

Bringing Expectations to the Collective Bargaining Table

Evidence From Brazilian Firms

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April 26, 2021

- Understanding wages and employment during crisis in a high inflation environment
- Brazil as a paradigm of emerging economies
- Relevance to US: past and present

Main Questions

- How does the timing of CBAs affect the response of wages and employment to the inflationary news shock?
- To what extent do firm-level wages exhibit nominal rigidities and why?
- What are the implications of wage and employment behavior in response to the shock for expectations-based monetary policy?

- Timing of monetary policy shocks (Olivei and Tenreyro 2007)
- Nominal rigidities – wage adjustment asymmetries (Taylor 2016)
- Real wages & response of employment (Card 1990)
- Monetary policy application: inflation targeting
 - Traditional channels are consumption and investment. Analyze potential CBA channel

Background I: The Inflationary News Shock

Key events: Dual economic and political crises in Brazil 2015 - 2016

- ① January 2015: Rousseff begins 2nd term amid allegations of corruption, fiscal malfeasance. Economic recession begins.
- ② March 2016: **Inflationary news shock** –wave of protests solidifies calls for Rousseff's impeachment
- ③ April 2016: Rousseff is formally impeached
- ④ May 2016: Rousseff's powers suspended; V.P. Michel Temer takes over, appoints Ilan Goldfajn Brazilian Central Bank chief.

Background I: The Inflationary News Shock

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Brazil: the Road Ahead

Special Report **Ilan Goldfajn** [+ Add to myFT](#)

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

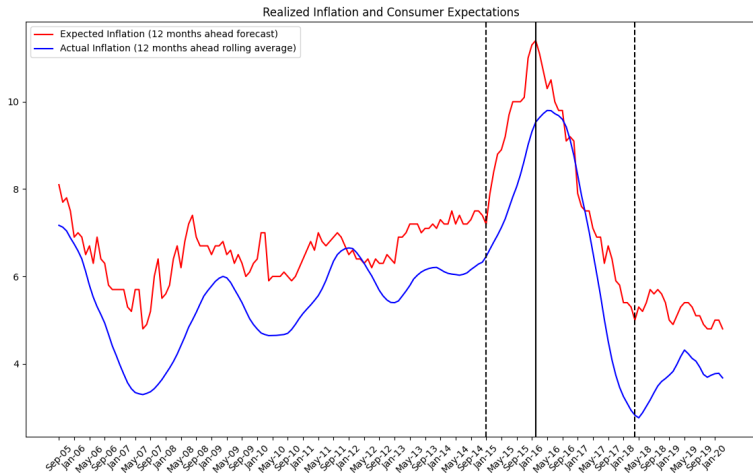


Ilan Goldfajn has helped the central bank regain credibility since Dilma Rousseff (below) was impeached for manipulating the budget © Luiz Maximiano

