A close-up photograph of a person's hands gripping vertical metal bars, likely in a prison or jail. The lighting is dramatic, with strong highlights and deep shadows, emphasizing the texture of the skin and the metallic surface of the bars. The background is dark and out of focus.

Does crime affect economic growth? A case study of the city of Manaus

Author: Pedro Davi Drugowick Ferreira
Sao Paulo, 2017



Motivation to study violence/crime in Brazil

Statistics

- ✓ **12 million** – Number of people that were victims of robbery or theft in 2010¹;
- ✓ **17.500** - Number of cargo theft incidents in 2014²;
- ✓ **622.205** – People arrested in Brazil in 2016³;
- ✓ **75%** – Percentage of brazilian population with fear of being murdered⁴;
- ✓ **61.619** – Number of murder in Brazil in 2016⁵.



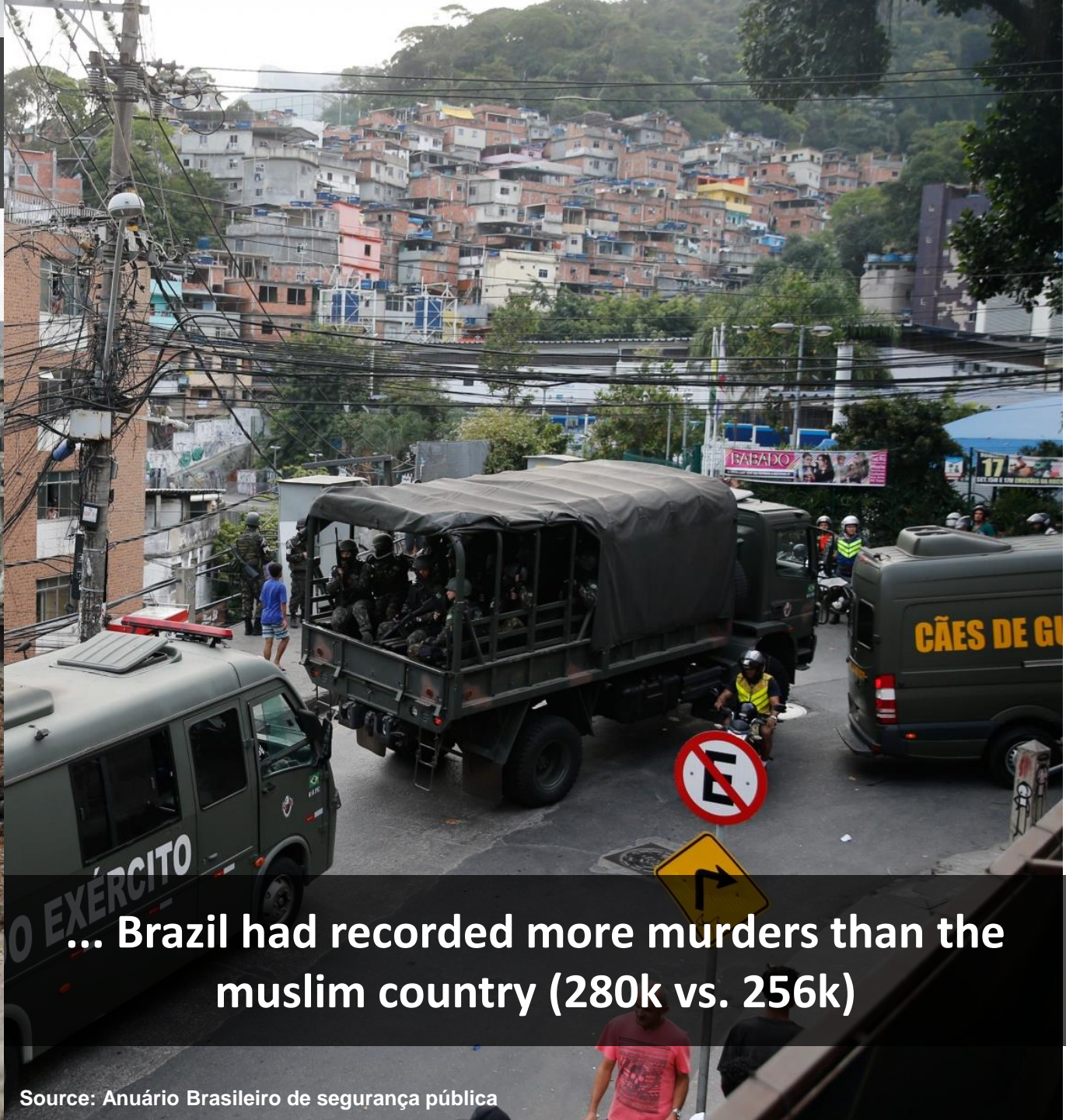


Annual Homicides
2015 or latest available year

- 59,080
- 59,012

Source: UN

Since the beginning of the Syrian civil war...



... Brazil had recorded more murders than the muslim country (280k vs. 256k)

Source: Anuário Brasileiro de segurança pública

Why Manaus?

- Because in 2007, due to an exogenous shock, was created a criminal organization called Família do Norte.



How this criminal organization was created

- Manaus had some **drug dealers**, but until 2007 they were isolated;
- The tipping point was some year later, the main **drug dealers were arrested and went to federal prison**;
- While they were arrested, they were **convinced** by some members of **PCC and CV to create a criminal organization in Manaus**;
- When these drug dealer returned to Manaus they **created “Família do Norte”**.

