Incomplete Peace:
Unintended Consequences of Partial Conflict Resolution in Multilateral Conflicts

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The setting:

- Governments in war-stricken developing countries see peace agreements as a way to booost economic development.
- Aproximately 1 in 3 currently active conflicts over Government control involve the legitimate State and at least 2 armed groups (Gleditsch et al. 2002; Pettersson and Öberg 2020).
- Due to the difficulty of negotiating peace with all parties, these Governments often try to negotiate sequentially with one group at the time.

Why?

There is compelling evidence about the benefits of peace, also known as peace dividend. Studies link a decrease in violence with an reduction of uncertainty and increased economic activity:

- 1.3% - 3.5% increase in housing prices in Northern Ireland after the 1994 ceasefire between the Irish Government and IRA (Besley and Mueller 2012)
- 4% increase in manufacturing employment in the Basque Country after the 1998 ceasefire between the Spanish Government and ETA (Colino 2012)

But...

Some evidence in the context of partial conflict resolution in multilateral conflicts has found negative outcomes:

- Increase in deforestarion rates after the 2016 Colombian peace agreement (Prem, Saavedra, and Vargas 2020).
- Surge in number of murders of social leaders after the 2016 Colombian peace agreement (De-Arteaga and Boecking 2019).

The issue

How to reconcile this seemingly contradictory evidence?

> **Research question:** *What is the impact of partial conflict resolution in multilateral conflicts and how does it compare to the impact found in bilateral conflicts?*

Sneak peak at the results

- Unequivocally positive outcomes in bilateral contests between the Government and FARC: increase in economic activity and no change in coca cultivation
- Unequivocally negative outcomes in multilateral conflicts where FARC was outlived by ELN: no change in economic activity and an increase in coca cultivation.

Contribution

1. Provide better evidence to developing countries involved in multilateral conflicts about the consequences of signing partial peace agreements.
2. Improve the efficacy and efficiency of peace-building interventions by designing them around a better understanding of outcomes of resolution processes across a wider spetrum of conflict configurations.

How?

By studying the case of the partial conflict resolution process between the Colombian Government and the Revolutionary Armed Forces of Colombia embedded in a conflict characterized by:

(i) The legitimate State fighting two armed groups with Nation-wide presence: FARC and the National Liberation Army (ELN)

(ii) One demobilizing group (FARC) and one group that continued their activity unabated (ELN)

(iii) Involvement of FARC and ELN in illegal activity, mainly the cocaine business

Peace talks

How? (Contd.)

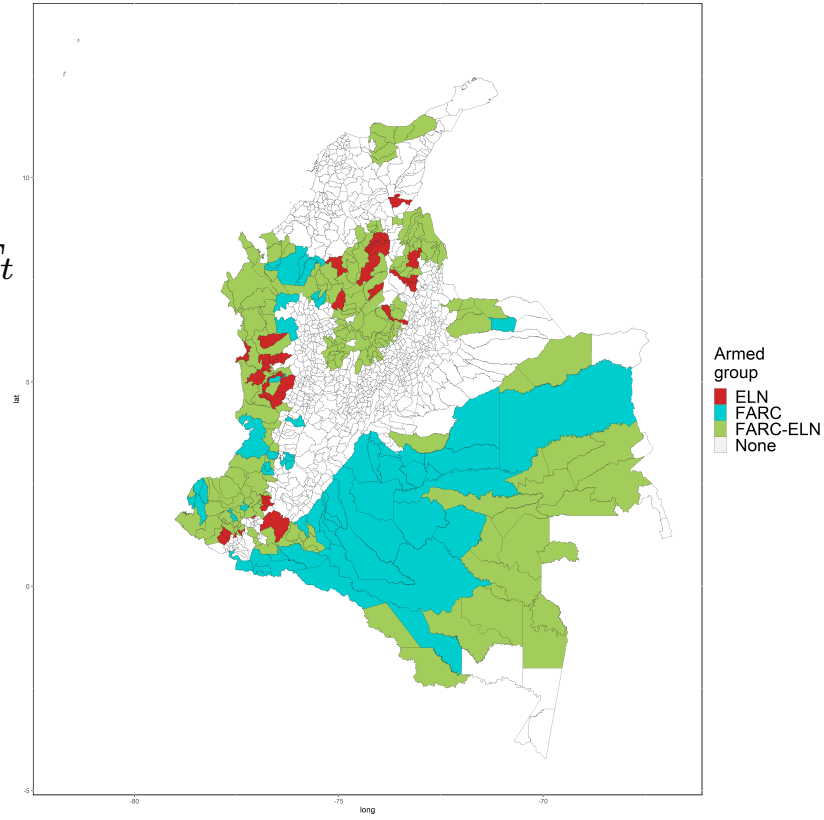
Using a difference-in-differences approach that exploits the heterogeneity in armed group presence:

Empirical strategy

$$
\begin{aligned}
y_{it} = & \beta_0 + \beta_1 POS - TREAT_t + \\
& \beta_2 (FARC_i \times POS - TREAT_t) + \\
& \beta_3 ((FARC - ELN)_i \times POS - TREAT_t \\
& \alpha_i + \mu_d t + \varepsilon_{it}
\end{aligned}
$$

- y_{it}: Violent incidents | Economic activity | Hectares planted in coca
- $POS - TREAT_t$: Binary variable; 1 for 2016, 0 for 2012
- $FARC_i$: Binary variable; sole FARC presence
- $(FARC - ELN)_i$: Binary variable; joint FARC-ELN presence
- ELN is the ommited category

Armed group presence



Challenges and data description

1. Identification of armed group presence:
   - Solution: 2016 electoral risk map published by the Electoral Observation Mission of Colombia.
   - Plausible endogeneity: (i) Negotiation in the "midst of conflict", and (ii) No evidence of changes in armed group presence between 2012 and 2016.
2. Observation of economic activity in war-stricken areas
   - Weak State presence, scarcity of formal transactions, and risk of asking questions.
   - Solution: Use of NASA's Black Marble HD imagery, available for 2012 and 2016 (i) top-coding corrected, (ii) temporally and spatially robust, and (iii) high resolution of 500 m. x 500 m.

Other data sources

- **Number of violent incidents:** Aggregate Register of Victims compiled by the Unit for the Attention and Integral Reparation of Victims of Colombia.
- **Number of hectares planted in coca leaf:** System for the Observation of Drugs of Colombia.

Baseline descriptive statistics

Variable:	ELN	FARC	FARC-ELN	P-value
Economic activity	$7.97x10^3$	$1.1\ x10^4$	$5.8e\ x10^4$	0.391
Violent incidents	25.3	45.6	47.9	0.000
Coca cultivation (has)	99.7	369	388	0.070
Population (1000 people)	12.1	22.2	15	0.762
Local Government income (1000 million COP)	23	35.7	23.2	0.815
Local Government expenditure (1000 million COP)	20.2	33.1	21.2	0.872
Water service (%)	54.9	53	56.1	0.756
Garbage service (%)	45.9	48	43	0.499
Sewer service (%)	40.9	44.9	37.3	0.385

