The Economic Costs of the War in Donbas for the Affected Ukrainian Regions

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Introduction

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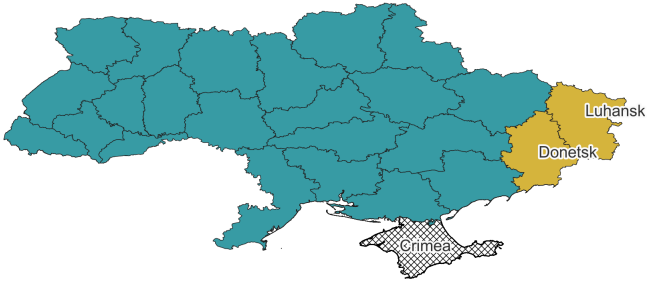

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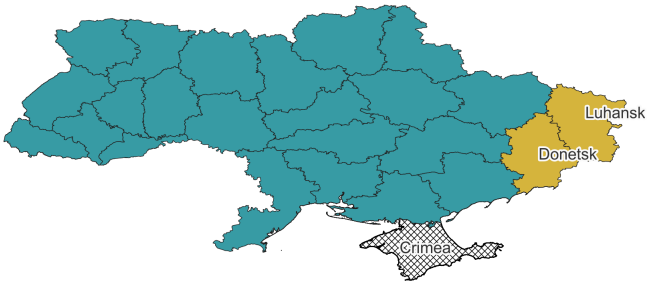

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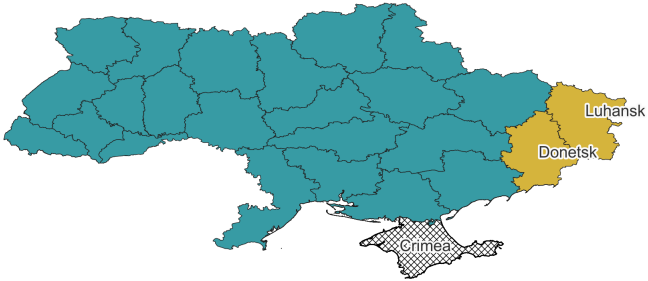

- We estimate the effect of the invasion on the Gross Regional Product per capita (GRP), disposable income per capita, and the unemployment rates of **Donetsk and Luhansk**.
- To estimate the Average Treatment Effect for the Treated (ATT), we deploy the Synthetic Difference-in-Differences estimator developed by Arkhangelsky et al.(2021).

Data and Methods

Data

- Official data from the State Statistics Service of Ukraine
- Series:
  - Disposable income per capita (2003 - 2019)
  - Gross Regional Product per capita (2004 - 2019)
  - Unemployment rate (2008 - 2019)
  - Gross fixed capital formation (2003 - 2019)
- Series are available for 24 out of 27 Ukrainian regions: Crimea and Sevastopol have not published data and the city of Kyiv was omitted given its unique economic status.

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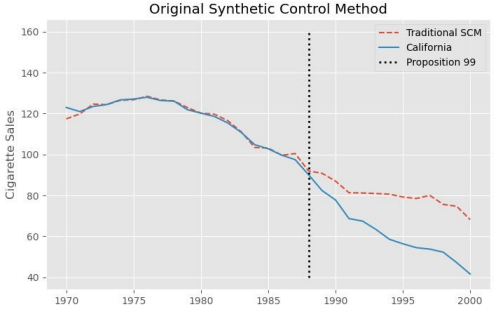
The Synthetic Control Method

- It estimates the causal effect of an intervention by creating a weighted combination of similar untreated units as a counterfactual comparison to the treated unit.



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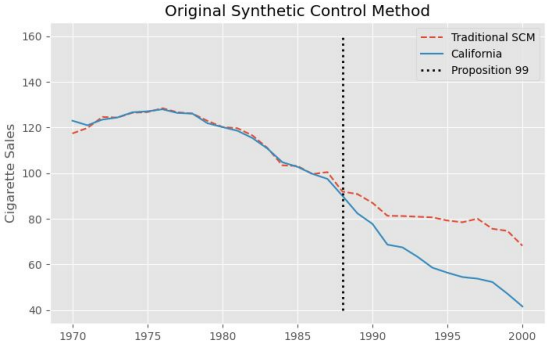
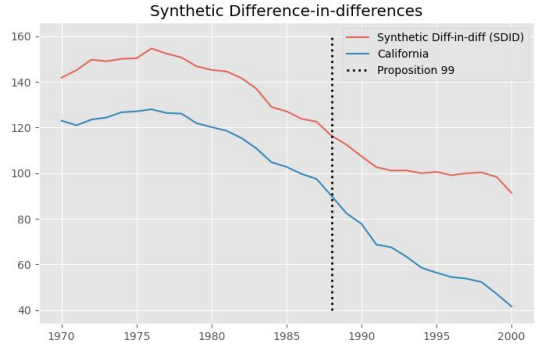




Results

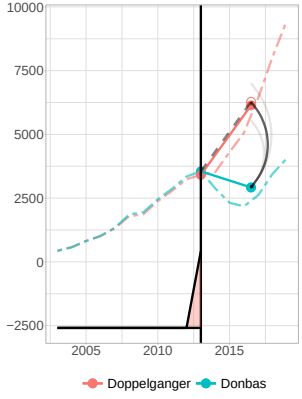
Results - The ATT

Table: The average treatment effects for the treated units and the standard errors for each variable of interest

