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THE ECONOMICS OF PASSING-ON

FACTUAL AND EXPERT EVIDENCE OF PASSING-ON

QUANTIFYING DAMAGES AND **PASSING-ON**

> 8-10 JUNE 2023 VALENCIA





UNIVERSITAT DE BARCELONA SCHOOL OF ECONOMICS



PLAN OF THE TALK

- I. Passing-on claims by indirect purchasers and passingon defenses
- 2. Beyond econometrics: causal inference
- 3. Factual evidence
- 4. From the broad economics pass-on concepts to the narrow legal test of damage mitigation



PASSING-ON CLAIM FROM INDIRECT PURCHASERS







Claim: damages due to the vendor full or partial passing-on

- I. <u>Theory of harm</u>: overcharge logic and passing-on likelihood according to economics
- 2. <u>Burden of proof</u> of the existence of the effect includes proving the existence of the passing-on: hypothesis testing
- 3. <u>Methods</u> for proving existence: <u>causal inference and metrics</u>
- 4. Quantifying the effect: margins of confidence, likelihood bounds



PASSING-ON DEFENSE





Defense: Damage mitigation

- I. Overcharge damages are not suffered by the claimant due to the full or partial passing-on
- 2. Loss of sales damages are neither suffered by the claimant



PASSING-ON DEFENSE





- I. <u>No harm theory</u>: two legs (I) overcharge pass-on (2) no loss of sales
- 2. <u>Burden of proof</u>: two legs (1) existence of passing-on (2) non-existence of loss of sales
- 3. <u>Methods</u> for proving existence: <u>causal inference and metrics</u>
- 4. Quantifying the effects: margins of confidence, likelihood bounds



PRICE VS. VOLUME EFFECTS







ECONOMETRICS

- Econometrics is like the cavalry: it shines but it does not win battles (Schumpeter)
- 2. If it is not embedded in causal analysis, confounds the discussion on the existence and quantification of effects of antitrust infringements



JUDEA PEARL WINNER OF THE TURING AWARD

AND DANA MACKENZIE

THE BOOK OF WHY



THE NEW SCIENCE OF CAUSE AND EFFECT

CAUSAL INFERENCE

1. CAUSAL INFERENCE is much more than a simple regression analysis

2. DESIGN OF A **CAUSAL IDENTIFICATION** EXERCISE

(economics concept)

PROVING THE CAUSAL LINK

(equivalent law concept)





PREMIOS FRONTERAS DEL CONOCIMIENTO

XIV EDICIÓN



Premio Fronteras a Judea Pearl por sentar las bases de la Inteligencia Artificial moderna que permite a los ordenadores gestionar la incertidumbre y relacionar causas con efectos







Nick Huntington-Klein The Effect

An Introduction to Research Design and Causality

CS





Υ.

Regression analysis: CORRELATION

$$Health = \beta_0 + \beta_1 \cdot Treatment \begin{pmatrix} 0 \\ 1 \end{pmatrix} + \varepsilon$$







CAUSALITY: Counterfactuals

$$\begin{cases} \beta_0 \\ \beta_0 + \beta_1 \end{cases} = Price \qquad \qquad \beta_1 \qquad Cartel = \begin{cases} 0 \\ 1 \end{cases} \\ \varepsilon \sim N(0, \sigma_{\varepsilon}) \end{cases}$$

Regression analysis: CORRELATION

$$Price = \beta_0 + \beta_1 \cdot Cartel \begin{pmatrix} 0 \\ 1 \end{pmatrix} + \varepsilon$$





CORRELATION

$$Price = \beta_0 + \beta_1 \cdot Cartel \begin{pmatrix} 0 \\ 1 \end{pmatrix} + \varepsilon$$

$$E(Price) = 14,7 + 29,3 \cdot Cartel$$



$$\begin{cases} 14,7\\ 14,7+29,3 \end{cases} = Price \qquad \beta_1 = 29,3 \\ Cartel = \begin{cases} 0\\ 1 \end{cases} \\ \varepsilon \sim N(0,\sigma_{\varepsilon}) \end{cases}$$



ALTERNATIVE EXPLANATIONS?