Data exploration

Trends of economic activity, violence, and coca leaf cultivation

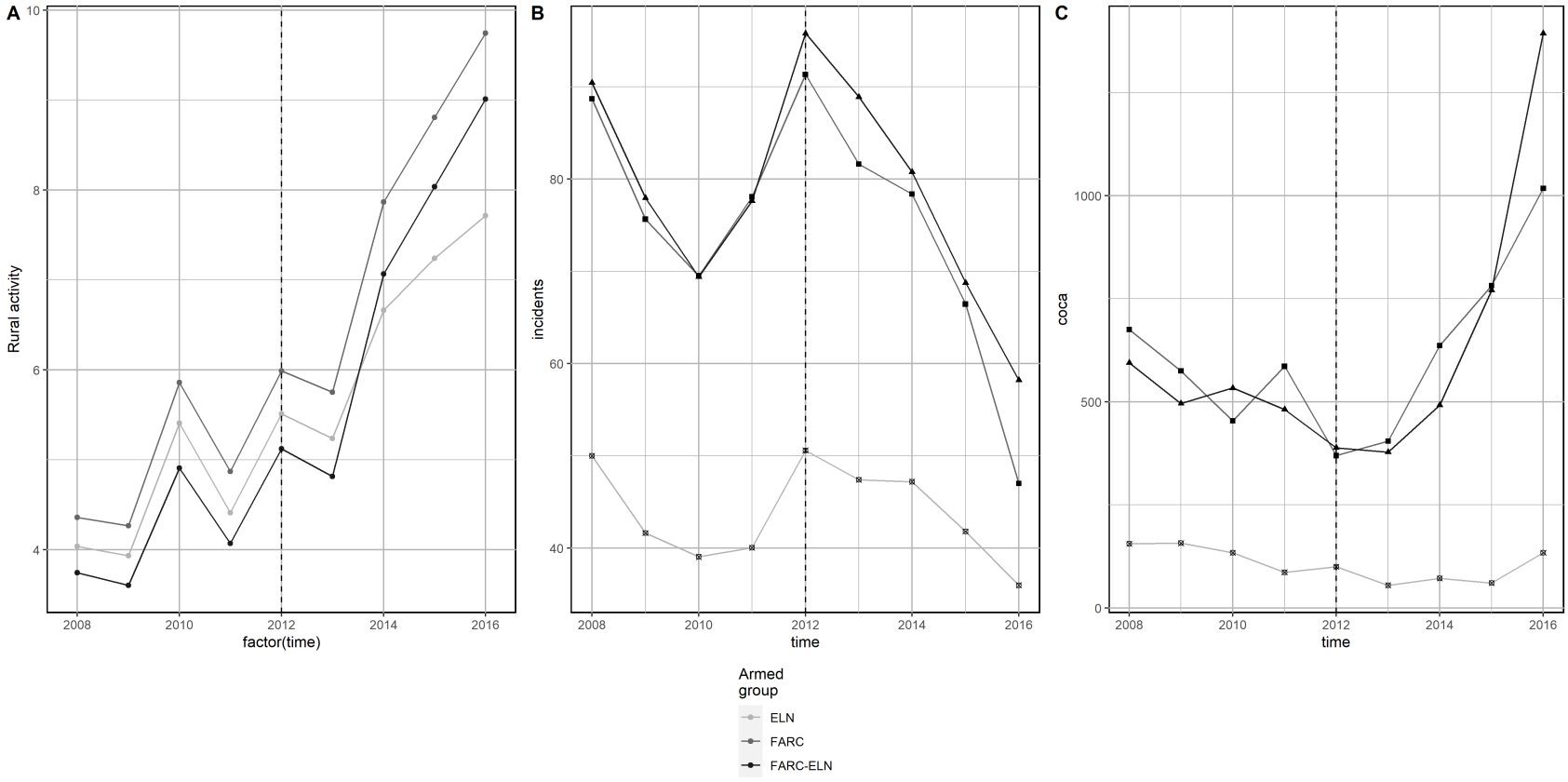


Figure 1: Figure. Time trends of (A) Changes in economic activity measured by night lights, (B) Changes in number of violent incidents, and (C) Changes in number of hectares planted in coca leaf, disaggregated by treatment group

Geographic distribution of changes in economic activity violence, and coca leaf cultivation

