# How illegal economies can reduce local fiscal capacity: Quasiexperimental evidence from an *accident* in the Colombian peace negotiations

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# Different links between conflict (and *illegal economies*) and local tax performance

(Ch et al. 2018)

- Conflict deteriorates the tax base by, e.g., destroying physical capital
- Conflict generates negative reciprocity of taxpayers (e.g., Cárdenas et al. 2014)
- Conflict reduces the return of legal businesses and raises the return of illegal businesses, which are not taxed (e.g., Besley and Persson 2008)
- Criminal and rebel rule undermine state legitimacy (e.g., Arjona 2016, Blattman et al. 2023, Sánchez de la Sierra 2020)
- Conflict facilitates the capture of local institutions by armed groups (e.g., Eaton 2006; Ch et al. 2018)

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# This paper asks three questions

1. Does a positive shock on the size of illegal economies affect local tax revenues?
2. If so, which types of taxes?
3. Finally, which are the relevant explanations?

# We study variation in Colombia

# TL;DR

- We study how an exogenous positive shock on coca production affects local tax revenues:
  - More specifically, an announcement on future subsidies for coca growers that drove coca and cocaine production up (Prem et al. 2023)

- We focus on the three main municipal-level taxes:
  - Trade and production tax (applies to all sectors except agriculture)
  - Property tax
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  - Property tax
  - Gasoline sales tax

- Our findings suggest that...
  - Trade and production tax remains stable, as aggregate economic activity—*legal and illegal*—seems to remain stable
  - Property tax decreases, with agriculture transitioning to the illegal sector
  - Gasoline sales tax decreases, with the gasoline retail market transitioning to the illegal sector

# Outline

# The 1991 Constitution improved decentralization and local fiscal capacity

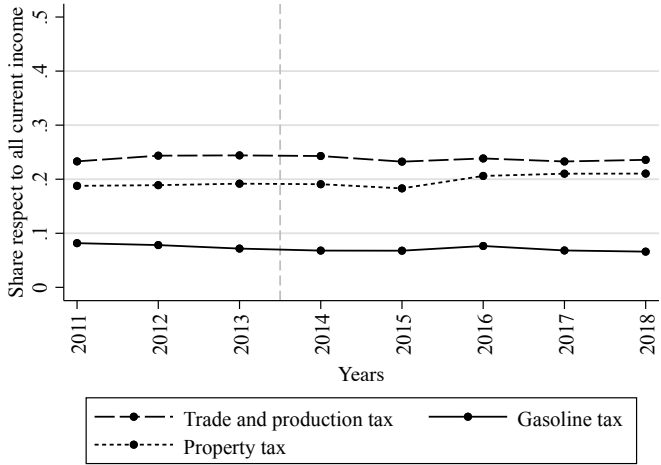
Three main municipal-level taxes:

1. **Trade and production taxes:** paid by businesses, a percentage of approximate sales or production that explicitly excludes the agricultural sector

2. **Property taxes:** paid by households and businesses, a percentage of property valuation

3. **Gasoline taxes:** paid by households and businesses, a percentage of gasoline sales