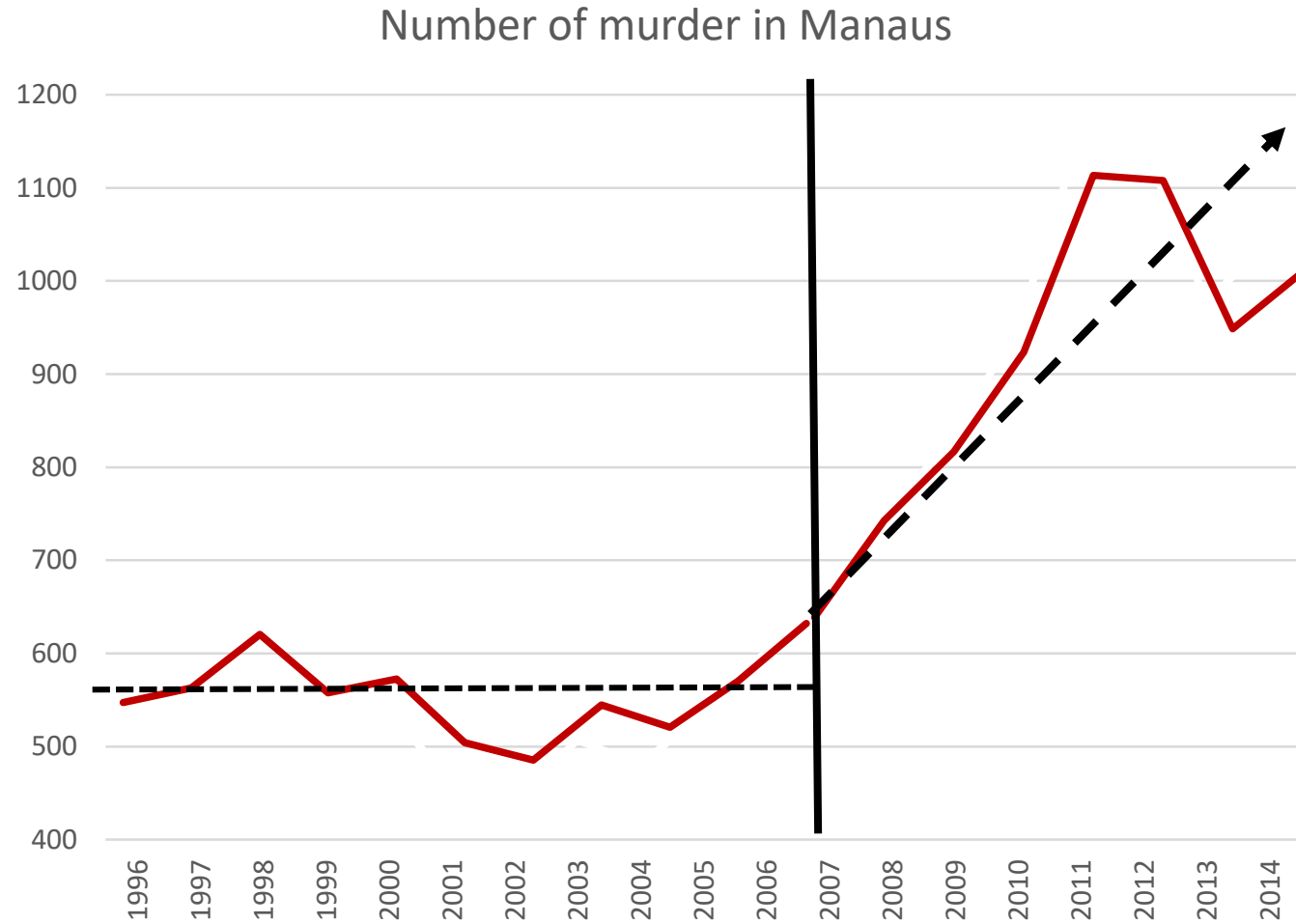


Família do norte

- Become the 3rd biggest organized crime in Brazil;
- Control the “**Solimões route**”;
- According to the leader, they had 200k members registred in 2015;
- Owned a soccer team;
- Negotiated votes for the governor of Amazonas;



Homicides had surge in Manaus after 2007





Empirical Strategy

Empirical Strategy

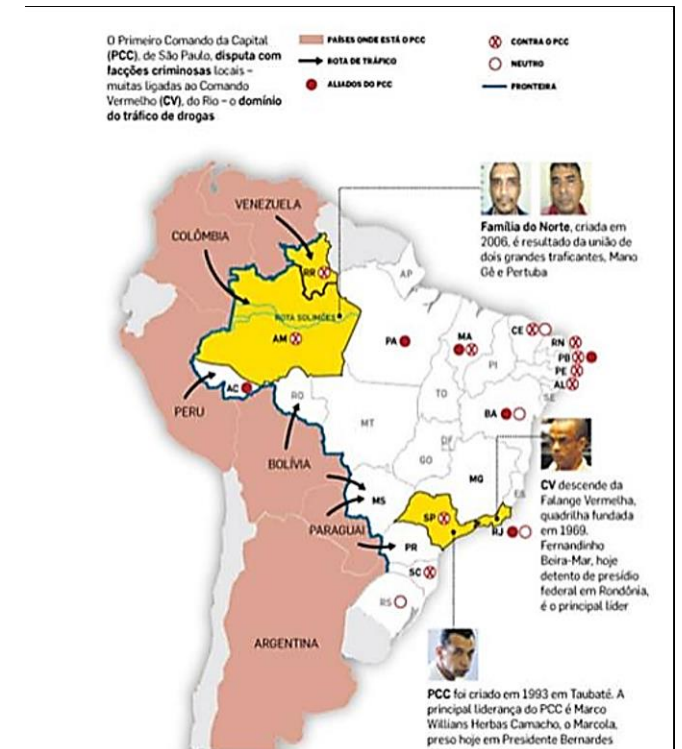
- Synthetic Control method
 - Weighted average of other regions unaffected by criminal organization activity that mimics the economic structure of Manaus few years before treatment.
 - Exogenous shock ✓
 - The shock (FDN) need to be sufficient large ✓
 - Good control group (donor pool)