THE ECONOMETRICS DANCE

- Comparative method:
 - Synchronic (before during after)
 - or diachronic

- Control variables:
 - Good controls
 - Bad controls



- Para 328. A regression model is a commonly adopted statistical technique <u>designed to find a conditional correlation</u> between two variables:
 - the "dependent" variable which in this case is the truck price;
 - and "independent" or "explanatory" variables, which in this case are a range of observable factors such as truck costs, the strength of demand, the time of year, etc.



- Para 331. The essential purpose of the regression models in this case was to produce <u>an estimate of the effect of the Infringement</u>.
 - This is achieved using a so-called <u>"dummy variable" as one of the explanatory</u>
 <u>variables</u> in the regression which takes the value of 1 during the Infringement period and zero at all other times.
 - The coefficient estimate on the Infringement dummy variable should measure whether, having controlled for all other variable factors and possible influences on price, truck prices tended to be higher during the Infringement period than outside it.
 - <u>Agreement of the experts in the multiple regression comparative diachronic</u> <u>methodology: before – during – after</u>





- Para 332. The implementation of this methodology and in particular the specification of their regression models involving a very large number of choices gives rise to the <u>contentious issues on which</u> <u>the experts did not agree and which was the</u> <u>subject of debate</u> in their Reports and during their concurrent evidence session.
- These choices have <u>considerable effects on the</u> <u>estimation coefficients</u>



• Para 333: Marcus Smith J in Britned at [299]

 "regression analyses do not allow analysts to claim a causal connection. There is correlation, from which causation may be inferred, at most."



CAT TRUCK CARTEL JUDGEMENT: CONFOUNDING FACTORS

- Exchange rates movements: Complications caused by the need to reconcile observations on prices in different currencies, principally truck costs and truck prices (para 335.c)
- 2. The global financial crisis ("GFC") in late 2008 (para 335.d)
- 3. The price effects associated with new DAF trucks that met <u>new EU emissions</u> <u>standards</u>; this is problematic both because exchange of information on such price premia formed a part of the Infringement and because DAF often incorporated other changes to its products at the same time as these new standards were implemented (para 335.e)
- 4. Changes in **product mix** through time
- 5. Changes in costs: Material, Labor and Overheads (MLO)



- Para 386. Viewed this way, the choice between Mr Harvey's and Professor Neven's approaches is one between two imperfect alternatives.
- A Cool
- Both are capable of reaching a misleading conclusion
 <u>about cartel effects</u>, but in opposite directions, and we note
 that the bias in each case happens to assist the experts' respective
 clients' positions.
- Importantly, neither approach fully solves the underlying identification problem that arises from the <u>coincidence of the</u> <u>start of the Infringement and an appreciable shift in the</u> <u>exchange rate</u>.





GOOD CONTROLS

EXOGENOUS: AGE



$$Healh \ Status = \beta_0 + \beta_1 \cdot Treatment \begin{pmatrix} 0 \\ 1 \end{pmatrix} + \beta_2 Age + \epsilon$$





BAD CONTROLS

ENDOGENOUS: BLOD PRESSURE



Healh Status = $\beta_0 + \beta_{1D} \cdot Treatment \begin{cases} 0 \\ 1 \end{cases} + \beta_{1I} Blod Pressure + \varepsilon$





BAD CONTROLS

ENDOGENOUS: INFRINGER COSTS







 $Prices = \beta_0 + \beta_1 \cdot Cartel + \beta_2 Petrol Price + \varepsilon$





 $Prices = \beta_0 + \beta_{1D} \cdot Cartel + \beta_{1I} Infringer costs + \varepsilon$



TRUCK CASE JUDGMENT

- In his closing submissions, Mr Beard KC asserted that the experts were in agreement that a 2stage least squares model was the appropriate way to address endogeneity.
- However, we are not convinced that Professor Neven's specific approach provides a definitive or even adequate solution to the problem.
- It is in practice <u>hard to find an instrument that provides a robust solution to the</u> <u>endogeneity problem, and it is not the case that the simple fact of having done a 2-stage</u> <u>least squares model means that the issues arising from the endogeneity problem have</u> <u>been resolved</u>.
- We are surprised that Mr Harvey was not more concerned about this and we consider that there are serious issues here.