# How important are these taxes relative to total current income?



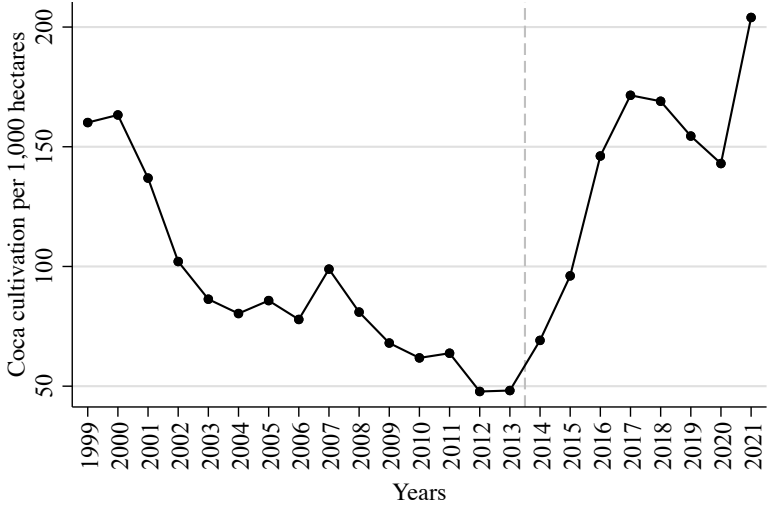
# Outline

# The partial agreement on illicit drugs between the Colombian government and the FARC guerrilla was announced in May 2014

(Prem et al. 2023)

- The announcement explicitly referred to “material welfare conditions” for coca growers
- Only after the press conference, government officials realized the announcement could lead to perverse incentives (Bermudez-Lievano, 2018)
- And in fact, coca growers did receive cash transfers from the government starting in 2017

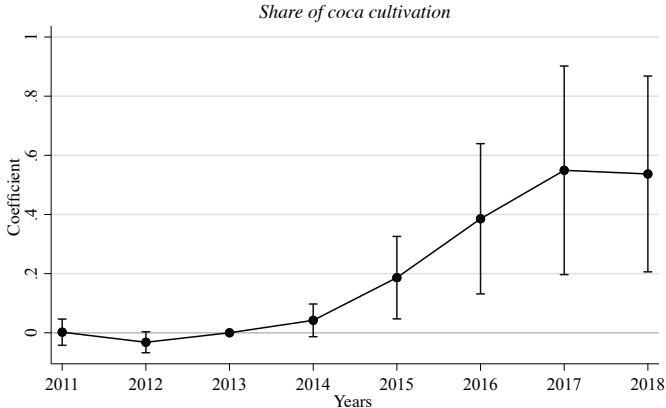
# Coca cultivation increased following the announcement




*Notes*. Data UNODC

# The naive announcement largely explains the increase in coca cultivation in Colombia

(Prem et al. 2023)




*Notes*. OLS coefficient estimates (and their 95% confidence intervals) are reported. The dependent variable is equal to the Share of coca cultivation over 1,000 hectares in each municipality *i* and year *t*. Estimation include municipality and department*year FE.

# Outline

# Data

- Main outcomes:
  - Local tax revenues (National Planning Department, 2023)

- Criminal and rebel group presence and activities:
  - Coca suitability (Mejía and Restrepo, 2015)
  - Presence of armed actors (Ministry of Defense, 2021)
  - Criminal and rebel rule:
    - We scrape human rights violation cases compiled by Osorio et al. (2019)
    - We describe different categories of criminal governance based on Lessing (2020)

- Looking for explanations:
  - Night lights—which proxy for local economic activity (Li et al. 2020)
  - Agricultural production (Ministry of Agriculture, 2023)
  - Arrests (National Police, 2023)

# Outline

# What is really the *treatment* here

- Coca production, even if conducted mainly by peasants, is regulated and ruled by rebel and criminal organizations
- These groups, to different degrees, engage in typical governance activities (Lessing, 2020):
  - Policing and enforcement
  - Judicial
  - Fiscal
  - Regulatory
  - Political
- Hence we broadly see a large coincidence of the presence of illegal economies, armed actors, and criminal and rebel rule

# Correlates of armed group presence suggest armed groups rule and participate in the illegal production of cocaine

| Variable | Dimensions of criminal governance (Lessing 2020) | | | | | | Coca suitability |
|---|---|---|---|---|---|---|---|
| | Policing and enforcement | Judicial | Fiscal | Regulatory | Political | Any dimension | |
| | Coef. (S. E.) (1) | Coef. (S. E.) (2) | Coef. (S. E.) (3) | Coef. (S. E.) (4) | Coef. (S. E.) (5) | Coef. (S. E.) (6) | Coef. (S. E.) (7) |
| Armed actors | 0.159*** (0.025) | 0.183*** (0.025) | 0.149*** (0.024) | 0.220*** (0.030) | 0.252*** (0.031) | 0.159*** (0.025) | 0.285*** (0.024) |
| Controls | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Department FE | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| R2 | 0.041 | 0.062 | 0.044 | 0.064 | 0.062 | 0.044 | 0.317 |
| N | 8,736 | 8,736 | 8,736 | 8,736 | 8,736 | 8,736 | 8,736 |

