Bringing Expectations to the Collective Bargaining Table

Evidence From Brazilian Firms

April 1, 2021

Outline

Main Questions

- How do inflationary news shocks affect collective bargaining outcomes (wages and employment)?
- How does the timing of collective bargaining agreements (CBAs) affect firm performance?
- What are the macroeconomic implications of collective bargaining activity induced by inflationary news shocks?

Economic Significance

- Inflation expectations and economic behavior
- Monetary policy application: forward guidance
  - Traditional channels are consumption and investment. Analyze potential CBA channel
- Timing of monetary policy Shocks (Tenreyro & Olivei 2007 AER)
- Nominal rigidity – wage adjustment asymmetries (Kaur 2019 AER)

Data

- RAIS – Matched employer-employee data
- Sistemas Mediador – collective bargaining agreements (single firm - employee contracts)
- IBRE / IBGE – aggregate inflation expectations (May gain access to firm-level price and cost expectations)

Background

- Dual economic and political crises in Brazil 2015 - 2016
- Impeachment of President Dilma Rousseff announced on December 2, 2015. Her powers were suspended on May 12, 2016.
  - **Inflationary news shock:** In June 2016, acting President Michel Temer appointed Ilan Goldfajn as the BCB head.

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A cool head for crisis: Brazil central bank chief Ilan Goldfajn

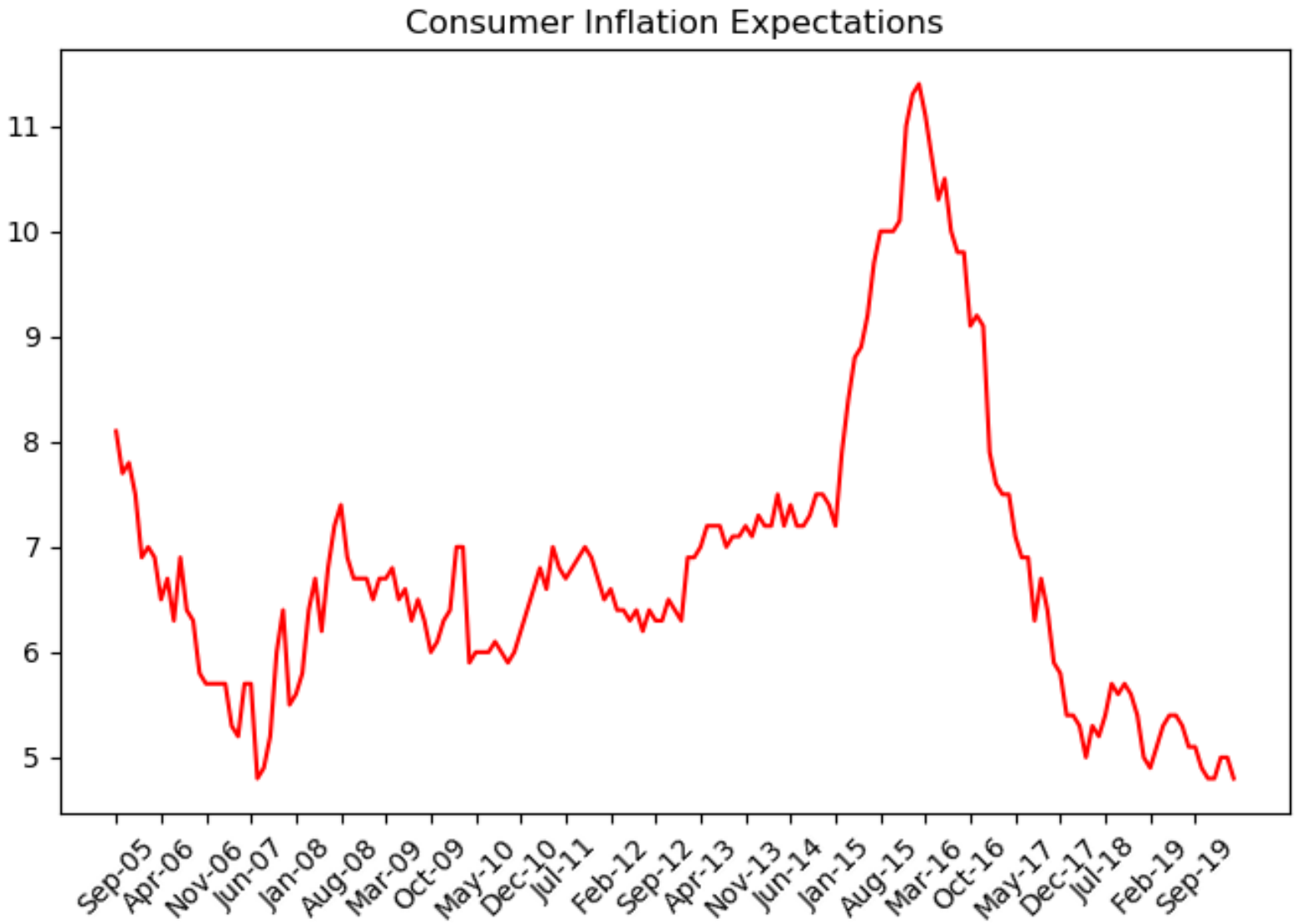
Success in curbing Brazilian inflation is just the first step in creating long-term stability for economic recovery

