

hand to mouth

$t = 1$  

$t = 2$
optimizers

hand to mouth
optimizers

\[ t = 1 \]

\[ t = 2 \]

hand to mouth
optimizers

\[ \downarrow C \]

\[ t = 1 \]

\[ \bar{C} \]

\[ \downarrow T \]

\[ C \]

\[ t = 2 \]

\[ \uparrow T \]

\[ \uparrow C \]

hand to mouth
optimizers

\[ W \downarrow \]
\[ C \downarrow \]
\[ \bar{C} \]
\[ t = 1 \]

\[ C \downarrow \]
\[ T \uparrow \]
\[ t = 2 \]

hand to mouth
optimizers

down W

down C

t = 1

C

hand to mouth

down C

down T

t = 2

up T

up C
Conclusion

- Fixed exchange rate can explain Argentina’s vulnerability to various shocks
  - sudden stop
  - terms of trade
  - appreciation
  - corralito

- Some shocks partly endogenous:
  - fixed exchange + fiscal indiscipline… 
    credibility problems
  - *feedback loop*: social crisis, political crisis and macroeconomic crisis…
Europe Today
Greece: Prices and Wages
Greece CPI
Greece CPI

- 2004-2008
- 2008-2012
Greece CPI

- 2004-2008
- 2008-2012
Greece CPI

2004-2008

2008-2012
Greece RER
Greece RER
### Greece: Disaggregated RER CPI

<table>
<thead>
<tr>
<th>Items with largest depreciation</th>
<th>$\Delta \log \text{RER}$</th>
<th>Items with largest depreciation</th>
<th>$\Delta \log \text{RER}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pharm products</td>
<td>-0.36</td>
<td>Hospital services</td>
<td>0.14</td>
</tr>
<tr>
<td>Accomm services</td>
<td>-0.25</td>
<td>Financial services n.e.c.</td>
<td>0.16</td>
</tr>
<tr>
<td>Oils and fats</td>
<td>-0.15</td>
<td>Tobacco</td>
<td>0.18</td>
</tr>
<tr>
<td>Newspapers, periodicals</td>
<td>-0.12</td>
<td>Passenger transport by road</td>
<td>0.23</td>
</tr>
<tr>
<td>Passenger transp by water</td>
<td>-0.10</td>
<td>Insurance transport</td>
<td>0.24</td>
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<tr>
<td>Durables for ind,outdoor recr.</td>
<td>-0.10</td>
<td>Other services pers. transp. equip.</td>
<td>0.27</td>
</tr>
<tr>
<td>Motor cycles, bicycles and</td>
<td>-0.10</td>
<td>Liquid fuels</td>
<td>0.27</td>
</tr>
<tr>
<td>Motor cars</td>
<td>-0.09</td>
<td>Fuels, lubric personal transp. equip</td>
<td>0.28</td>
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<tr>
<td>Fruit</td>
<td>-0.08</td>
<td>Combined passenger transport</td>
<td>0.29</td>
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<tr>
<td>Passenger transport by air</td>
<td>-0.07</td>
<td>Spirits</td>
<td>0.30</td>
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<tr>
<td>Solid fuels</td>
<td>-0.07</td>
<td>Gas</td>
<td>0.36</td>
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<tr>
<td>Package holidays</td>
<td>-0.07</td>
<td>Passenger transport by railway</td>
<td>0.43</td>
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Spain CPI
Spain CPI
Spain CPI
Spain CPI

- 2004-2008
- 2008-2012
Spain RER
Spain RER

2004-2008

2008-2012
Spain RER

2004-2008

2008-2012
Spain PPI
Spain PPI

2004-2008

2008-2012
Spain PPI

- 2004-2008
- 2008-2012
Spain PPI

- 2004-2008
- 2008-2012
Europe: Target2

- Belgium
- Germany
- France
- Italy
- Netherlands
- GR-IE-PT-ES

Jan-02 Jul-03 Jan-05 Jul-06 Jan-08 Jul-09 Jan-11 Jul-12
Time Deposit Rates

- Pesos
- Dollars