# Outline

# Identification

- We follow Prem et al. (2023) and leverage:
  - The timing of the pre-announcement of future incentives to substitute away coca
  - The cross-sectional variation in coca suitability

- The main identifying assumption:
  - In the absence of the announcement, tax revenues in municipalities with high coca suitability would have followed the trajectory of tax revenues in municipalities with low coca suitability

- We estimate *reduced form* effects:
  - The impact of the announcement on local tax revenues

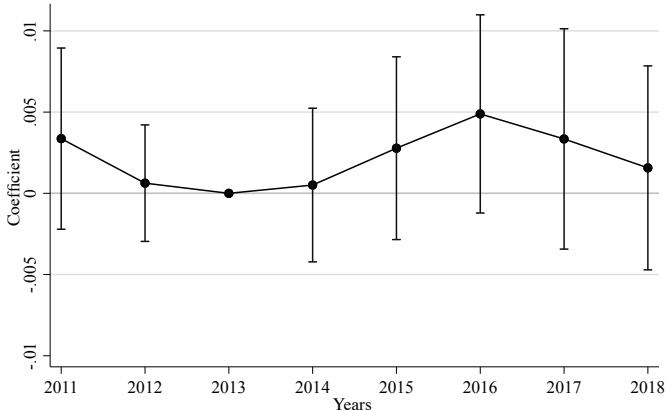
# To estimate causal effects, we follow an event study approach

$$y_{idt} = \sum_{j=-3}^{-2} \beta_j (A_j \times Coca_i) + \sum_{j=0}^{4} \beta_j (A_j \times Coca_i) + \gamma_i + \delta_{dt} + \varepsilon_{idt}$$

- $y_{idt}$ is the relevant outcome in municipality $i$, in department $d$, for year $t$
  - **Our primary focus:** Per capita trade, property and gasoline sales tax revenues
  - **Our secondary focus:** Economic activity, agricultural production, gasoline thefts
- $A_j$ is a dummy variable that takes the value one after the announcement
- $Coca_i$ is a measure of the suitability to grow coca (Mejía and Restrepo, 2015)
- $\gamma_i$ and $\delta_{dt}$ stand for municipality and and department–by–year fixed effects
- Our coefficients of interest are the $\beta_j s$: the difference in revenues between municipalities with high- vs. low-coca suitability in year $j$ relative to 2013