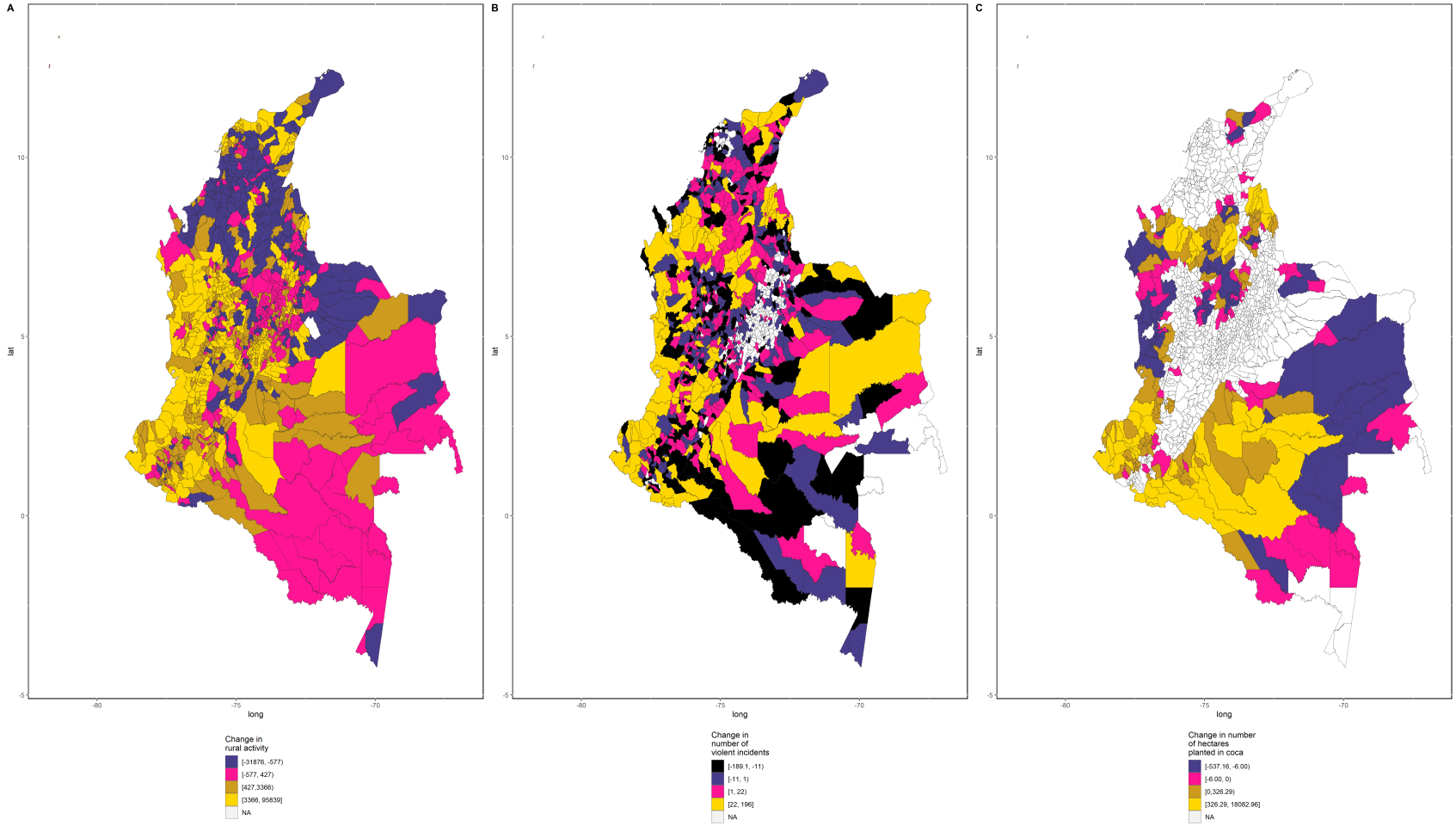


Figure 2: Figure. Geographic distribution of (A) Changes in economic activity measured by night lights, (B) Changes in number of violent incidents, and (C) Changes in number of hectares planted in coca leaf, disaggregated by treatment group

Results

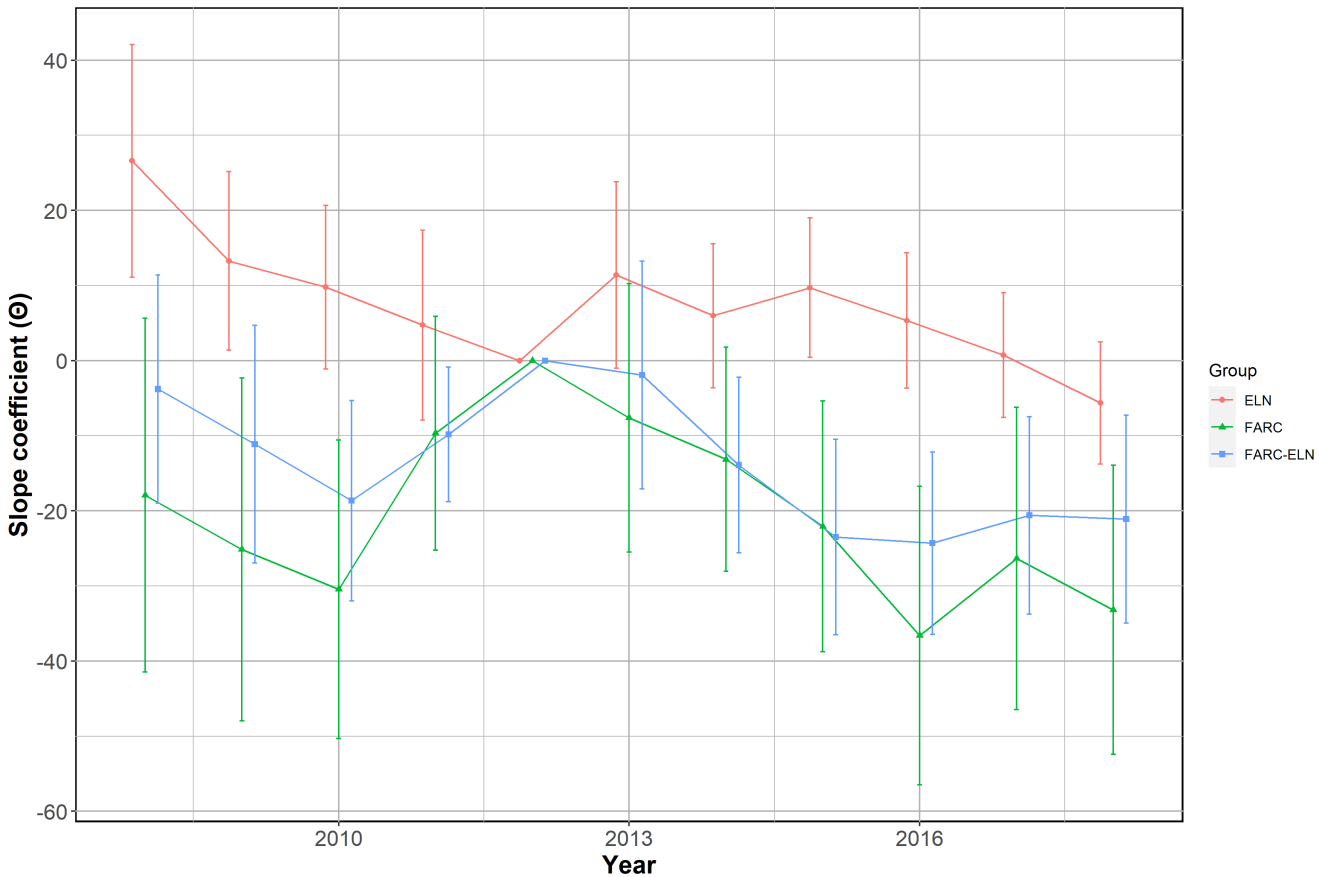
Impact of the conflict resolution process on violence

