

# Capacity building workshop on the ex-post evaluation of competition authorities' enforcement decisions: A methodological summary

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## Outline

- Difference in differences (diff-in-diff):
  - Counterfactuals
  - Dimensions of data
  - Endogeneity
  - Limitations of diff-in-diff
- Simulations:
  - Pros and cons
- Acquiring the data

## Difference-in-differences studies

(counterfactuals in mergers)

- **Rivals' prices** used as counterfactual: the assumption of *no spill-over effects* (i.e. the analysed event only affected the treatment group and not the counterfactual) is unlikely to hold as rivals are likely to have been affected by the merger, or cartel, or abuse of dominance.
- **Local markets:** Choosing a better performing counterfactual is easier where data is available for local markets and the data shows sufficient variation across these markets.
- Even where formal methods for counterfactual selection are not possible, the merger study should always examine the implications of the given counterfactual choice.

## Difference-in-differences studies

(counterfactuals in cartels)

- **Benchmark market:** products not included in the cartel, or jurisdictions without the cartel, or pre-cartel or post-cartel prices
- **Cost-plus approach:** product costs and a reasonable margin are assumed to be the non-collusive price.
- The problem is that most of the counterfactuals used in cartel cases might not reflect the 'but for' world.
- To find a well-performing counterfactual, one would need to know what would have happened in the absence of the cartel: competition, tacit collusion?
- In practice though, pre-, or post-cartel prices are often used without answering these questions.

## Dimensions of the panel data

- Use time series methods if data is time series dominant
- E.g. dealing with autocorrelation otherwise the estimated model is likely to return spurious results.
- High time-frequency data is also useful as it allows testing the parallel trend assumption between the treatment market/product and the counterfactual.

## Dealing with endogeneity

- Many of the previous studies simply assume that the analysed event is exogenous.
- Try and find out what triggered the analysed event – use qualitative analysis (e.g. a questionnaire administered to market participants or market experts).
- In merger cases there might be signs suggesting that the merger was proposed by the parties to reduce their costs. With this information in hand it becomes even more important to try to acquire costs data and include it in the model to reduce the chances of biased results.

## Limitations of difference-in-differences

- Unsuitable for welfare analysis: e.g. a 1% price change has the same interpretation irrespective of, for example, potential differences in demand elasticities across markets.
- Diff-in-diff (in mergers) typically compares the factual world with the counterfactual of no merger – sometimes this is not fitting (e.g. estimate the effect of a merger remedy you need to be able to model the world with the merger without the remedy).

## Simulations (ex post)

- Simulations can deal with both of the above limitations of Diff-in-diff.
- On the other hand they are largely sensitive to modelling assumptions.
- *Simulations using ex-ante information*: we can identify how far away the actual decision fell from this most-informed prediction.
- *Simulations using ex-post data*: relies on ex-post data. The structural parameters are estimated using ex-post data, and the pre-event situation is simulated using these parameters but accounting for any change that happened post-event (for example, in the case of mergers, post-merger cost savings, entry, exit).
- *Simulations using ex ante and ex post data*: would allow testing a key assumption used in simulations: whether the pre and post structural parameters remain unchanged.

## Diff-in-diff or simulations

- Ideally both, but it's very resource demanding.
- There is a large overlap in the data required, and especially where a simulation is being conducted, it should be relatively simple to use the same data to also run simple diff-in-diff.
- Using the diff-in-diff estimate can help guide the research through the simulations and eliminate the results that are due to 'wrong' assumptions.
- Combine diff-in-diff studies with qualitative studies. (1) diff-in-diff identifies the cases where post-merger prices increased, and (2) CA to focus on these cases to establish what – if anything – went wrong with the decision.

## Collecting the data

- Data availability inevitably determines which industries are analysed.
- US merger retrospectives are concentrated around a few industries (e.g. hospitals, transportation, petrol retail), where detailed data is available either publically or as proprietary data.
- When selecting cases to evaluate, one important issue is the complexity of the given market and its interaction with data availability.
- It might be advisable to think about the evaluation of a case (and about data collection) already during the investigation of the case itself.

## To sum up

- Careful study design with a particular focus on the choice of counterfactual.
- The study should acknowledge the limitations of the chosen counterfactual.
- Identify the causes of the analysed events and control for all factors that might have triggered the analysed event.
- Simulations could help estimate the welfare effect of the analysed events but they are much more demanding on data and resources.
- Any ex post-study should carefully check the robustness of estimates to possible variations of the model/method/assumptions.
- Requesting a peer-review (typically by an academic) can improve the credibility of findings.