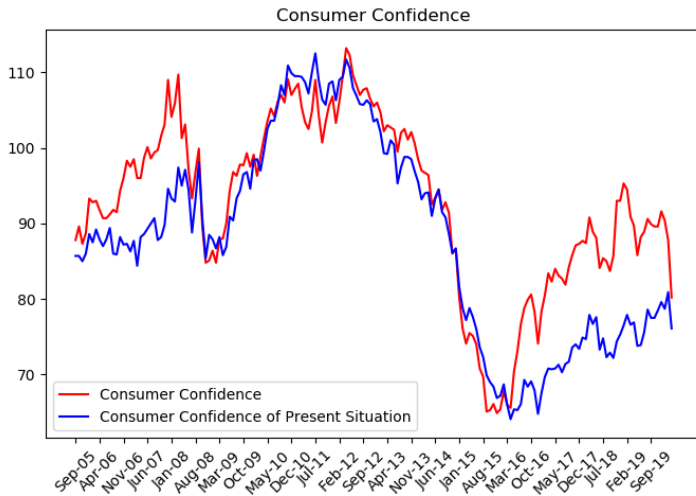
Joe Leahy SEPTEMBER 19 2017



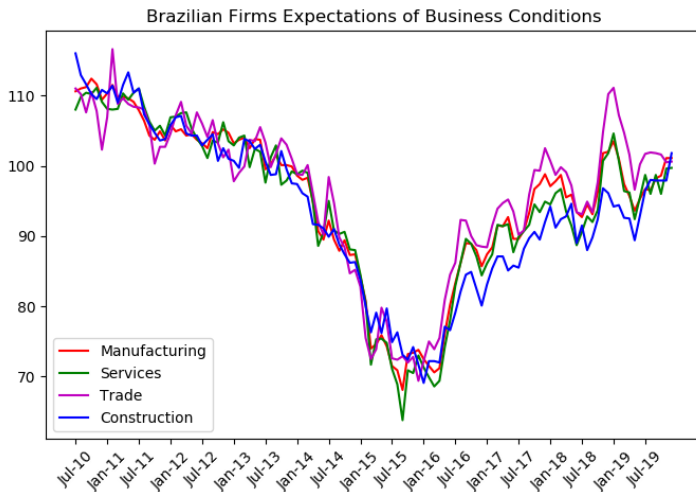
Background I: The Inflationary News Shock



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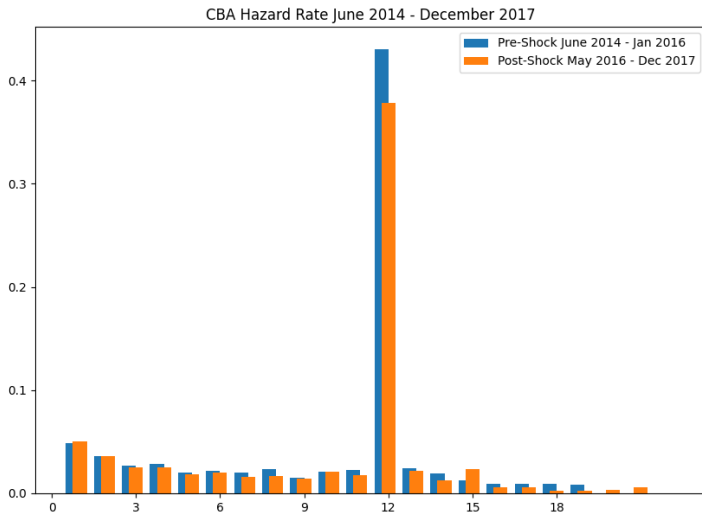
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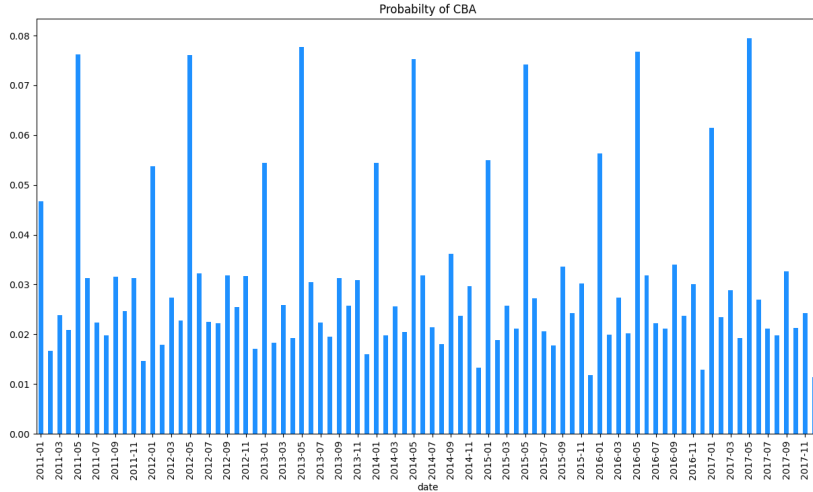
Background II: CBAs in Brazil

- 65% of formal sector workers are unionized in Brazil (compare with 11% in US).by Jelle Visser 2017
- CBAs typically fix a **nominal wage level** for the duration of the contract.
- **Brazilian Consolidation of Labor Laws:** Nominal wages cannot be reduced without workers' approval.
- A reduction in hours must be paired with a commensurate increase in the hourly rate.
- Maximum duration of a CBA is 24 months (can be extended indefinitely).
- Agreements are either at the firm- or sector- level. We focus on firm-level agreements.