	Dependent variable:	
	Number of violent incidents	
Time	1.34	2.31
	(2.11)	(2.43)
Time x FARC	-9.06 **	-9.13 **
	(3.73)	(3.71)
Time x FARC/ELN	-8.70 ***	-6.33 ***
	(2.55)	(2.43)
Time x Presence over 2000-2012		-2.48
		(2.23)
FARC x Time x Presence over 2000-2012		-7.55 **
		(3.67)
FARC/ELN x Time x Presence over 2000-2012		-13.35 **
		(6.13)
Observations	488	488

Source: Author's calculations

Notes: The unit of observation is the municipality-year. All specifications include municipality and department-by-month fixed effects. Standard errors clustered at the municipal level are presented in parenthesis. *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$.

$$Violence_{it} = \beta_0 + \sum_{k \in groups} \sum_{j=2008, j \neq 2012}^{2018} \theta_j^K (GROUP_i^k \times \mathbb{1}(TIME_t = j)) + \alpha_i + \lambda_t + \mu_d t + \varepsilon_{it}$$



The conflict resolution process and economic activity

	Dependent variable:		
	Economic activity		
Time	-1.68	-1.94 *	-2.58 *
	(1.20)	(1.14)	(1.13)
Time x FARC	6.60 *	6.67 *	5.08
	(4.02)	(3.80)	(3.75)
Time x FARC-ELN	1.11	1.38	3.63
	(2.40)	(2.47)	(2.37)
Time x Presence 2000-2012		16.79 *	
		(8.72)	
FARC x Time x Presence 2000-2012		-7.86	
		(11.23)	
FARC-ELN x Time x Presence 2000-2012		-15.23 *	
		(8.99)	
Time x Baseline Economic activity			0.11
			(0.08)
FARC x Time x Baseline Economic activity			0.23 *
			(0.09)
FARC-ELN x Time x Baseline Economic activity			-0.39 ***
			(0.11)
Observations	488	488	488

