The Costs of Populism: Evidence from a Gas Price Holiday in Brazil

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Motivation and Purpose

- Resurgence of populism and populist regimes across the world (Guiso et al., 2020)

- Supply of populism as a ‘thin-centered ideology’:
  - Need to develop a *political platform* [maximize votes and likelihood of winning the election]
  - Need to build a *political coalition* [secures majority to be able to govern]

- Mechanisms:
  - ‘Buy votes’ [artificial set of domestic price in key commodity markets]
  - ‘Buy politicians’ [Assign oversight of agencies and government control enterprises to key members of other parties in the political coalition]

Examine the social costs of and opportunity cost of populism
A primer on Populism in Brazil

- Since the end of dictatorship, no single political party has won elections with majority [need to ‘buy politicians’ to secure coalition to govern]

- Fuel Markets are easy targets to implement populist strategies
  - Government influence on Petrobras
  - Populism Benefits are likely higher than Political costs
    - Salience of fuel prices at the pump and economywide benefits of low diesel prices
    - Relatively smaller number of private shareholders to be anger by losses due to domestic price-controls
  - Drawback: Financial unsustainable overtime, given size of fuel markets

- 2002-2010 - Success of the Lula Administration also depended on a left-wing ‘pro-poor’ agenda [expansion of cash-transfer programs]
Support for Lula at the end of the administration’s mandate

Panel A: Proportion of Voting Households by Income Group

Panel B: Government Approval Rating August, 2009

Income Level (multiples of federal minimum wage)

- Approves
- Neutral
- Disapproves
Financial unsustainability of Petrobras becomes a problem.

Early 2013 Petrobras removes their price support for diesel. Protests and demonstrations eroding the support for the administration.
Unexpected announcement: eliminate gasoline price control

Monday:
Market Response
Observed
PetroBras experiences a discrete increase in its valuation due to increased investor expectations

October 28th

October 25th

October 30th

November 29th

Monday:
Market Response
Observed
PetroBras experiences a discrete decrease in its valuation due to decreased investor expectations

December 2nd

Friday (After Market Close):
PetroBras Announces End of Gasoline Price Holiday
PetroBras will implement a mechanism to smoothly match domestic prices to international levels

Wednesday:
Brazilian Stock Market Regulation Authority Orders
PetroBras to Clarify
For example, how the proposed mechanism will function, and when it will be implemented

Friday (After Market Close):
PetroBras Announces no Change to the Price Holiday
A board of directors meeting, expected to include new information regarding the end of the gas price holiday, contained nothing

- Event study – effect of announcement on daily returns of stock prices
- Use the econometric estimates to measure the social costs and opportunity cost of populism
Data

  - São Paulo Stock Exchange (BOVESPA) and New York Stock Exchange
  - Voting and Non-Voting Shares
  - Construct log daily returns as the ratio of closing price today/yesterday

- Other major components of data
  - Market Index [value weighted portfolio of the most liquid stocks traded on the BOVESPA and NYSE Markets]
  - Fama-French Factors [capture additional forms of volatility and risk]
  - Daily closing stock share price for twenty-four publicly traded large Brazilian firms
  - Daily Wholesale price of crude oil and gasoline [EIA]
  - Daily Exchange rate
Event manifested in Petrobras share closing price
Empirical Strategy

\[ r_{it} = \beta_{i}^{Fri} D_{t}^{Fri} + \beta_{i}^{Mon} D_{t}^{Mon} + \beta_{i}^{Tue} D_{t}^{Tue} + \delta_{i} X_{it} + \epsilon_{it} \]

- **Event Window:**
  - Announcement – Friday, Nov 25th
  - Event Day – Monday, Nov 28th
  - Event Window – Include Friday and Tuesday

- **Estimation Window** – centered 200 trading days

- **Xit** – Market index; Oil and Exchange Rate; Fama-French

- **Error Term** – specified as a Garch \((1,1)\)
### Effect of the announcement on the log returns