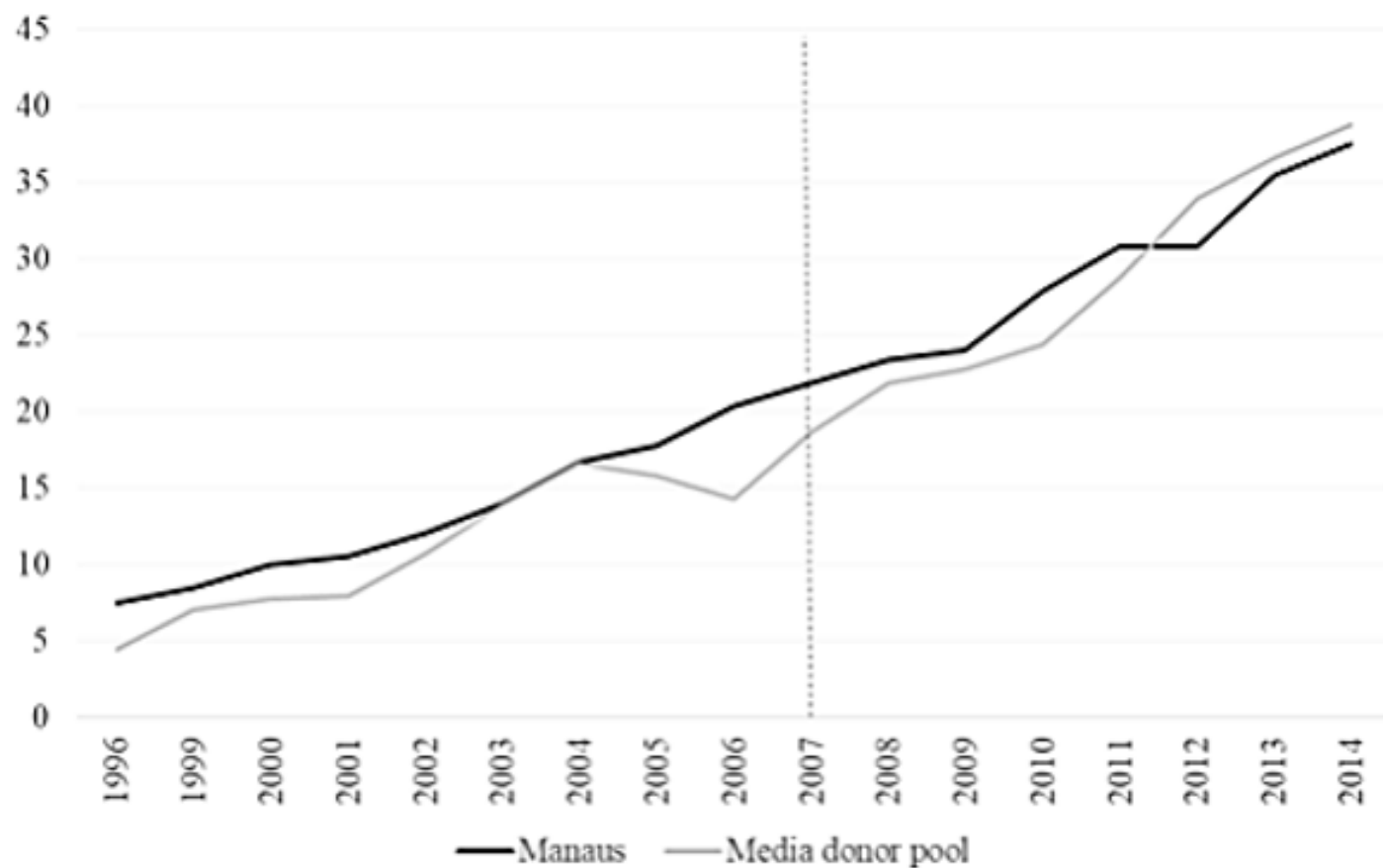
Donor pool

- 100 major cities from Mato Grosso, Tocantins and Goiás
 - Unaffected by criminal organization
 - Geographically close to Manaus
 - Problem?
 - The most importante sector from Manaus (Industry) is different from donor pool (agriculture)

Main characteristics of Manaus before 2007		
	Manaus	Donor pool average
Income per capita	0,20	0,22
Manufacturing share	38%	21%
Capital per capita	3,5	3,6
Human capital per capita	27,4	23,1
GDP per capita (1999)	8,4	6,7
GDP per capita (2002)	12,0	10,7
GDP per capita (2004)	16,7	16,6
GDP per capita (2006)	20,3	14,2



Nominal per capita GDP – Manaus and control group



Empirical Strategy

- Synthetic Control method

- Weighted average of other regions unaffected by criminal organization activity that mimics the economic structure of Manaus few years before treatment.
 - Exogenous shock ✓
 - The shock (FDN) need to be sufficient large ✓
 - Good control group ✓

- Stata code

- `ssc install synth, replace all` (to install synth method in stata)
- `Help synth`
- `synth crescimentopib partagr(1999&2007) rendapercapita(2000)
partind(1999&2007) kcapita(2000) khumano(2000) crescimentopib(1999)
crescimentopib(2002) crescimentopib(2004) crescimentopib(2006), trunit(54)
trperiod(2007) fig`

The background features a light gray gradient with several strips of yellow crime scene tape. The tape has the text "CRIME SCENE DO NOT CROSS" repeated in a dark gray font. The strips are layered and slightly curved, creating a sense of depth. The word "Results" is centered in the middle of the page in a large, black, sans-serif font.