Source: Author's calculations

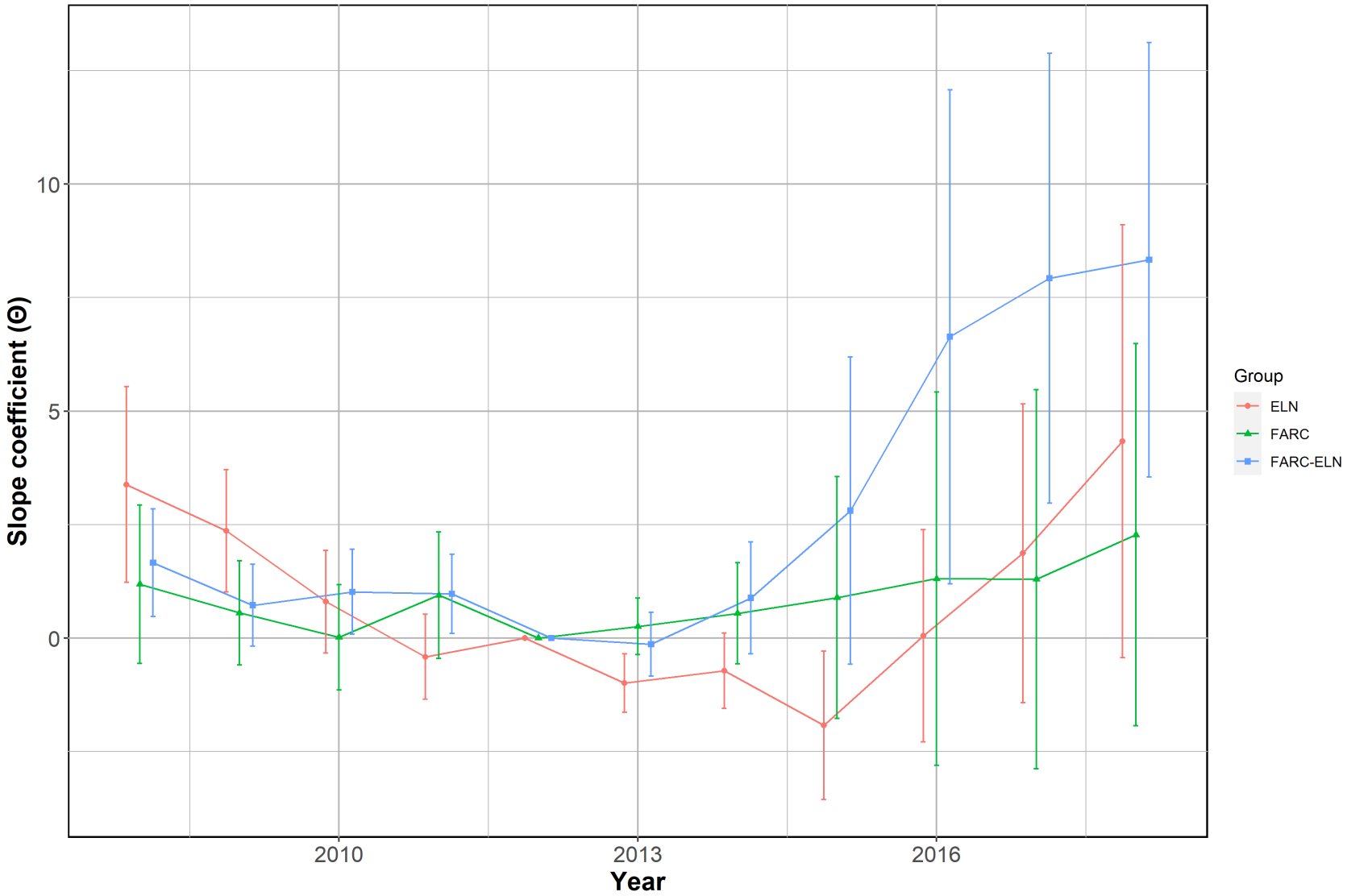
Notes: The unit of observation is the municipality-year. All specifications include municipality and department-by-month fixed effects. Standard errors clustered at the municipal level are presented in parenthesis. *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$.

The conflict resolution process and coca cultivation

	Dependent variable:		
	Coca cultivation		
Time	0.17	-1.33	0.31
	(1.28)	(2.52)	(1.30)
Time x FARC	-1.23	-0.54	2.46
	(6.30)	(5.63)	(2.96)
Time x FARC/ELN	6.28 *	1.24	-5.26 **
	(3.24)	(2.61)	(2.51)
FARC x Time x Presence 2000-2012		-0.26	
		(1.41)	
FARC-ELN x Time x Presence 2000-2012		28.59 *	
		(16.13)	
Time x Baseline Violence			0.21
			(0.57)
FARC x Time x Baseline coca cultivation			1.01
			(0.84)
FARC/ELN x Time x Baseline coca cultivation			3.13 ***
			(0.68)
Observations	488	488	488