Timing of CBAs in Brazil



Timing of CBAs in Brazil



Key Takeaways

- Large drop in inflation expectations coincides with Rousseff's impeachment and replacement by Temer (and Goldfajn). This represents a plausible inflationary news shock
- Variation in the timing of CBAs is plausibly exogenous.

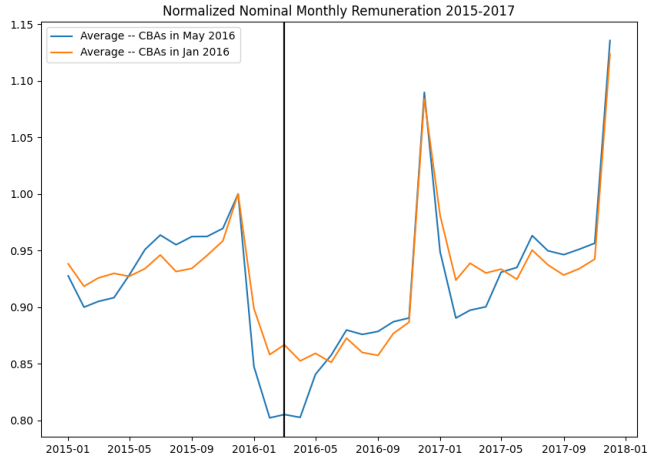
- **RAIS** – Matched employer-employee data
 - Key variables: Monthly remuneration, employment status, 6-digit occupation code, 2-digit sector code, firm ID, worker ID.
 - Note: “Monthly remuneration” measured observed earnings per worker in a given month. We do not observe wage rates and hours separately.

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- **Sistema Mediador** – collective bargaining agreements (single firm - employee contracts)
 - Key variables: company names, start/end dates of contracts

Example of CBA Contract

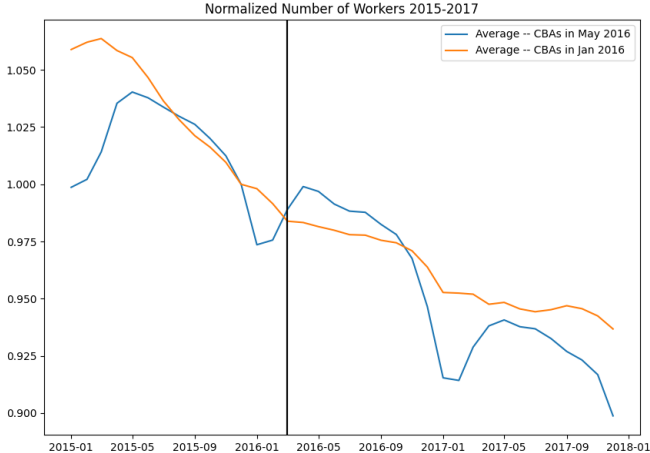
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- Example of CBA Contract
- **FGV IBRE**– aggregate inflation expectations (May gain access to firm-level price and cost expectations)
 - Key variables: Aggregate inflation expectations, firm and consumer confidence indices.
 - Inflation expectations capture households’ projections for inflation over the next 12 months.

Preliminary Results: Nominal Monthly Remuneration



Median Plots

Preliminary Results: Number of Workers



Median Plots

Reduced-Form Model

Using a DiD approach, we measure effect on CBA timing relative to the shock on nominal wage and employment levels.

We write down the reduced form model for wages as:

$$\log w_{i,t} = \alpha_i + \delta_t + \sum_{t=\text{Jan 2015}, t \neq t^{\text{shock}}}^{\text{Dec 2017}} \beta_t D_{i,t} + \varepsilon_{i,t} \quad (1)$$

Similarly, the model for number of workers is:

$$\log n_{i,t} = \alpha_i + \delta_t + \sum_{t=\text{Jan 2015}, t \neq t^{\text{shock}}}^{\text{Dec 2017}} \beta_t D_{i,t} + \varepsilon_{i,t} \quad (2)$$