Results

Results

Weight of each city in the synthetic control

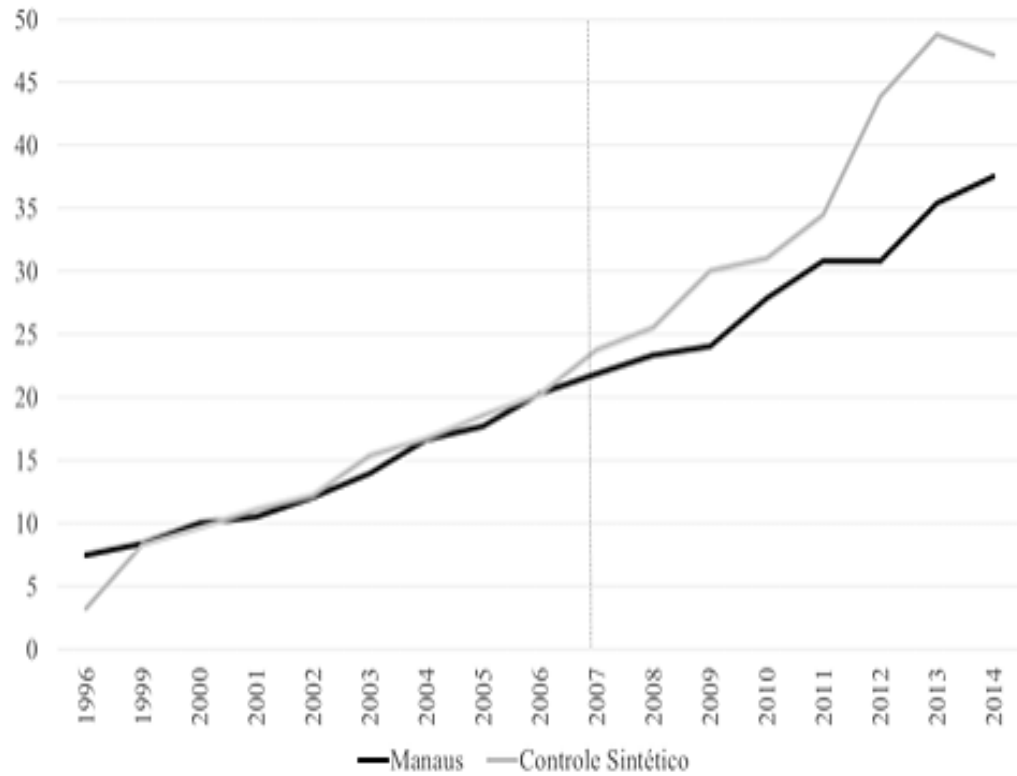
State	City	Weight
GO	Corumbaíba	56%
GO	Minaçu	15%
MT	Cuiabá	12%
MT	Alto Araguaí	8%
GO	Cavalcante	4%
GO	Catalão	4%
GO	Mozarlândia	2%

Main characteristics of Manaus before 2007

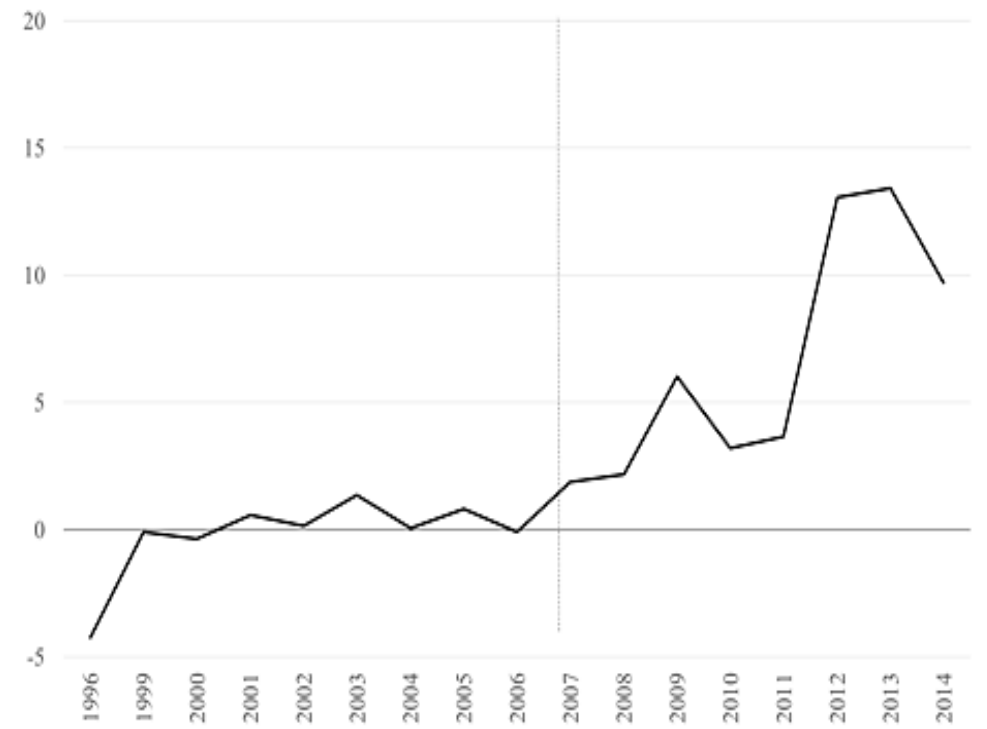
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Results

