Aarhus Colloquium of Meta-Analysis in Economics

SEPTEMBER 27-30, 2007

Convened at: *Sandbjerg Manor, Sønderborg, Denmark*

Sponsored by: *The University of Aarhus, Aarhus, Denmark*

Organizers:

Hristos Doucouliagos*:* Professor of Economics, Deakin University, Australia

Martin Paldam*:* Professor of Economics, University of Aarhus, Denmark

T.D. Stanley**:** Professor of Economics and Business, Hendrix College, USA

Day 1, Thursday: September 27. Participants arrive
Light Dinner and evening Drinks. Brief welcome from Martin Paldam.

Day 2, Friday: September 28

7:30 to 8:30: breakfast

8:30 to 8:45: **Bent Jesper Christensen** to welcome attendees

8:45 to 10:15: **Plenary Session A:** (Chair: **Bent Jesper Christensen)**

Martin Paldam (Aid, Growth and the Reluctancy Hypothesis) and
Chris Doucouliagos (Theory Competition and Selectivity: A Meta-Meta-Analysis)

10:15-10:45: **Coffee Break**

10:45 to 12:15: **Plenary Session B:** (Chair: **Randy Rosenberger)**

Jacques Poot (Learning from the Flood of Numbers: Meta-Analysis in Economics) and
T.D. Stanley (Getting Beyond Publication Bias)

12:15 to 13:45: **Lunch**

13:45 to 15:15: **Plenary Session C:** (Chair: **Jacques Poot)**

Randall Rosenberger (Selection Effects in Meta-Valuation Function Transfers) and
Raymond Florax (Meta-Regression Estimates for CGE Models)

15:15-15:45: **Coffee Break**

15:45 to 17:30: **Parallel Session A1**, 3 presentations
15:45 to 17:30: **Parallel Session A2**, 3 presentations

15:45 to 16:15, 1st speaker
16:20 to 16:50, 2nd speaker
16:55 to 17:25, 3rd speaker

17:30 to 18:00: Walk depending on the weather

18:00 to 19:00: Dinner

19:00 to 23:00: drinks and chat.

Day 3, Saturday: September 29

7:30 to 8:30: breakfast

8:30 to 8:45: Brief announcements.

8:45 to 10:30: **Plenary Session D:** (Chair: **Raymond Florax)**

Tammo Bijmolt (Generalizations on Pharmaceutical Marketing Effectiveness)

Henri L.F. de Groot (Agglomeration, Innovation and Regional Development: Theoretical Perspectives and Meta-Analysis)

Craig Gallet: (The Demand for Alcohol: A Meta-Analysis of Elasticities)

10:30-10:45: **Coffee Break**

10:45 to 12:30: **Parallel Session B1**, 3 presentations
10:45 to 12:30: **Parallel Session B2**, 3 presentations

10:45 to 11:15, 1st speaker
11:20 to 11:50, 2nd speaker
11:55 to 12:25, 3rd speaker

12:30 to 13:45: **Lunch**

13:45 to 15:15: **Plenary Session E:** Open Forum: The Future of Meta-Analysis and AMAES (Association of Meta-Analysts for Economic Science)?

15:30 to 17:30: Walk depending on the weather

18:00 to 19:00: Dinner: After dinner speeches, Martin Paldam.

19:00 to 23:00: drinks and chat.

Day 4, Sunday: September 30, departure

7:30 to 8:30: breakfast

Parallel Sessions

A1. International Trade and Migration. (Chair: **Bruno Ćorić)**

Geoff Pugh: (The Effects of Exchange Rate Variability on International Trade: A Meta-Regression Analysis)

Simonetta Longhi: (Meta-Analysis of Empirical Evidence on the Labour Market Impacts of Immigration)

Maria Cipollina: (Reciprocal Trade Agreements in Gravity Models: A Meta-Analysis)

A2. Downsizing, Unions and Reform (Chair: **Chris Doucouliagos)**

Patrice Laroche: (Union and Firm Profits: A Meta-Analysis)

Gunter Capelle-Blancard: (How Do Shareholders Respond to Downsizing: A Meta-Analysis)

Ian Babetskii: (Does Reform Work? An Econometric Examination of the Reform-Growth Puzzle)

B1. Macro-Political Economy. (Chair: **Martin Paldam**)

Ahmad Saleh: (Whither Corruption? A Meta-Regression Analysis Study)

Iikka Korhonen: (Meta-Analysis of the Business Cycle Correlation between the Euro Area and the CEECs)

Jeroen Klomp: Meta-Analysis on the Relation between Inflation and Central Bank Independence

B2. Energy, Stated Preference and Publication Bias (Chair: **Tom Stanley)**

Mark Koetse: (Capital-Energy Substitution and Shifts in Factor Demand: A Meta-Analysis).