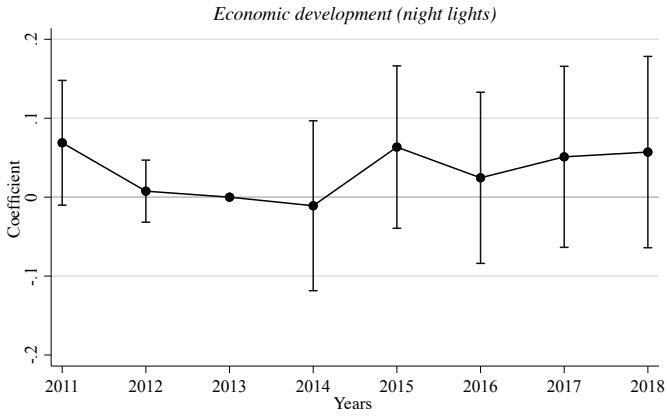
# Outline

# No changes in trade and production tax revenue



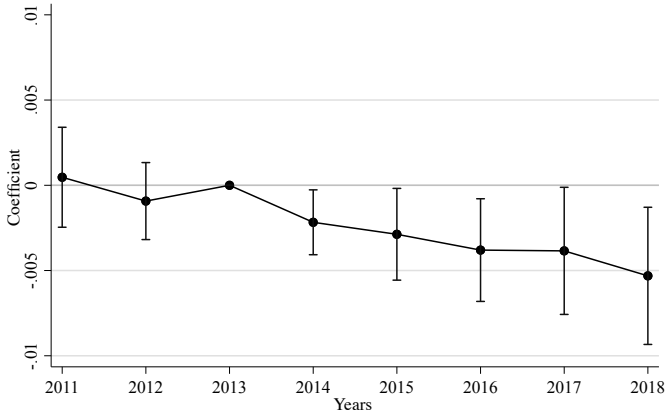

*Notes*. OLS coefficient estimates (and their 95% confidence intervals) are reported. The dependent variable is equal to the per capita value of industry and commerce taxes in real terms in each municipality *i* and year *t*. Estimation include municipality and department*year FE.

# Likely explained by no changes in aggregate economic activity—both legal and illegal, as measured with night lights




*Notes*. OLS coefficient estimates (and their 95% confidence intervals) are reported. The dependent variable is equal to the average luminosity in each municipality *i* and year *t*.
Estimation include municipality and department*year FE.

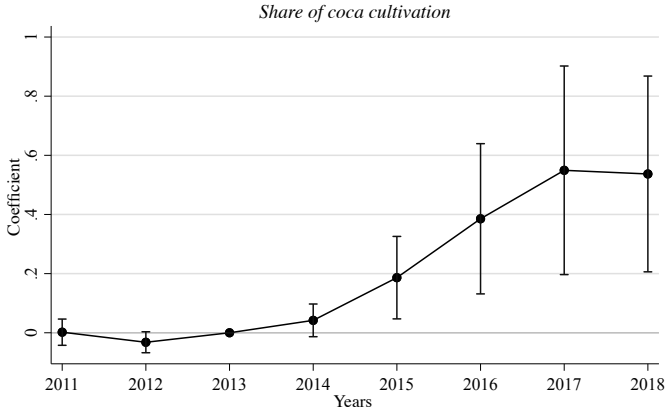
# A significant decrease in property tax revenues




*Notes*. OLS coefficient estimates (and their 95% confidence intervals) are reported. The dependent variable is equal to the per capita value of property taxes in real terms in each municipality *i* and year *t*. Estimation include municipality and department*year FE.

# Likely explained by a transition from the legal to the illegal sector, as measured with the local extension of legal and illegal crops

(Prem et al. 2023)




*Notes*. OLS coefficient estimates (and their 95% confidence intervals) are reported. The dependent variable is equal to the Share of coca cultivation over 1,000 hectares in each municipality *i* and year *t*. Estimation include municipality and department*year FE.

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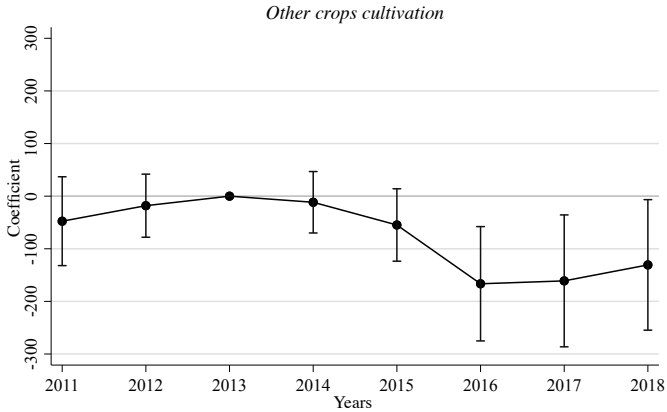
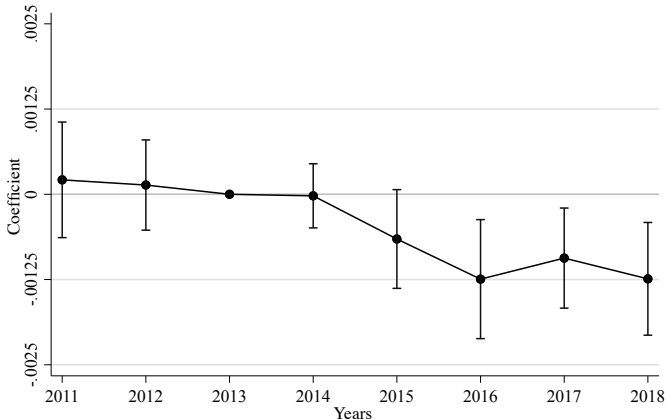