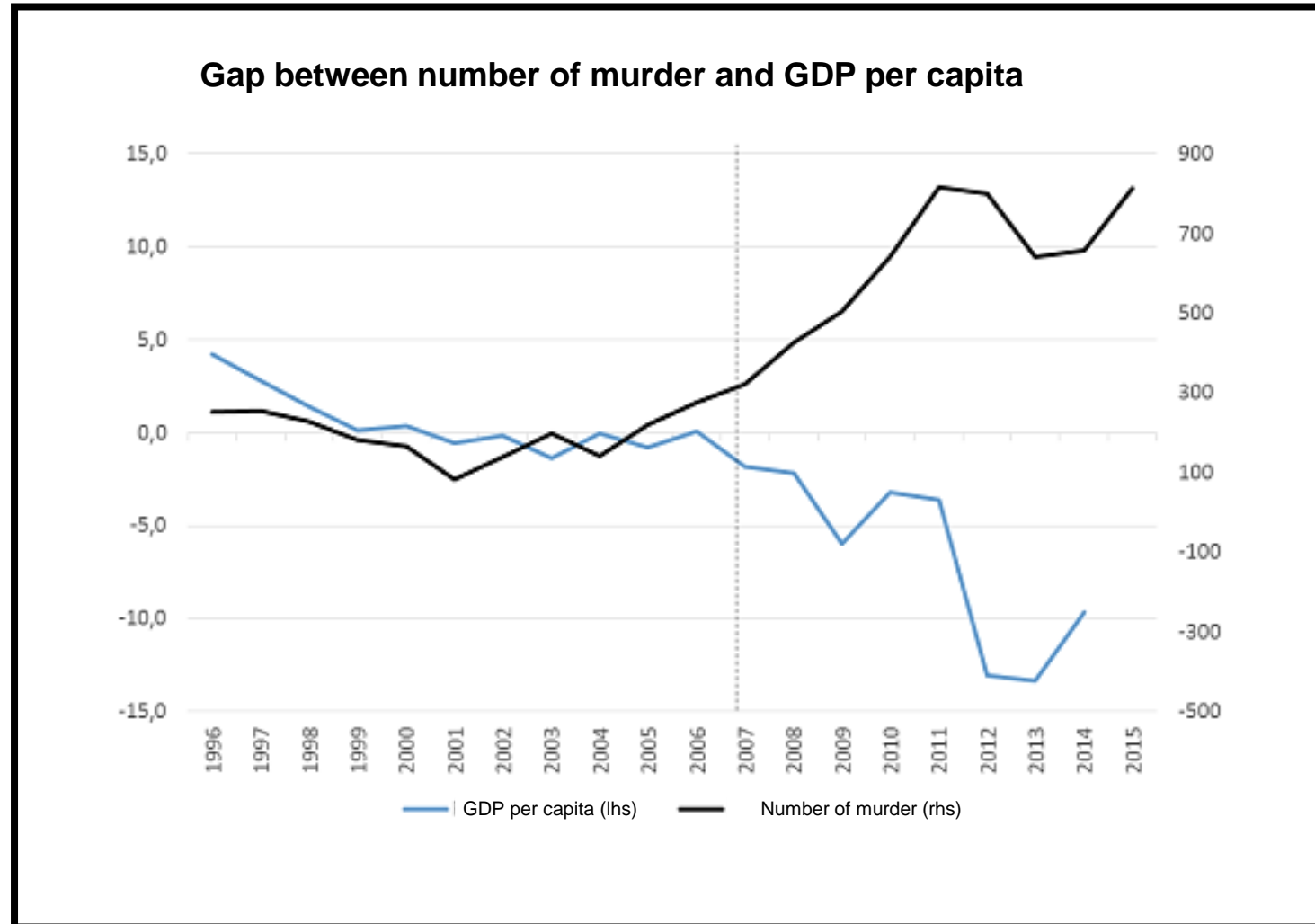
Nominal GDP per capita (R\$ Thousand) – Manaus and synthetic control