Ilan Goldfajn has helped the central bank regain credibility since Dilma Rousseff (below) was impeached for manipulating the budget © Luiz Maximiano

Joe Leahy SEPTEMBER 19 2017

Preliminary Findings

- Across all sectors, inflation expectations rose to 12% until February 2016, at which point they began to decline to roughly 5% by Q3 2017 (as anticipation of new regime took root.)
- Timing of CBAs provides opportune variation for studying effects on wages, employment
- Setting may allow us to analyze multiple inflation shocks prior to 2017


Consumer Inflation Expectations
11
10
9
8
7
6
5
Sep-05
Apr-06
Nov-06
Jun-07
Jan-08
Aug-08
Mar-09
Oct-09
May-10
Dec-10
Jul-11
Feb-12
Sep-12
Apr-13
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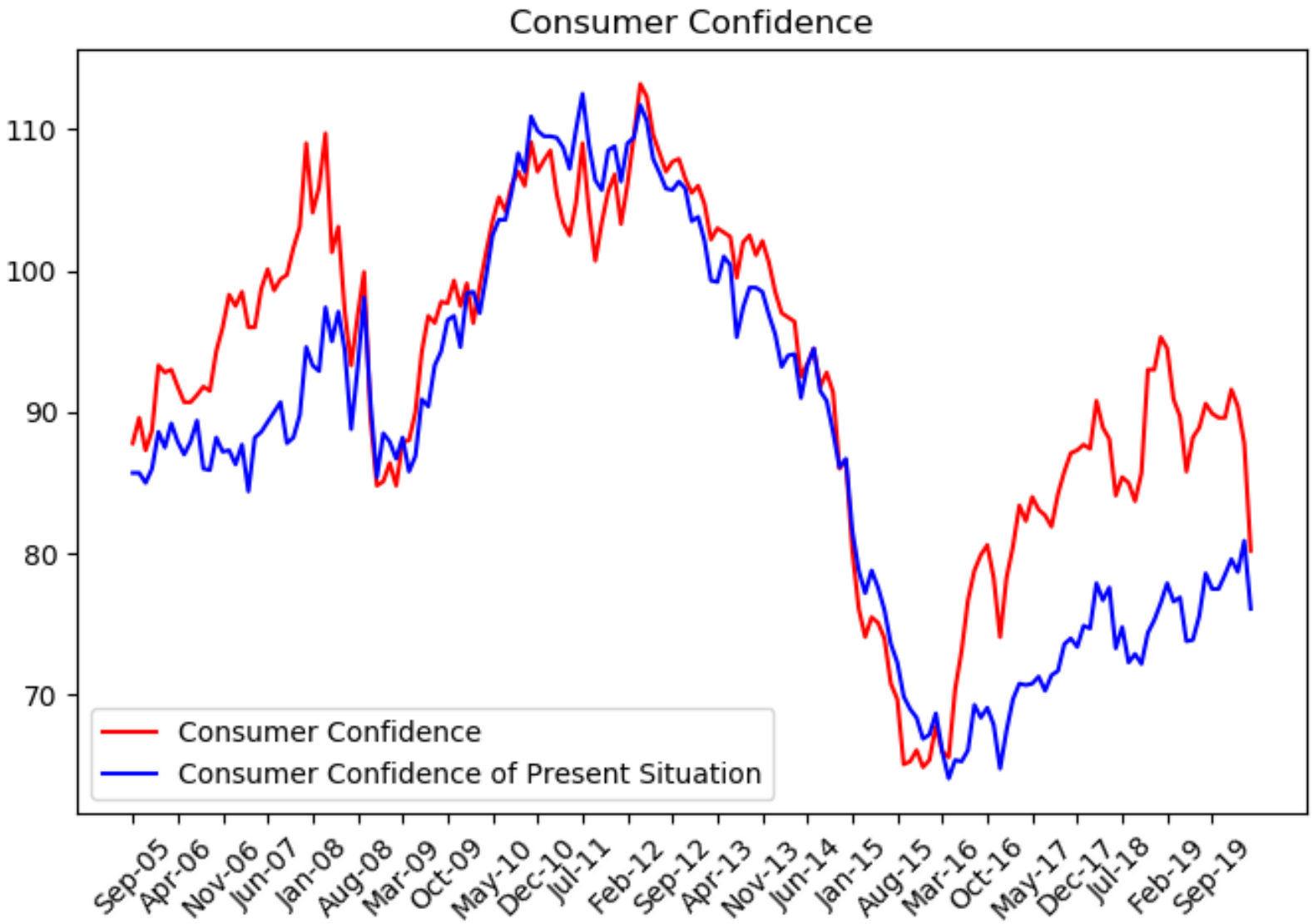
Jan-15
Aug-15
Mar-16
Oct-16
May-17
Dec-17
Jul-18
Feb-19
Sep-19