#### Panel A. Nonvoting Shares Log Excess Returns

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Friday</td>
<td>0.0146</td>
<td>0.0164</td>
<td>0.0166</td>
</tr>
<tr>
<td></td>
<td>(0.0242)</td>
<td>(0.0139)</td>
<td>(0.0121)</td>
</tr>
<tr>
<td>Monday</td>
<td>0.0740**</td>
<td>0.0522***</td>
<td>0.0530***</td>
</tr>
<tr>
<td></td>
<td>(0.0242)</td>
<td>(0.0134)</td>
<td>(0.0118)</td>
</tr>
<tr>
<td>Tuesday</td>
<td>−0.0086</td>
<td>−0.0061</td>
<td>−0.0025</td>
</tr>
<tr>
<td></td>
<td>(0.0239)</td>
<td>(0.0135)</td>
<td>(0.0127)</td>
</tr>
</tbody>
</table>

Market Index Control
- Yes
- Yes

All Other Controls
- Yes

#### Panel B. Total Impact on Petrobras Value

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Δ Firm Value (%)</td>
<td>6.926</td>
<td>6.535</td>
<td>6.457</td>
</tr>
</tbody>
</table>

Notes: ***, **, and * represent significance at 0.1%, 1%, and 5%, respectively.
**Inference and Thread to Identification**

- GARCH model assumes a specific distribution of the error term
  
  Assess statistical significance via alternative methods, e.g. Sample Quantile test

- Other Events
  
  Any *simultaneous* event?
  
  1. Anecdotal news sources suggest nothing
  2. Examine the 2\textsuperscript{nd} announcement, which would plausibly have equal but opposite magnitude

- The estimation window may not reflect normal behavior of share price
  
  1. Shortened estimation window
  2. Leading vs centered window

- Anticipation or delay in capitalization of information
  
  1. Trading volumes show no major deviations in normal trading behavior before or after the event
  2. Include (prior) Thursday and (following) Wednesday in event window

1. the market index may not be the ideal ‘control group’
## Market Index vs Synthetic Control

<table>
<thead>
<tr>
<th></th>
<th>Non-Voting Shares</th>
<th>Log Excess Returns</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Market Index</td>
<td>Synthetic Control</td>
</tr>
<tr>
<td></td>
<td>BOVESPA</td>
<td>NYSE</td>
</tr>
<tr>
<td>Monday</td>
<td>0.0530***</td>
<td>0.0588**</td>
</tr>
<tr>
<td></td>
<td>(0.0118)</td>
<td>(0.0179)</td>
</tr>
<tr>
<td>Friday</td>
<td>0.0166</td>
<td>0.0156</td>
</tr>
<tr>
<td></td>
<td>(0.0121)</td>
<td>(0.0181)</td>
</tr>
<tr>
<td>Tuesday</td>
<td>−0.0025</td>
<td>−0.0055</td>
</tr>
<tr>
<td></td>
<td>(0.0127)</td>
<td>(0.0187)</td>
</tr>
</tbody>
</table>

**Controls**

- Market Index: Yes, Yes
- Synthetic Index: Yes, Yes
- All Other Controls: Yes, Yes

*Notes:***, **, and * represent significance at 0.1%, 1%, and 5%, respectively.*
The costs of Populism

<table>
<thead>
<tr>
<th>Costs to PETROBRAS</th>
<th>12 months</th>
<th>13 months</th>
<th>14 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct Transfer to Consumers</td>
<td>6,365</td>
<td>6,365</td>
<td>6,365</td>
</tr>
<tr>
<td>Cost of Absorbing Oil Price and Exchange Rate Volatility</td>
<td>3,389</td>
<td>3,671</td>
<td>3,954</td>
</tr>
<tr>
<td>Implied Marginal Excess Burden</td>
<td>1,644</td>
<td>1,867</td>
<td>2,106</td>
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</tbody>
</table>

Panel B. Social Cost of Populism

<table>
<thead>
<tr>
<th></th>
<th>12 months</th>
<th>13 months</th>
<th>14 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Implied Marginal Excess Burden</td>
<td>0.88</td>
<td>0.73</td>
<td>0.61</td>
</tr>
</tbody>
</table>
Opportunity Cost of Populism

![Bar chart showing the percentage of income group pro-Dilma and percentage of total voters across different income brackets.](chart.png)
Conclusions

- Taking advantage of an unexpected announcement to end a gas price holiday, conducted an event study to estimate the effects of the announcement on returns to stock shares.

- Embed these estimates to calculate the social costs of populism and opportunity cost.

- Populist policy doesn’t have an extremely large MEB but it quickly becomes unsustainable, given the size of fuel markets.

- Populist policy appears to be regressive.

- Opportunity cost of populism reveals that the poor would have benefited much more from a benevolent social planner with a pro-poor agenda.