Henrik Lindhjem: (20 Years of Stated Preference Valuation of Non-Timber Benefits from Fennoscandian Forests: A Meta-Analysis.**)**

Steve Jarrell: (A Comparative Investigation of 'Top Ten' versus Alternative Methods to Reduce Publication Bias).

ABSTRACTS

Plenary Session A:

Aid, Growth and the Reluctancy Hypothesis

Hristos Doucouliagos: Department of Economics, Deakin University, Melbourne, Australia
Martin Paldam: Department of Economics, University of Aarhus, Aarhus, Denmark

The aid effectiveness literature (AEL) consists of empirical macro studies of the effects of development aid. By the end of 2004, it had reached 97 econometric studies of three families, which have been analyzed in one study for each family using meta-analysis. The AEL is an ideal subject for meta-analysis as it uses only a few formally similar models which try to catch precisely the same effects. Also, it is an area with strong beliefs – often generated by altruism – and interests. In this survey of the AEL, we show that when the whole of the literature is examined, a clear pattern emerges in the results: after 40 years of development aid, the evidence indicates that aid has not been effective. We show that the distribution of results is significantly asymmetrical in a way that reflects the reluctance of the research community to publish negative results. The Dutch Disease effect of aid has been ignored but is a plausible explanation for aid ineffectiveness.

Theory Competition and Selectivity

Hristos Doucouliagos: Department of Economics, Deakin University, Melbourne, Australia
T.D. Stanley: Department of Economics, Hendrix College, Conway, AR, USA

There is growing concern and mounting evidence of selectivity in empirical economics. Most empirical economic literatures have a skewed (or truncated) distribution of results. The aim of this paper is to explore the links between publication selectivity and theory competition. In research areas where theory supports a wide range of outcomes, empirical evidence is less likely to be affected by selectivity. However, in those areas where theory is consistent with only one qualitative effect (e.g, a negative effect of price on quantity demanded), selectivity is more likely and its effects more severe. This hypothesis is supported through the analysis of 46 distinct empirical economics literatures, involving approximately one and a half thousand empirical studies, which in turn collectively contain many thousands of estimates. Our meta-meta-analysis shows that publication selection is widespread, but not universal, and distorts inferences and that competition and debate between rival theories reduces selectivity and improves economic inferences. Thus, all literature reviews, whether traditional or quantitative (meta-analysis), need to adopt an explicit selection correction strategy.

Plenary Session B:

Learning from the Flood of Numbers: Meta-Analysis in Economics

Raymond J.G.M. Florax: Dept. of Agricultural Economics, Purdue University, USA and Dept. of Spatial Economics, Vrije Universiteit, Amsterdam, The Netherlands
Jacques Poot: Population Studies Centre, University of Waikato, Hamilton, New Zealand and Dept. of Spatial Economics, Vrije Universiteit, Amsterdam, The Netherlands

This article has two main aims. The first is to provide an overview of the current practice of meta-analysis in economics, including a brief history of meta-analysis and its use in economics. We provide guidelines for carrying out a sound meta-analysis in economics and illustrate these guidelines by means of two examples, one from microeconomics and one from macroeconomics. The second objective is to provide a full assessment of the scope and limitations of meta-analysis, with particular emphasis on the methodologies proposed to overcome the weaknesses of meta-regression, and the

avenues for further development of techniques that are likely to be most fruitful. Specifically, we assess the impacts of quality differences among studies, differences in the measurement of effect sizes and the related differences in interpretation of the meta-analytical results, selection and publication bias in available study results, and heterogeneity and dependence within and between studies. We conclude by providing an overall evaluation of the methodology and advocate the widespread use of carefully conducted meta-analysis in empirical economic research. We also put forward some desiderata for the further advancement of meta-analysis in the economics profession, including the desirability of meta-regression specifications being more strongly informed by economic theory.