Consumer Confidence
110
100
90
80
70
Consumer Confidence
Consumer Confidence of Present Situation
Sep-05
Apr-06
Nov-06
Jun-07
Jan-08
Aug-08
Mar-09
Oct-09
May-10
Dec-10
Jul-11
Feb-12
Sep-12
Apr-13
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Jun-14
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Mar-16
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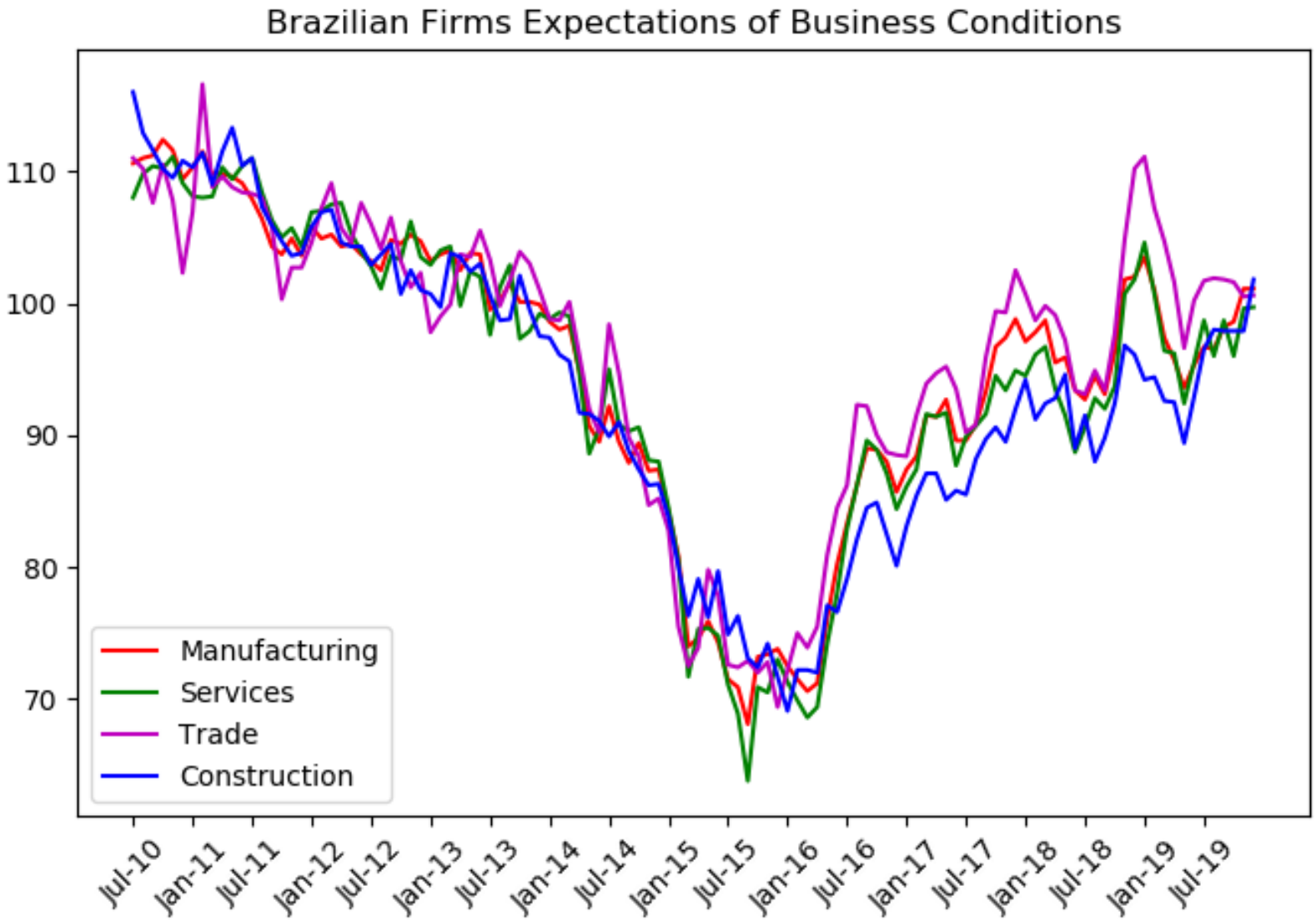
May-17
Dec-17
Jul-18
Feb-19
Sep-19