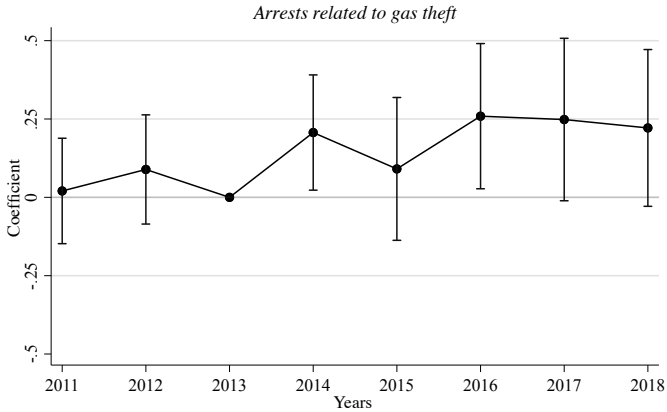

*Notes*. OLS coefficient estimates (and their 95% confidence intervals) are reported. The dependent variable is equal to the hectares cultivated of any legal crop in each municipality *i* and year *t*. Estimation include municipality and department*year FE.

# A significant decrease in gasoline tax revenues




*Notes*. OLS coefficient estimates (and their 95% confidence intervals) are reported. The dependent variable is equal to the per capita value of gas taxes in real terms in each municipality *i* and year *t*. Estimation include municipality and department*year FE.

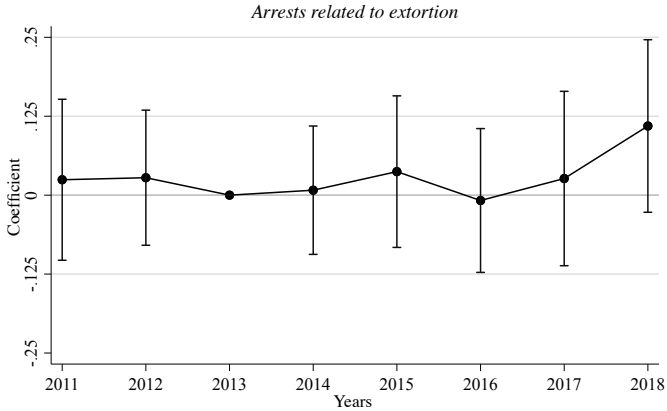
# Likely explained by an increase in gasoline theft, as measured with gasoline theft-related arrests




*Notes*. OLS coefficient estimates (and their 95% confidence intervals) are reported. The dependent variable is equal to the number of arrests related to gas theft in each municipality *i* and year *t*.
Estimation include municipality and department*year FE.

# Why should we expect this? To produce one kilogram of cocaine, you need 75 gallons—280 liters—of gasoline

# Finally: What about illegal taxation? We see some suggestive evidence it is increasing in latter years, however imprecise

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# Outline

# Concluding remarks

- Hard to dispute that peace in Colombia improved welfare
  - e.g., Prem et al. (2023b) find large positive impacts on human capital
- Yet, naive announcements led to negative unintended consequences
  - e.g., Prem et al. (2023) find large positive increases on coca cultivation
- We document how these negative impacts spilled over to local fiscal capacity
  - A decrease in property tax revenues, probably explained by a between legal and illegal activities
  - A decrease in gasoline tax revenues, probably explained by a substitution between legal and illegal activities
- Overall, our results shed light on the challenges of building fiscal capacity where armed groups, criminal rule, and illegal economies coincide