ROBUSTNESS OF DIFF-IN-DIFF AND OTHER CAUSAL INFERENCE TECHNIQUES

- Combined method (difference in differences) is more robust for causal inference
 - Similar market not affected
 - Comparison across time: before during after
- Less control variables when *parallel trends hold*, and adding covariates should respect parallel trends and exogeneity conditions





COMBINED METHOD: DIFF-IN-DIFF





ESTIMATES AND PROBABILITIES

Broad axe judgment on the Overcharge

- Claimant expert: 10%
- Defense expert: 0%
- Judgment: 5%





ESTIMATES AND PROBABILITIES

Broad axe judgment on the Overcharge

- Claimant expert:
 - 95% Probability: Range 5% to 15% 10%
- Defense expert:
 - 95% Probability: Range -5% to 5% 0%
- Judgement: 5%





ESTIMATES AND PROBABILITIES

Broad axe judgment on the Overcharge

- Claimant expert:
 - 97,5% Probability: Larger than 5% 10%
- Defense expert:
 - 97,5% Probability: Smaller than 5% 0%

• Judgement: 5%





FACTUAL EVIDENCE

- Obtaining and providing data is costly
- Transaction data on the affected sales
- Sales of the affected market: representativeness?
- Data quality, data gaps ...



CAT TRUCK CARTEL JUDGEMENT: FACTUAL ISSUES

- 1. <u>Representativeness</u>: The risk that the Claimants were possibly atypical DAF customers such that a result that was drawn from the entire population of all UK DAF truck buyers might not apply to the same extent to the Claimants (para 335.a)
- 2. <u>Data Quality & Data Gaps</u>: Data quality issues, which applied especially in the period prior to the Infringement and up to 2003, when the experts were unable to identify reliable statistical evidence on DAF's manufacturing costs for individual types of truck (para 335.b)





PASSING ON DEFENSE

- Broad economic concept of pass-on: price and volume effects
- Narrow legal test for establishing that the pass-on has caused a mitigation of loss:
 - not only that overpricing is likely to be taken into account as an extra cost for pricing of the affected party
 - Actual evidence of that



CAT JUDGEMENT

- Para 691.As we have said above, it is important to distinguish between the <u>economic concept of</u> <u>pass-on</u> and the <u>legal test for causation in relation to mitigation of loss</u>.
 - The former is likely to be much broader than the latter
 - ... which (the latter) requires there to be demonstrated a proximate causal connection between the Overcharge and an increase in downstream prices.
 - Mere recovery of costs is insufficient proof of such a connection.
 - Something more is required and we are satisfied that DAF has not in the end provided us with anything more than that the increase in truck costs represented by the Overcharge was taken into account in the price setting process, whether by the respective regulators or the Claimants themselves.
 - A number of other factors were also taken into account as well as costs and these were overlain with regulatory, public interest and commercial judgments being made.
 - It is not possible to say that an increase in truck costs, however small, was likely to have led to an increase in prices.
 - And if that is the case, there can be no SPO defense of mitigation.





EFFECTIVENESS: SEPARATING DECISIONS

- In the case damages are effectively mitigated by an eventual passing on which has not yet been credited:
 - Subsequent claim by indirect consumers on which overcharge has been passed on to get redress from the direct consumers for which compensation has already been awarded (sort of repetition action)



CAT JUDGEMENT. DISSENT OPINION

- Para 692. I believe, contrary to the majority view, that
 - it is likely that both Claimants did pass on a substantial amount of the Overcharge to their downstream consumers,
 - and that there is a sufficiently close causal connection between the Overcharge and a likely SPO.
- However, I am not persuaded that the SPO argument should be used to impose a reduction in the damages awarded to the Claimants because,
 - given the specific facts associated with this case, to do so would jeopardise the principle of effectiveness.
- Para 731: Specifically, it is necessary to consider whether the prospects of a successful claim from downstream customers against DAF would be "excessively difficult or impossible"
 - Effectiveness dilemma: effectiveness proposals ...