Getting Beyond Publication Selection Bias

T.D. Stanley: Department of Economics, Hendrix College, Conway, AR, USA

This presentation investigates methods to identify publication selection, to detect the presence of a genuine empirical effect beyond the contamination of publication selection, and to estimate the magnitude of this empirical effect, corrected for publication selection. Publication selection exists when editors, reviewers or researchers have a preference for statistically significant results. Over the last several years, I have been investigating and developing MRA methods to deal with the widespread and often overwhelming publication bias that is routinely found in economic research. Here, I wish to share which of these methods work and which do not. Simulations show that simple meta-regression models that use precision (1/SE) and/or the standard error (SE) are found to be robust against publication selection bias. Even if a literature is dominated by large and unknown misspecification biases, these MRA methods can provide viable strategies for detecting and estimating genuine empirical effects. *When research is all askew, precision to the rescue.*

Plenary Session C:

Selection Effects in Meta-Valuation Function Transfers

Randall S. Rosenberger: Dept. of Forest Resources, Oregon State University, Corvallis, OR
Robert J. Johnston: Dept. of Agricultural and Resource Economics, University of Connecticut, USA

This paper coordinates original empirical results with prior findings from the meta-analysis literature to elucidate issues, tradeoffs and concerns related to selection biases in meta-analysis benefit transfer. We begin with conceptual discussions of primary issues, followed by illustrations of potential implications based on case-study metadata addressing values for a range of different natural resources. The discussion highlights related tradeoffs facing meta-analysts who seek to apply results for benefit transfer, the state-of-the-literature with regard to these tradeoffs, potential solutions to remaining concerns, and crucial areas for future research.

Meta-Regression Estimates for CGE Models: A Case Study for Input Substitution Elasticities in Production Agriculture

Kathryn A. Boys: Dept. of Agricultural Economics, Purdue University, USA
Raymond J.G.M. Florax: Dept. of Agricultural Economics, Purdue University, USA

The selection of appropriate parameters for computable general equilibrium (CGE) models critically affects the results of applied economic modeling exercises. Valid and reliable parameter selection models are needed, and typically comprise direct estimation, expert opinion, or copycatting of results

from seminal studies. The purpose of this study is to use meta-analysis to summarize and more accurately estimate elasticities of input substitution, specifically between labor and other inputs in agricultural production. We construct a comprehensive database of elasticity estimates through an extensive literature review, and perform a meta-regression analysis to identify structural sources of variation in elasticity estimates sampled from primary studies. The use of meta-analysis contributes to improved baseline analysis in CGE simulations because it allows for the computation of input parameters tailored to a specific CGE model setup. We correct for variations in research design, which are typically constant within studies, and account for bias associated with undue selection effects associated with editorial publication decision processes. We suggest a strategy by which improved accuracy and knowledge of the distribution of imputed input parameters derived from a meta-analysis can contribute to improved performance of CGE sensitivity analyses.

Parallel Session A1:

The Effects of Exchange Rate Variability on International Trade:A Meta-Regression Analysis

Bruno Ćorić:, Department of Economics, University of Split, Split, Croatia.
Geoff Pugh: Staffordshire University Business School, Stoke-on-Trent, UK.

The trade effects of exchange rate variability have been an issue in international economics for the past 30 years. The contribution of this paper is to apply meta-regression analysis (MRA) to the empirical literature. On average, exchange rate variability exerts a negative effect on international trade. Yet MRA confirms the view that this result is highly conditional, by identifying factors that help to explain why estimated trade effects vary from significantly negative to significantly positive. In particular, we identify the importance of hedging opportunities. For the practice of MRA, we make a case for checking the robustness of results with respect to estimation technique, model specification and sample.

Meta-Analysis of Empirical Evidence on the Labour Market Impacts of Immigration

Simonetta Longhi: Institute for Social and Economic Research, University of Essex, UK
Peter Nijkamp: Dept. of Spatial Economics, Free University, Amsterdam, The Netherlands
Jacques Poot: Population Studies Centre, University of Waikato, Hamilton, New Zealand

The increasing proportion of immigrants in the population of many countries has raised concerns about the 'absorption capacity' of the labour market. This has fuelled extensive empirical research in countries that attract migrants. In previous papers we have synthesized the conclusions of this empirical research by means of a meta-analytic assessment of the impact of immigration on wages and employment of native workers. While in these studies we have shown that the labour market impacts in terms of wages and employment are rather modest, the sample of studies available to generate comparable effect sizes was severely limited by the heterogeneity in study approaches, ranging from the econometric analysis of cross-regional differences to general equilibrium models, natural experiments and time-series approaches. In the present paper, we take an encompassing approach and consider a broad range of labour market outcomes: wages, employment, unemployment and labour force participation. Observed *t*-statistics of estimates across a wide range of studies are converted into Fisher Z' statistics and their variation is analysed by meta-regressions. We also trichotomise the various labour market outcomes in simple terms as benefiting, harming or not affecting natives, and use an ordered probit model to assess the relationship between this observed impact and key study characteristics such as type of country, methodology, period of investigation and type of migrant.