Brazilian Firms Expectations of Business Conditions
110
100
90
80
70
Manufacturing
Services
Trade
Construction
Jul-10
Jan-11
Jul-11
Jan-12
Jul-12
Jan-13
Jul-13
Jan-14
Jul-14
Jan-15
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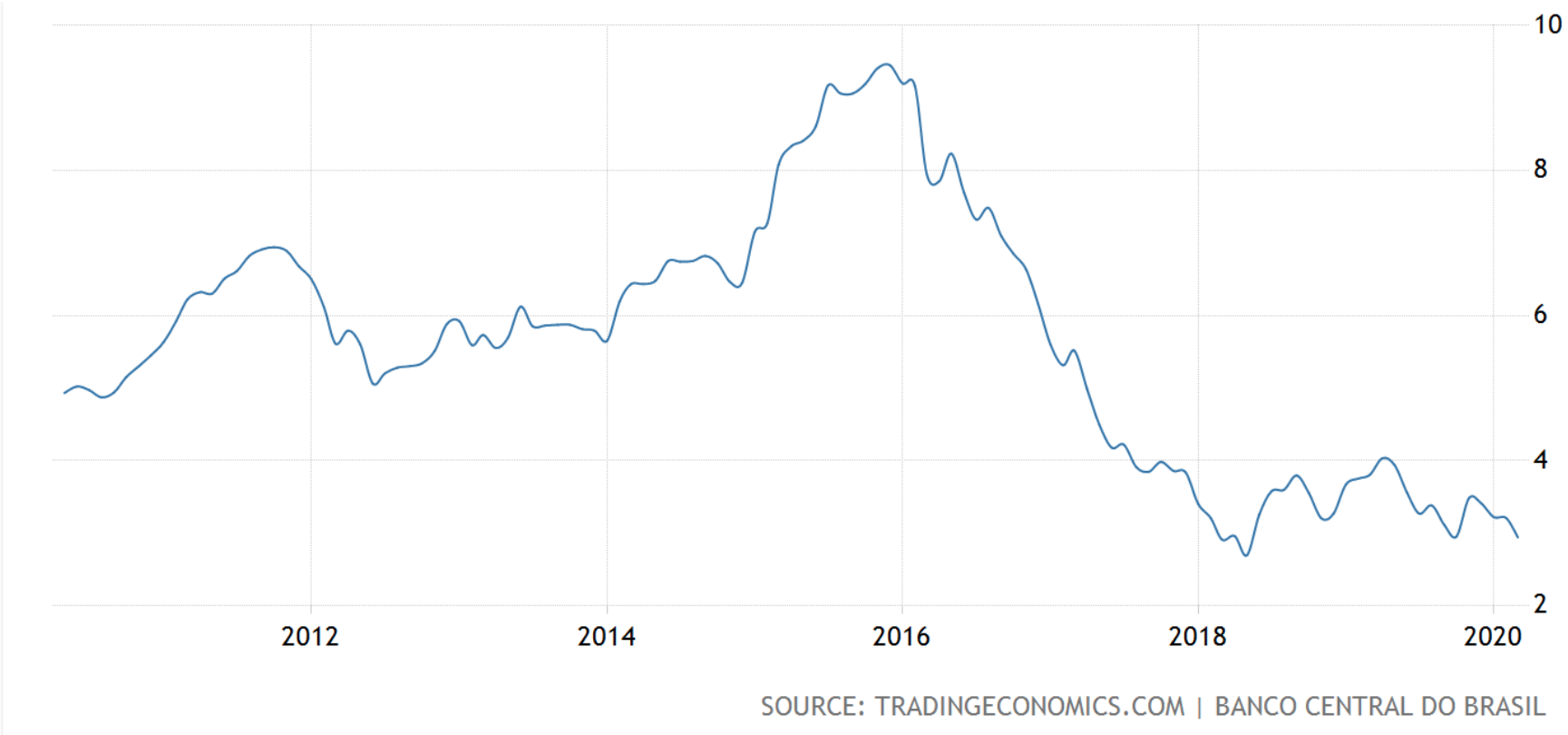
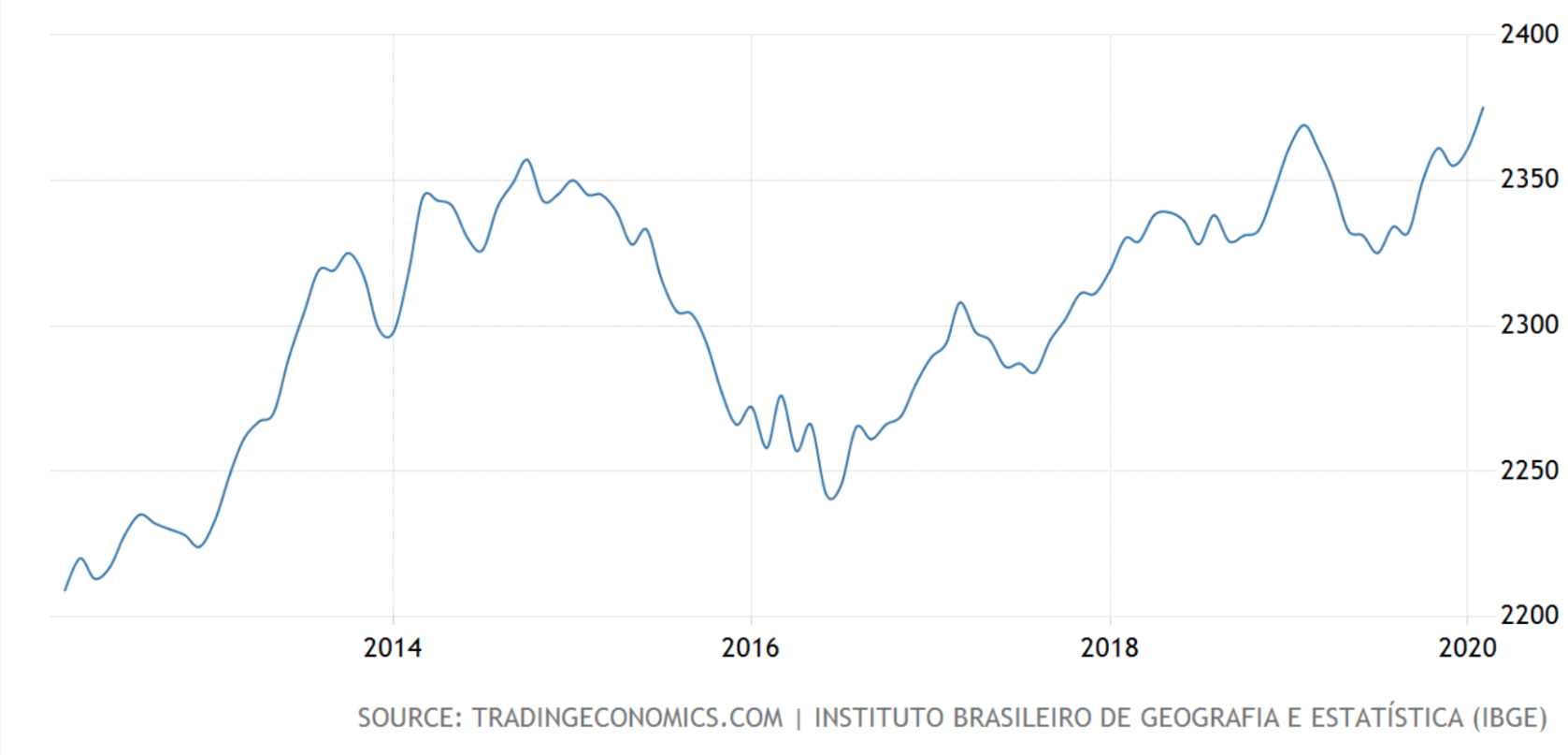
Jan-19
Jul-19