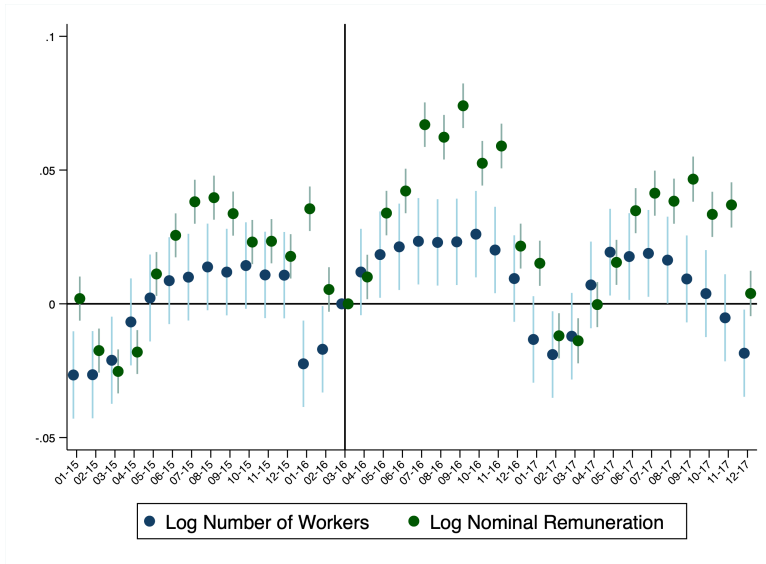
- balanced panel of firms from 2015 - 2017
- contracts set either in Jan 2016 (pre-shock) or May 2016 (post-shock)

Table: DiD Summary Statistics

	postshock_group	
	0	1
	mean/sd	mean/sd
num_workers	193.650 (637.540)	142.544 (467.514)
rem	2786.865 (2736.130)	2236.337 (1784.036)
male	0.628 (0.288)	0.670 (0.305)
nonwhite	0.357 (0.333)	0.290 (0.318)
lesshs	0.245 (0.262)	0.315 (0.295)
hs	0.479 (0.283)	0.486 (0.296)
morehs	0.276 (0.308)	0.198 (0.272)
<i>N</i>	510264	

Sector	postshock_group		
	0	1	Total
	%	%	%
Administrative Activities and Ancillary Services	12.6	4.6	8.0
Agriculture	1.4	3.3	2.5
Arts, Culture, Sports and Recreation	0.3	1.1	0.8
Construction	3.0	5.9	4.7
Domestic Services	0.0	0.0	0.0
Education	1.0	1.5	1.3
Electricity and Gas	0.3	0.9	0.6
Extractive Industries	0.8	0.7	0.8
Financial Activities and Insurance	5.4	1.0	2.9
Food and Hospitality	3.3	1.7	2.4
Human Health and Social Services	2.9	4.5	3.8
Information and Communication Technologies	2.3	2.0	2.1
International Organizations	0.0	0.0	0.0
Other Services	7.5	11.2	9.6
Processing Industries	34.1	22.0	27.1
Professional, Scientific, and Technical Activities	2.7	2.1	2.3
Public Administration, Defense, and Social Security	0.4	0.8	0.6
Real Estate Activities	1.2	0.2	0.6
Sale and Repair of Motor Vehicles	13.7	17.4	15.8
Transport, Storage and Mail	6.3	18.1	13.1
Water and Waste Management	0.9	1.0	1.0
Total	100.0	100.0	100.0

DiD Results



Preliminary Findings

- For both groups of firms, large, persistent drop in nominal wages between Dec. 2015 and Jan. 2016, despite legally-required downward wage rigidity.
- This may be driven by mid-month separations, and/or reclassification of workers.
- Contrary to prediction, firms with CBAs post-shock actually had higher nominal wages than firms with pre-shock CBAs.
- Seasonality in coefficient estimates

Preliminary Findings

- For both groups of firms, large, persistent drop in nominal wages between Dec. 2015 and Jan. 2016, despite legally-required downward wage rigidity.
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- Seasonality in coefficient estimates

Possible explanations: optimism, sectoral heterogeneity, cyclicalities in workers' bargaining power, regime switching.