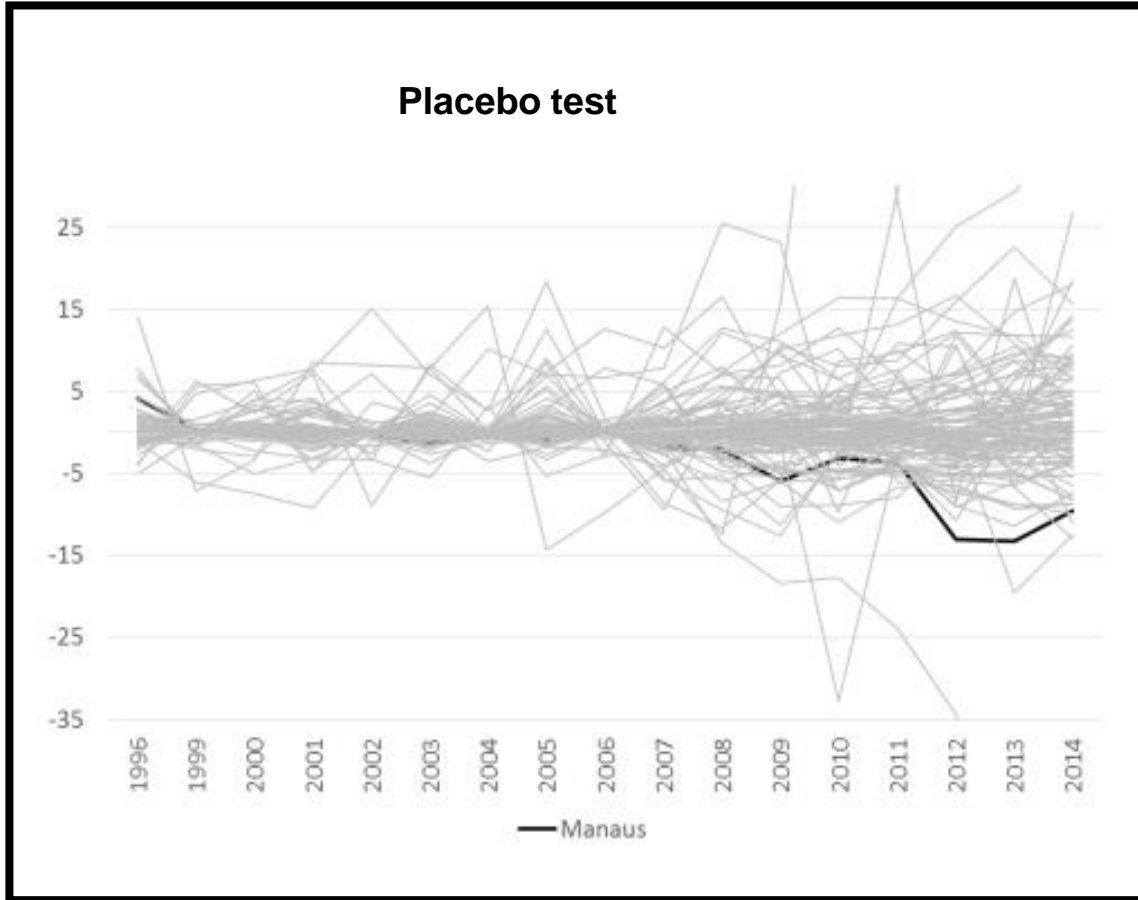
Gap between Manaus and synthetic control GDP (R\$ Thousand)



