

# The Short-Term Effects of the Russia-Ukraine War On Russian Foreign Trade

Applying Regression Discontinuity in Time to trade data.

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## Motivation

Wars and armed conflicts can have devastating economic effects for the participants. This can also be observed with the large-scale Russia-Ukraine war starting in February 2022. While certain countries have imposed economic sanctions on Russia, other countries, such as China or India have increased their foreign trade. There are also instances of countries circumventing sanctions, for example, Turkish refineries are increasingly using Russian oil to produce oil products for sanctioning countries.

## Data

The data is taken from the UN-website Comtrade. As Russia has stopped publishing foreign trade data after the start of the war, the data is from the perspective of the other countries, meaning that export are exports to Russia and imports are imports from Russia. The countries include sanctioning countries, mostly from Europe, post-Soviet countries, Asian countries, as well as Brazil, South Africa, Hungary, and Turkey.

## Methodology

The thesis utilizes Regression Discontinuity in Time (RDiT), a non-experimental design typically found in environmental sciences. Intuitively, RDiT estimates a regression with a "cut-off date" (here, February 2022), allowing for a jump in the data, as well as different trends before and after the discontinuity. The methodology follows the recommendations of Hausman and Rapson (2018) and Cattaneo and Titiunik (2022).

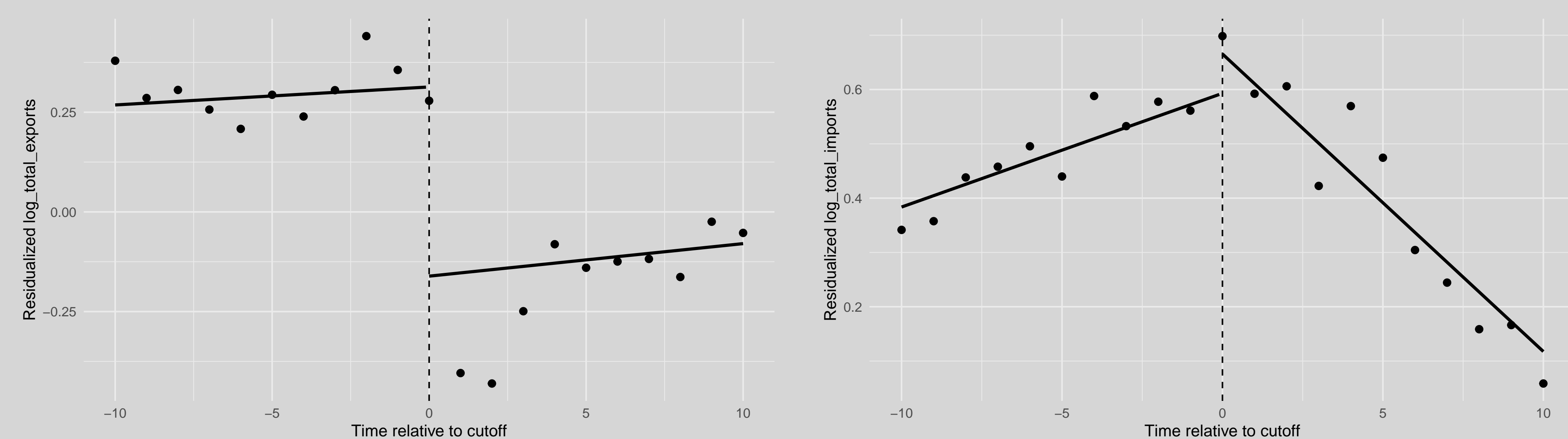
## Model

Model equation:

$$y_c = \beta_{0c} + \beta_1 * t + \tau * war_t + \beta_2 * t * war_t + y_{c,lag} + \epsilon_c$$

where  $t$  is the running variable (time) and  $war$  is a dummy variable that is one after the start of the war. The model includes fixed effects for country and month of the year, two-way clustered standard errors by country and time, and a lagged dependent variable ( $y_{c,lag}$ ) to deal with autocorrelation. The model used a bandwidth of 10 months around the cut-off date of February 2022.

## RDiT-Results



Export to Russia exhibit a significant drop of about 38% after the start of the invasion. The slopes before and after the cut-off are not significant indicating heterogeneous trade patterns for different countries.