Next Steps & Future Research

- Broaden scope of research question; move beyond inflation shock narrative
- Explore heterogeneity across sector
- Unpack key drivers in observed nominal wage reduction across groups: separations, reclassifications, or both?
- Estimate effects for real wages and compare with nominal wage and number of workers results.
- Pending data access, explore “optimism” narrative using own-price/cost expectations microdata.
- Analyze firms’ other margins in response to the shock. Data sources?

Structural Identification Strategy

- Adapt a DSGE model with uneven wage staggering wage model with collective bargaining to assess impacts of monetary policy (Olivei and Tenreyro 2007) or;
- Adapt a DMP model with inflation expectations to understand implications for aggregate wages and employment.

References



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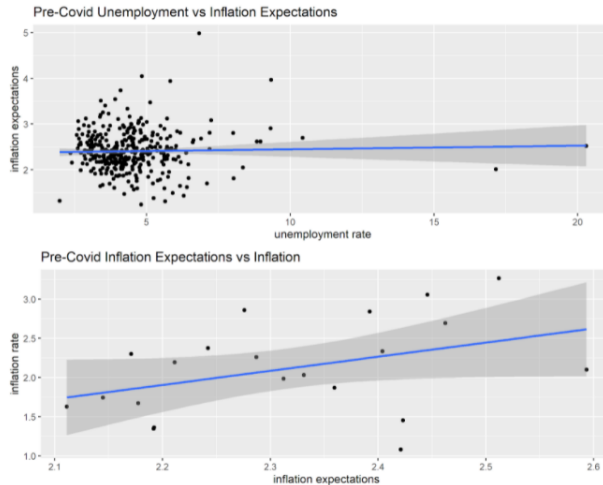
Additional Projects

Regional Inflation Expectations During Covid & The Phillips Curve

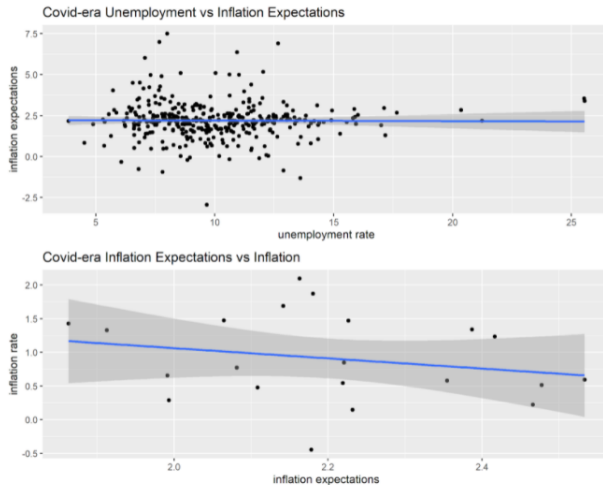
Main questions:

- How do regional economic conditions & household characteristics (e.g. employment status) during affect household inflation expectations?
- What is the slope of the Phillips curve, measured using the regional inflation expectations data?

Regional Inflation Expectations During Covid & The Phillips Curve



Regional Inflation Expectations During Covid & The Phillips Curve



Household Wealth Perceptions and Labor Supply Decisions

- **Main question:** How do households' wealth perceptions affect
- i.e., is there a “Behavioral” Laffer Curve?
- Potential data source: DNB Household Survey
- Ideal setting: Look for tax reform as source of exogenous variation in wealth perceptions.

Appendix

Sistema Mediador: Typical CBA (excerpt from Lagos 2021)

Figure A4: Extract from a CBA in *Sistema Mediador*

ACORDO COLETIVO DE TRABALHO 2013/2013

NÚMERO DE REGISTRO NO MTE: SP006649/2013
DATA DE REGISTRO NO MTE: 28/06/2013
NÚMERO DA SOLICITAÇÃO: MR031458/2013
NÚMERO DO PROCESSO: 47999.005332/2013-81
DATA DO PROTOCOLO: 27/06/2013

Confira a autenticidade no endereço <http://www3.mte.gov.br/sistemas/mediador/>.