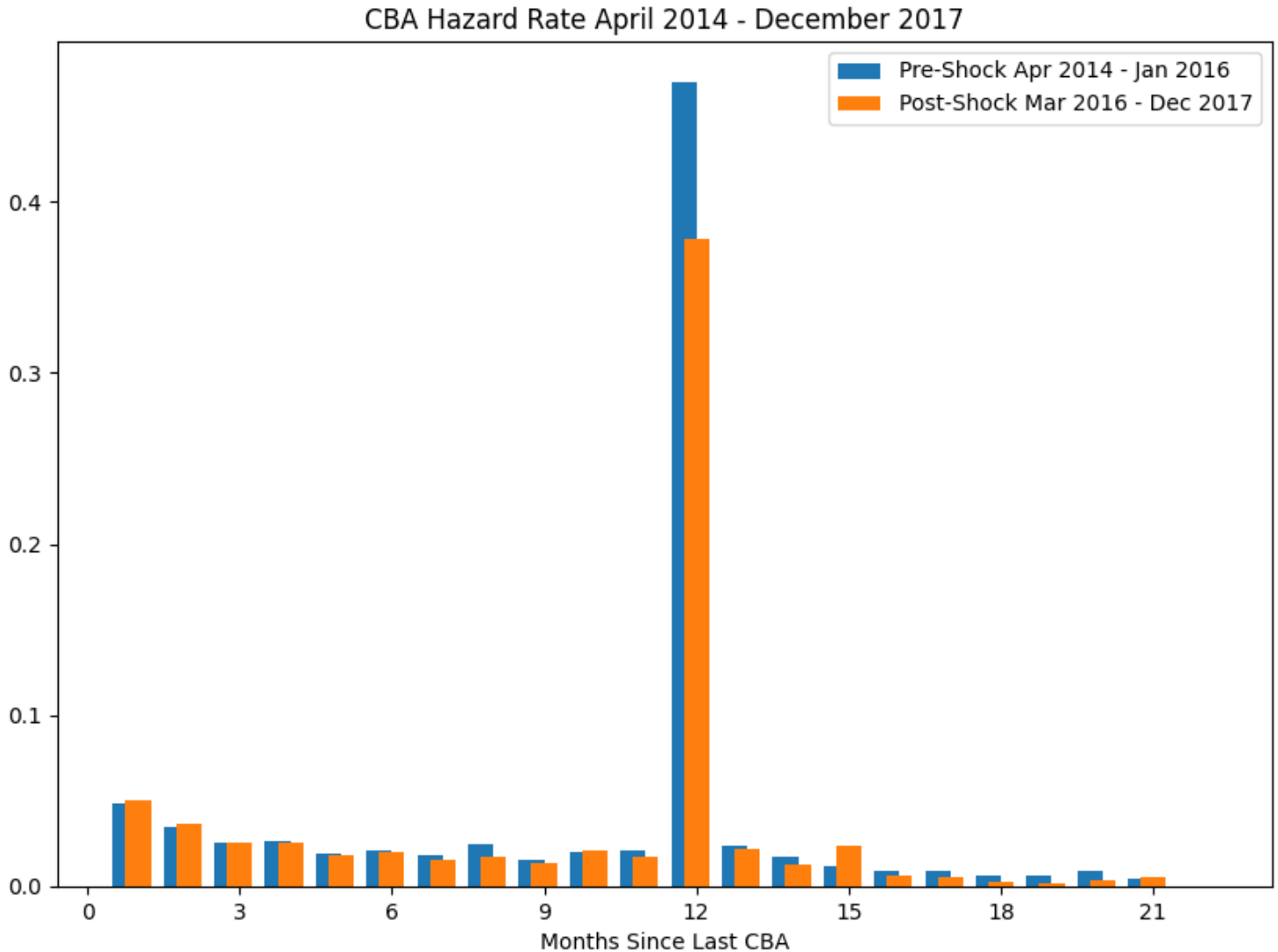
Actual Inflation in Brazil



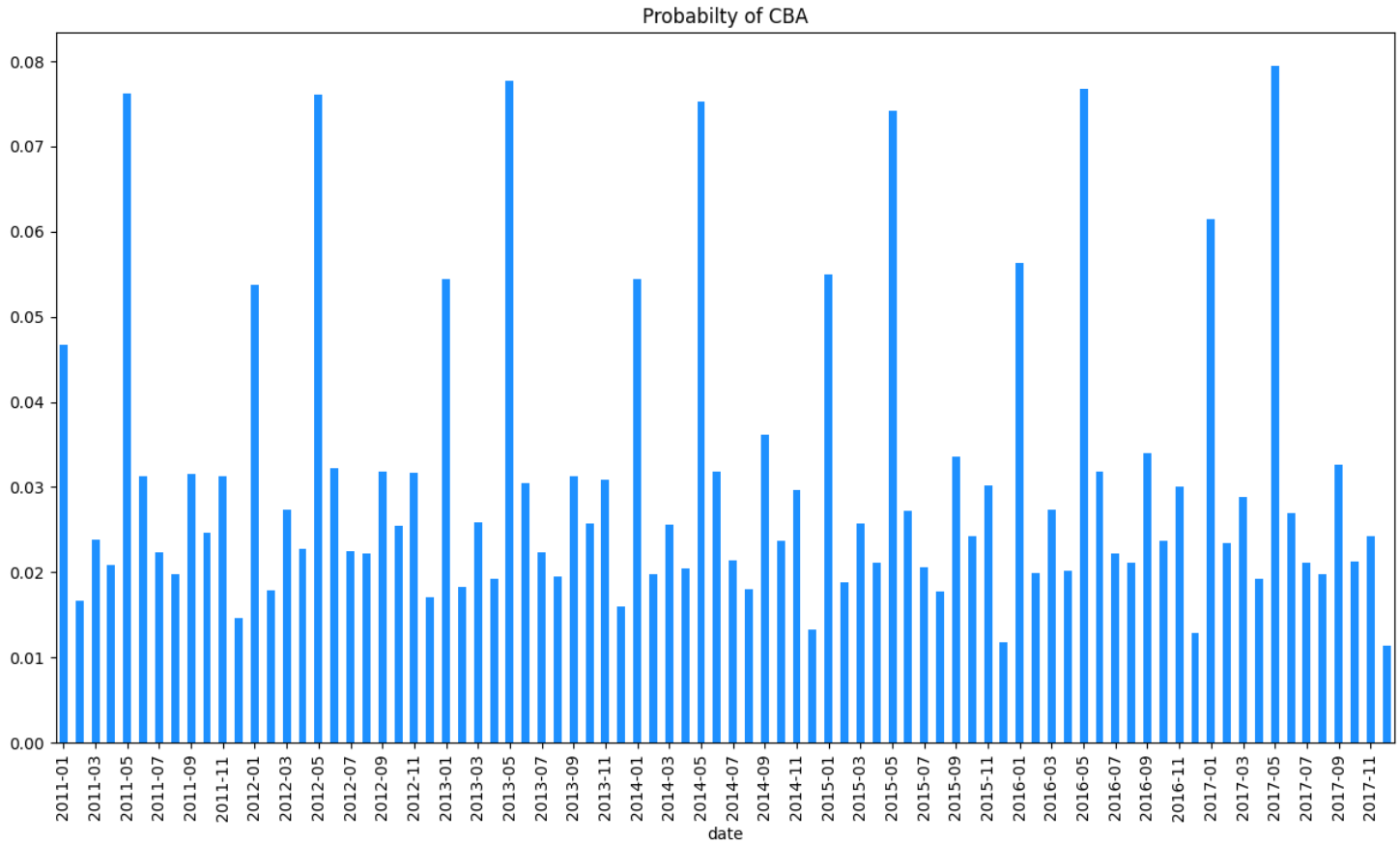
Average Monthly Real Wages in Brazil



Timing of CBAs in Brazil



Timing of CBAs in Brazil



Reduced-Form Model 1

We focus on the subset of firms with a one-year contract set either in Jan 2016 (pre-shock) or Mar 2016 (post-shock). Using a DiD approach, we measure the effect on nominal wage growth of setting wages just before the shock and just after:

$$nom\ wage_{i,t} = \beta_0 + \beta_1 D_t^{March\ 2016} + \beta_2 D_i^{March\ CBA} + \beta_3 [D_t^{March\ 2016} \times D_i^{March\ CBA}] + \mathbf{Z}_{i,t} + \varepsilon_{i,t}$$

- β_3 captures the difference in nominal wage differences across firms with pre- and post- shock CBAs
- Caveat: nominal wage growth may be driven by other forms of negotiation, even if a firm is "locked-into" a CBA