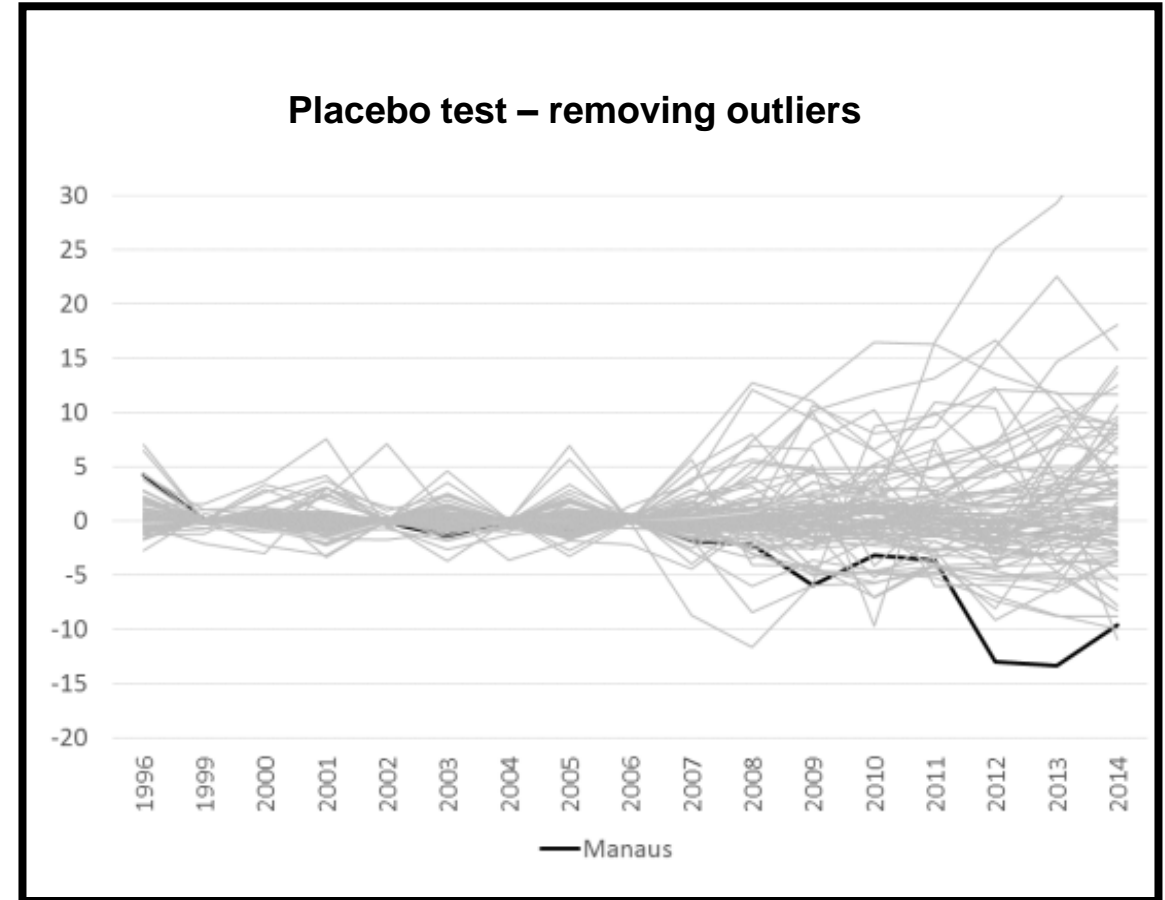
Results



Placebo test

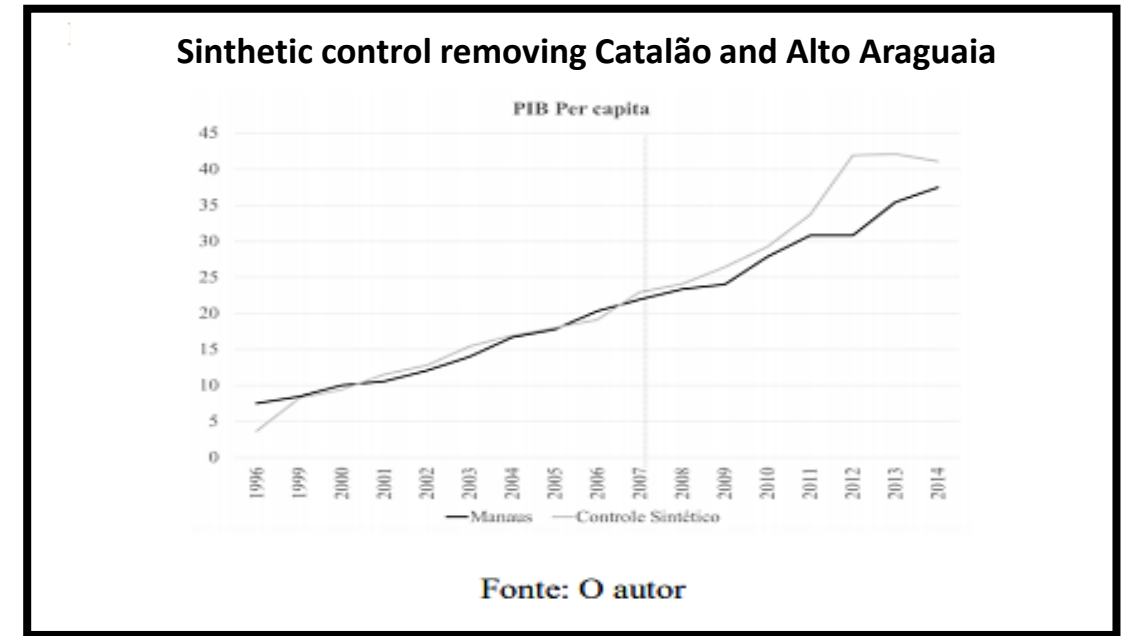
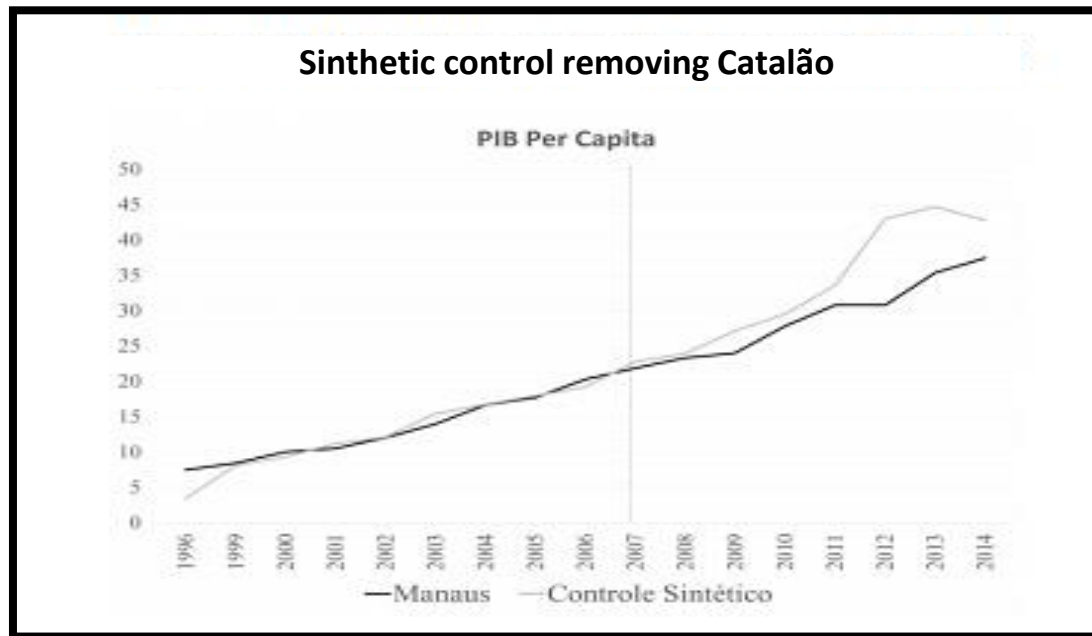