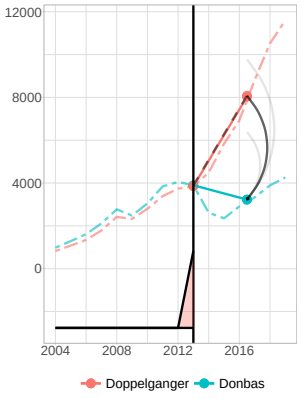
	Income	*GRP*	*Unemployment*
Estimate	-3362 (USD)	-4853 (USD)	+5.56 (pp)
Standard error	(164)	(467)	(0.77)

Note: Per capita GRP and per capita disposable income are in constant 2011 USD, and the unemployment rate is in percentage points.

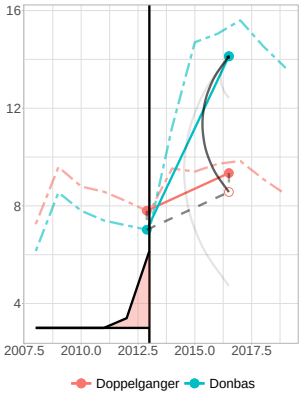
Results - SDID graphs



(a) Disposable Income



(b) GRP



(c) Unemployment

Results - A possible mechanism

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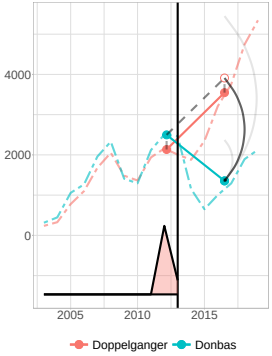

Robustness checks

Robustness check - Sensitiveness to estimation method

- To ascertain that our results are relatively insensitive to the choice of SDiD estimator, we also run the estimation using conventional DiD and SCM.

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	Income	*GRP*	*Unemployment*	*Investments*
SDiD				
Estimate	-3362 (USD)	-4853 (USD)	+5.56 (pp)	-2.56 (bn. USD)
Standard error	(164)	(467)	(0.77)	(0.236)
SCM				
Estimate	-3497 (USD)	-5557 (USD)	+5.81 (pp)	-2.67 (bn. USD)
Standard error	(167)	(554)	(0.98)	(0.174)
DiD				
Estimate	-2569 (USD)	-4198 (USD)	+5.81 (pp)	-1.08 (bn. USD)
Standard error	(430)	(1219)	(0.86)	(0.578)

Robustness check - Decomposition of the treatment effect weights

- We apply the decomposition developed by Chaisemartin and D'Haultfoeuille (2020) for our case of two treated units to check whether they satisfy the "no-sign reversal" feature.

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- Given that we have six post-treatment periods, we estimate twelve treatment effects, with non showing negative weights.
- We repeat the exercise for all four variables of interest, and the results hold for all of them.
- Consequently, **we believe that the TWFE approach is not problematic from this perspective in this case**.

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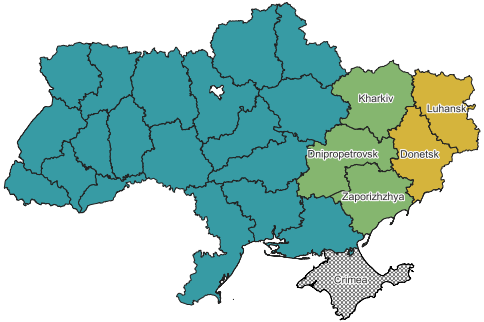
	Income	*GRP*	*Unemployment*	*Investments*
Luhansk				
Estimate	-3416 (USD)	-4727 (USD)	+6.98 (pp)	-1.38 (bn. USD)
Standard error	(208)	(580)	(1.15)	(0.299)
Donetsk				
Estimate	-3315 (USD)	-4992 (USD)	+4.14 (pp)	-3.65 (bn. USD)
Standard error	(196)	(756)	(1.10)	(0.358)

Robustness checks - Possible SUTVA violation

- Spatial spillovers could bias the results from SDID.
- Recent research in the DiD literature has proposed alternatives to estimate this kind of effect.
- We consider one of these approaches, the Spatial Diff-in-Diff from Butts (2020), and modify it to be applied to the Synthetic Diff-in-Diff.



Robustness checks - Possible SUTVA violation

- The indirect treatment effects (spillovers) are not significant for any of the variables of interest.

	Income	*GRP*	*Unemployment*	*Investments*
Direct	-3187 (USD)	-5012 (USD)	+ 5.51 (pp)	-2.39 (bn. USD)
Standard error	(299)	(402)	(0.32)	(0.330)
Indirect (W)	240 (USD)	303 (USD)	-0.16 (pp)	-0.02 (bn. USD)
Standard error	(323)	(435)	(0.34)	(0.356)

Conclusion

- Literature about the regional effects of 2014 Russian invasion on Donbas is still lacking.
- With a recent method from the comparative case literature we estimate the economic effects on GRP, income and labor market conditions.
- We propose one of the key channels that drives the economic slump faced after 2014 in the region.
- To validate our methods, we run robustness check for the validity of the method and search for indirect effects that could bias the results.

THANK YOU!

Paper, data and codes for replication: github.com/serenini/Ukraine

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