SIND TRAB COM MIN DER PETROLEO (IPM) SJCAMPOS VP REGIAO, CNPJ n. 96.486.634/0001-75, neste ato representado(a) por seu Presidente, Sr(a). MARIA ANTONIETA DE LIMA;

E

BRASQUIMICA PRODUTOS ASFALTICOS LTDA, CNPJ n. 13.829.957/0015-92, neste ato representado(a) por seu Diretor, Sr(a). JOSE ALBERTO PINON GONZALEZ;

celebram o presente ACORDO COLETIVO DE TRABALHO, estipulando as condições de trabalho previstas nas cláusulas seguintes:

CLÁUSULA PRIMEIRA - VIGÊNCIA E DATA-BASE

As partes fixam a vigência do presente Acordo Coletivo de Trabalho no período de 1º de janeiro de 2013 a 31 de dezembro de 2013 e a data-base da categoria em 1º de janeiro.

CLÁUSULA SEGUNDA - ABRANGÊNCIA

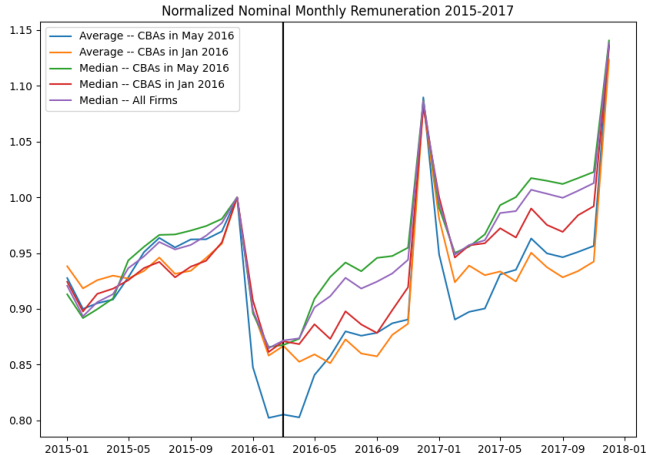
O presente Acordo Coletivo de Trabalho, aplicável no âmbito da(s) empresa(s) acordante(s), abrangerá a(s) categoria(s) trabalhadores no comercio de minerios inclusive pesquisa de minerios e derivados de petroleo, com abrangência territorial em Caçapava/SP.

Note: Figure shows an extract of a typical CBA found in *Sistema Mediador*, highlighting the standardized features in the underlying HTML. The title indicates whether the agreement is at the firm-level (*acordo*) or sectoral (*convenção*). The small table following the title contains the registration and filing dates. Afterwards are the two counterparts with their respective CNPJ identifiers. The initial two clauses are standardized. The first one contains the CBA validity (i.e., start and expiration date) as well as the reference negotiation date (*data-base*). The second clause includes the worker category in free text as well as the list of municipalities comprising the geographic coverage. All subsequent clauses are categorized into their selected groups from predetermined lists, contain a title and body where both are written as free text.

Excerpt from (Lagos 2021)

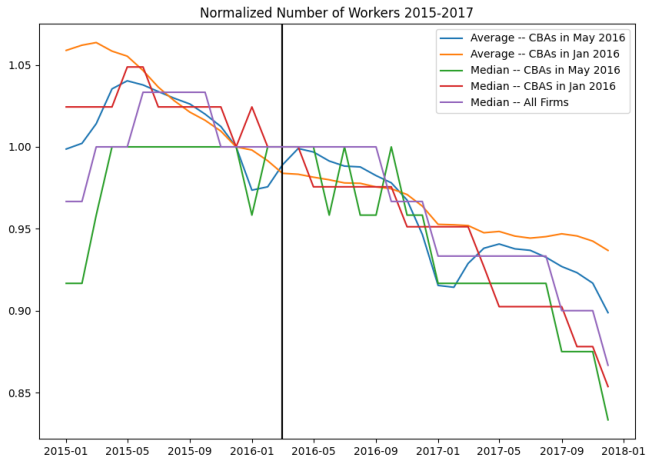
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Preliminary Results: Nominal Monthly Remuneration



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Preliminary Results: Number of Workers



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