Source: Author's calculations

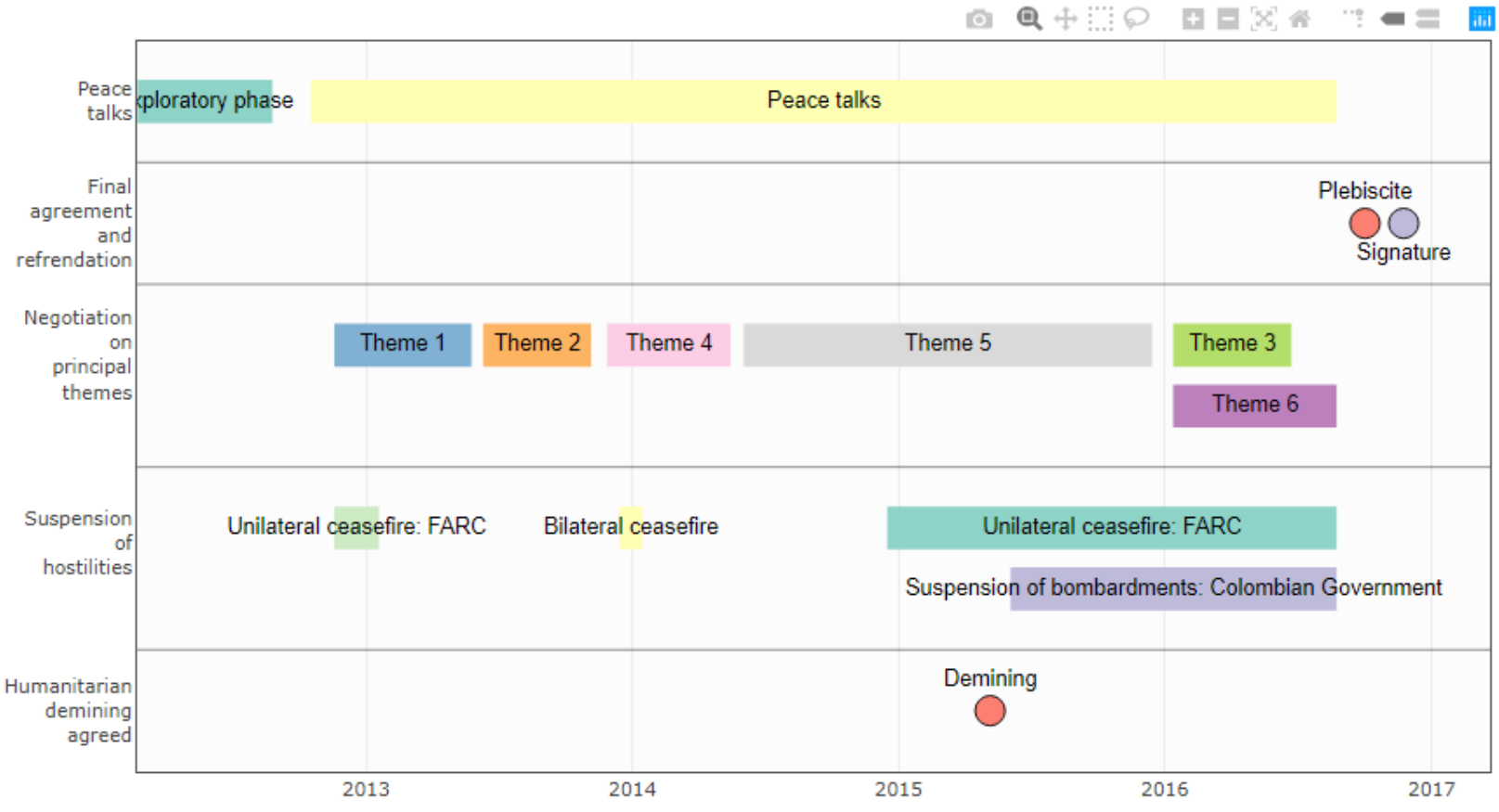
Notes: The unit of observation is the municipality-year. All specifications include municipality and department-by-month fixed effects. Standard errors clustered at the municipal level are presented in parenthesis. *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$.


Slope coefficient (Θ)
10
5
0
2010
2013
2016
Year
Group
ELN
FARC
FARC-ELN

Discussion

Conclusions

The Colombian peace talks



Back

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