p-value: 5%

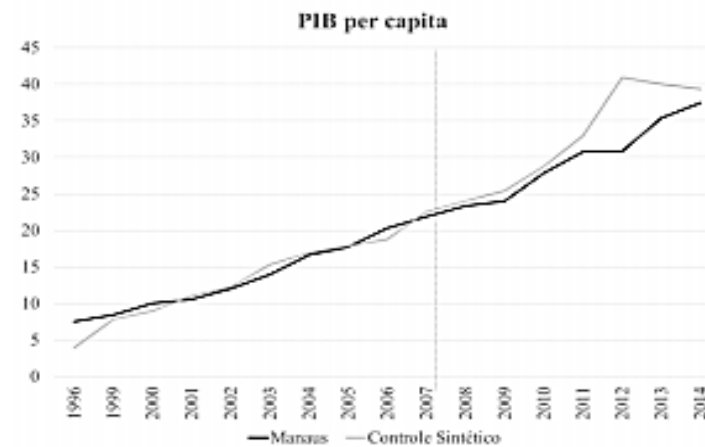


p-value: 2,3%

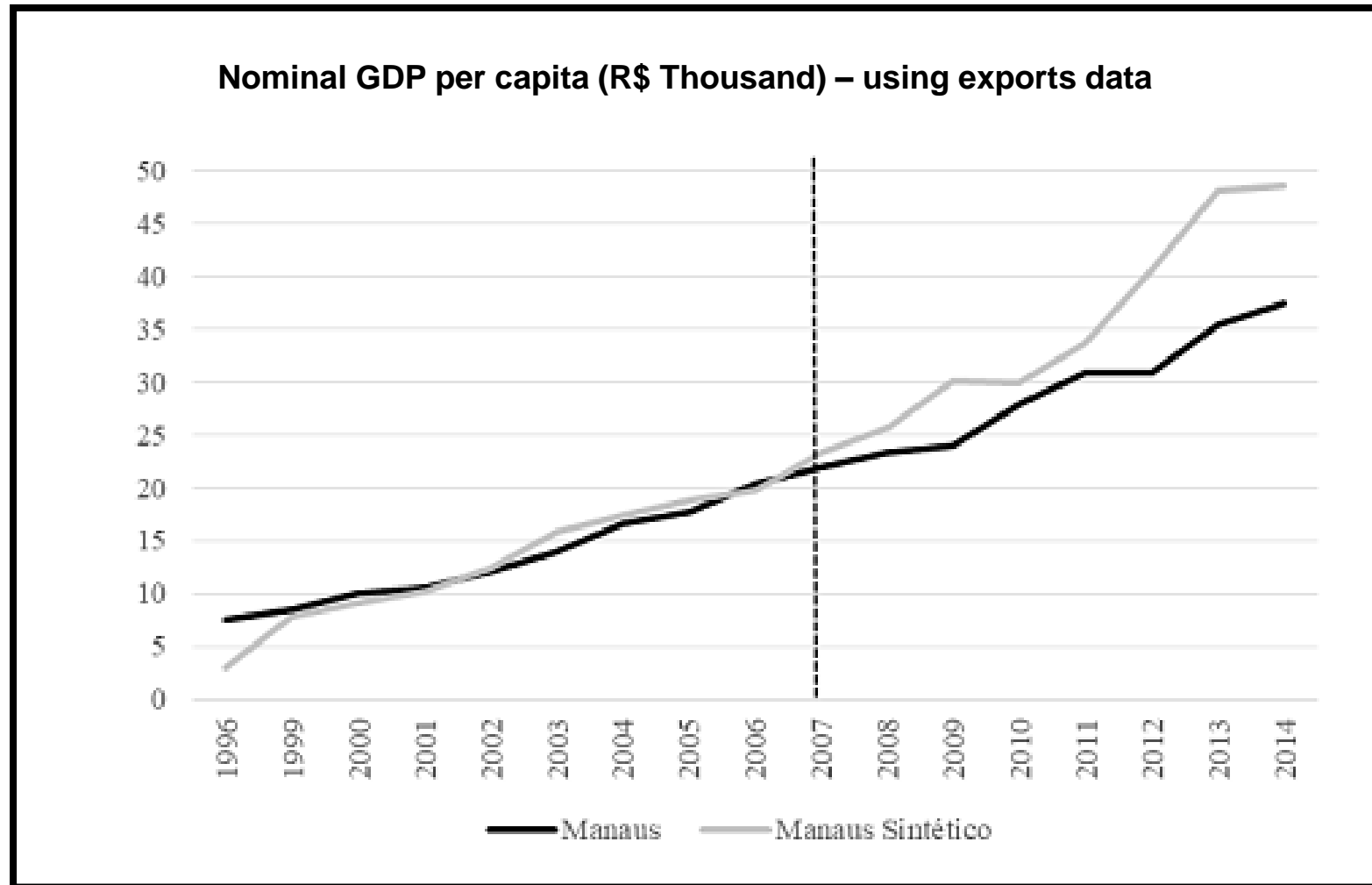
Robustness test



Sinthetic control removing Catalão, Alto Araguaia and Mozarlândia



Robustness test





Final remarks

Final remarks

- The presence of Família do Norte **lowers GDP per capita by 20%** during the analyzed period; or 3% per year.
 - Other paper find similar results (~10/15%);
- At the same time, the **homicide rate rose 75%** while in the other cities we found a stability.
- If we invest in **public security we could find a solution**, however if we don't do anything, this **problem could get worse** as new criminal organizations are being created, **specially on the Northeast**.





Thank you!

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