Reduced-Form Model 2

A preliminary reduced-form model takes the following form:

$$nominal\_wage\_growth_{i,t} = \alpha + \beta_1 exp\_inflation_t \times CBA\_month_{i,t} + \beta_2 CBA\_month_{i,t} + \beta_3 exp\_inflation_t + \mathbf{Z_{i,t}} + \varepsilon_{i,t}$$

	(1)	(2)	(3)
inflation_CBA_interaction	1.853***		0.600***
	(0.365)		(0.0946)
lag1_inflation_CBA_interaction	-1.313***	0.518***	
	(0.383)	(0.0992)	
cba_month	-0.0214**	-0.0208**	-0.0275***
	(0.00801)	(0.00802)	(0.00768)
exp_inflation	-0.978***		-1.528***
	(0.0549)		(0.00966)
lag1_exp_inflation	-0.577***	-1.553***	
	(0.0567)	(0.0100)	
m2	0.0946***	0.0917***	0.0966***
	(0.00167)	(0.00164)	(0.00166)
m3	0.156***	0.154***	0.157***
	(0.00155)	(0.00153)	(0.00154)
m4	0.129***	0.127***	0.131***
	(0.00144)	(0.00141)	(0.00143)
m5	0.159***	0.159***	0.158***
	(0.00149)	(0.00149)	(0.00149)
m6	0.134***	0.130***	0.136***
	(0.00146)	(0.00144)	(0.00146)
m7	0.162***	0.160***	0.163***
	(0.00150)	(0.00148)	(0.00149)
m8	0.132***	0.131***	0.133***
	(0.00145)	(0.00144)	(0.00145)
m9	0.129***	0.126***	0.131***
	(0.00139)	(0.00138)	(0.00140)
m10	0.157***	0.157***	0.157***
	(0.00147)	(0.00147)	(0.00147)
m11	0.132***	0.130***	0.133***
	(0.00139)	(0.00138)	(0.00139)
m12	0.353***	0.349***	0.355***
	(0.00236)	(0.00233)	(0.00236)
_cons	-0.00626***	-0.00449***	-0.00990***
	(0.000978)	(0.000946)	(0.000926)
N	5462768	5462768	5462768

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Structural Identification Strategy

- Adapt a staggered wage model with collective bargaining to assess impacts of monetary policy
- Estimate effects on economy-wide wages, levels of employment