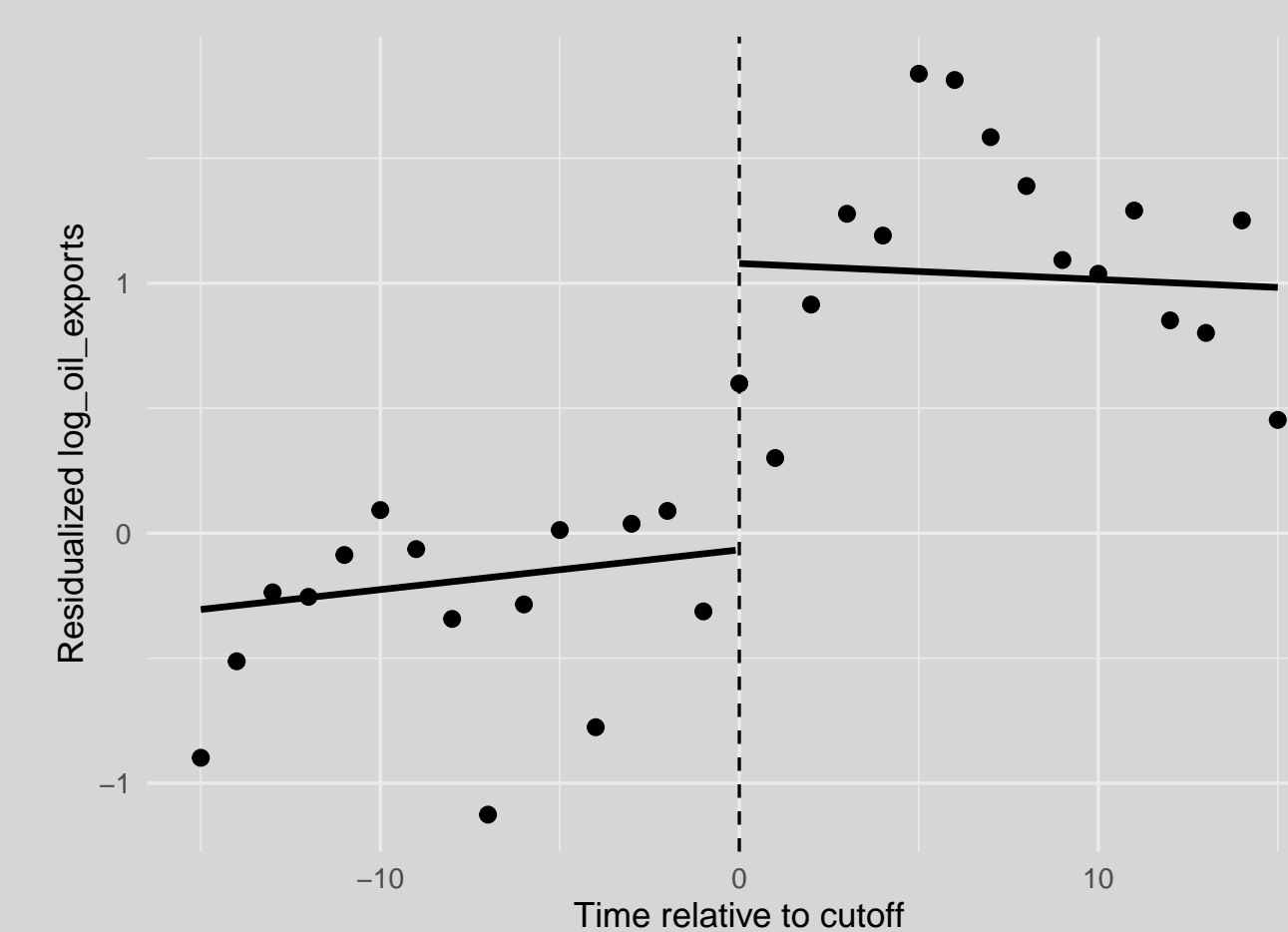
Imports to Russia do not instantly decrease like exports. Instead, the significant positive trend before the war reverts and turns into a decline of over 5% per month.

## Further results

Distinguishing by trade partners and commodity types leads to the following results:

- Not all countries decreased their trade with Russia. China, India, and some post-Soviet countries increased trade.
- Machinery, mechanical appliances, and vehicles experienced particularly sharp decreases in exports to Russia.
- Russian oil exports briefly increased after the war before declining afterwards.
- India significantly increased oil imports from Russia.

## Sanction evasion



This graph shows an immediate increase of over 200% in oil exports from Turkey to sanctioning countries. This supports claims about evasion of western sanctions through Turkey.

## Robustness checks

The results are robust to :

- Selection of bandwidth
- March 2022 as cut-off date (as the actual start of the war was at the end of February)
- Additional controls variables (not included in the main model as they do not meet the formal requirements for RDiT)
- "Donut" estimations leaving out values close to the cut-off
- Higher order polynomials (fitting curves instead of straight lines through the data)

## Conclusion

- The war in Ukraine has severely impacted Russian foreign trade.
- While exports to Russia have abruptly dropped after the start of the war, imports from Russia continuously declined
- The decrease in foreign trade was mainly driven by sanctioning countries. Other countries increased trade with Russia after the war.
- Trade sanctions were avoided using third countries as re-exporters or re-importers.

## References

1. <https://comtradeplus.un.org/>
2. Cattaneo, M. D.; R. Titiunik (2022): Regression discontinuity designs.
3. Hausman, C.; D. S. Rapson (2018): Regression discontinuity in time: Considerations for empirical applications.