Fixed-effect versus random-effects meta-analysis in economics: A study of pass-through rates for alcohol beverage excise taxes
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This paper compares two methods for meta-analysis: fixed-effect size (FES) models and random-effects size (RES) models by applying both to pass-through rates of excise taxes on alcohol beverages. By using different dispersion and heterogeneity statistics, the authors argue that the random-effects model is more appropriate for this data and question the standard use of fixed-effect models in economics, suggesting random-effects models instead. They also consider three widely used tests for publication selection bias. Regardless of the method, pass-through rates are approximately equal to one.

In particular, first, the two methods are discussed and it is argued that in economics, mainly the FES is used. Then, the data is described and a first analysis employing, among others, the prediction interval for random-effects, is conducted. Next, several subgroups are analyzed illustrating the use of mixed effects regressions. Meta-regressions with moderators account for observable heterogeneity. Three tests - funnel plots, Egger's tests for plot asymmetry and cumulative meta-analysis, quantifying the influence of less-precise estimates, - deal with publication bias selection. Finally, the authors give some recommendation for conducting meta-analysis in economics.

The paper offers some interesting elements. However, there are several issues with the paper. In the following I list three major concerns and several minor ones.

First, I am not really seeing the message of this paper. Is it that there is a lot of heterogeneity in this data-set? This, however, is well known. In the introduction it is stated that "dispersion and heterogeneity statistics are used to assess the performance of each method". However, the paper does not really assess the estimators' performance, but merely draws general conclusions from one sample. This sample could serve as an illustration of some message, however, as mentioned, the message of presence of heterogeneity already is quite well known.

Second, heterogeneity is commonly adressed in economics. Virtually all meta-analyses in economics adress heterogeneity either by random effects, or by conducting a meta-regression analysis. Therefore, the proposal of random effects is not new, and it is not clear why it is preferable to fixed effects. In this context, it is not clear what the paper is adding to this issue. Even in the context where random effects seem to be appropriate, a fixed effects estimator can still be preferable. Tom Stanley argues in several papers (e.g. Stanley and Doucouliagos, 2015) that the RE method does not work well if you deviate from the clean context for which it is proposed, i.e. adding, among other things, publication bias and realize that much of heterogeneity is from observed sources. In economics, data are not as clean as in other fields, with a lot of publication bias, and, as also stated in the paper, a lot of heterogeneity. Therefore, this type of discussion - fixed vs random effects - may fit better in other research fields.

Third, in a related paper "Effects of Alcohol Taxation on Prices: A Systematic Review and Meta-Analysis of Pass-Through Rates" with J. Moran, the author already conducted a meta-analysis of pass-through rates. The paper here is an extension of that paper. In the end of the introduction, it is stated that "The present study is an extended sensitivity analysis of [Nelson and Moran (2019)'s] conclusion". The differences between the two papers have to be worked out better. What is done in this paper that was not done in the previous one? Relatedly, the

paper somehow gives the feeling to be a spin-off containing results that did not fit in the previous paper.

The estimated prediction interval is huge and considerably larger than the standard confidence interval which reflects the large degree of heterogeneity. But then there is not much learned about the pass-through rates.

One of the proposals of how to solve excess heterogeneity is concentrating on subgroups of estimates. However, as seen in Table 3, the prediction intervals get even larger. So what do we learn here?

Another solution is a meta-regression analysis which deals with observed heterogeneity. Again, FES is compared with RES with a similar conclusion as before. Would it be not interesting to calculate the prediction interval of the mean so that to show that it gets smaller?

The employed publication selection bias methods are not really used in economics. Several simulation papers (Stanley, 2008; Stanley and Doucouliagos, 2014; Alinaghi and Reed, 2018; Bom and Rachinger, 2019) have converged on the use of regression methods, with Andrews and Kasy (2019) as a recent strong competitor. So it is not really clear what is learned here?

I do not really see the purpose of the final paragraph which discusses one of several available simulation based comparison of different meta-estimators in presence of publication bias.

References:

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