Reciprocal Trade Agreements in Gravity Models: A Meta-Analysis

Maria Cipollina: Dept. of Economics,Università degli Studi del Molise, Campobasso, Italy
Luca Salvatici: Dept. of Economics,Università degli Studi del Molise, Italy

Over the time a large number of reciprocal preferential trade agreements (RTAs) have been concluded among countries. Recently many studies have used gravity equations in order to estimate the effect of RTAs on trade flows between partners. These studies report very different estimates, since they differ greatly in data sets, sample sizes, and independent variables used in the analysis. So, what is the "true" impact of RTAs? This paper combines, explains, and summarizes a large number of results (1827 estimates included in 85 papers), using a meta-analysis (MA) approach. Notwithstanding quite an high variability, studies consistently find a positive RTAs impact on bilateral trade: the hypothesis that there is no effect of trade agreements on trade is easily and robustly rejected at standard significance levels. We provide pooled estimates, obtained from fixed and random effects models, of the increase in bilateral trade due to RTAs. Finally, information collected on each estimate allows us to test the sensitivity of the results to alternative specifications and differences in the control variables considered.

Parallel Session A2:

Union and Firm Profits: A Meta-Analysis

Patrice Laroche: Department of Management, Nancy University, Nancy, France
Hristos Doucouliagos: Department of Economics, Deakin University, Melbourne, Australia

Meta-regression analysis is applied to the population of 45 studies with 532 estimates of the direct effect of unions on profits. We show that unions have a significant negative effect on profits in the US. However, the evidence is inconclusive for the rest of the world. Separate meta-regression analysis is used to identify the sources of union-profit effects. The analysis of 604 estimates shows that market power reflected in industry concentration and investments in intangible assets (R&D and advertising), both have a positive effect on profits. The firms market share and physical capital investments do not have a positive effect on profits. A further meta-analysis of 239 estimates of unions interacted with hypothesized sources reveals that neither the market power nor the quasi-rent appropriation theories are supported. The literature has failed to reveal the source of union-profit effects. There is a clear need for additional primary research in this area.

How do Shareholders Respond to Downsizing? A meta-analysis

Gunther Capelle-Blancard: Panthéon Sorbonne Economie, Université Paris, Paris, France
Nicolas Couderc: Reims Management School and Panthéon Sorbonne Economie

Massive layoffs announcements often attract extensive media coverage. Beyond the newsworthiness of such events, is such a decision in any way correlated to the company's stock market performance? Do some firms resort to massive layoffs simply to please stockholder? In this paper, we offer a thorough review of the literature in an attempt to answer these questions. The core of the paper is a meta-analysis. We show that layoffs announcements have an overall negative effect on stock market prices, and this remains true whatever the country, the period of time or the type of firm considered. However, some factors may ease as well as worsen the stock market's reaction to such announcements. The reason for the layoff decision is among the most decisive factors and the market sanction will be more severe in the case of defensive layoffs (taken by firms facing difficulties) than for offensive layoffs (when they are part of a more general reorganization strategy).

Does Reform Work? An Econometric Examination of the Reform-Growth Puzzle

Ian Babetskii: Czech National Bank and Université de Paris-1 Sorbonne, Paris, France
Nauro F. Campos: Department of Economics, Brunel University, London

Despite the many benefits associated with structural reforms, the literature has thus far failed to establish a positive significant effect of reforms on growth. Using data from 43 econometric studies, we show that one third of the coefficients (of reform on growth) is positive and significant, another third negative and significant, and the final third is not statistically significant. In trying to understand this remarkable variation, we find that the measurement of reform and controlling for institutions and initial conditions are main factors in decreasing the probability of reporting a significant and positive effect of reform on growth.

Plenary Session D:

Generalizations on Pharmaceutical Marketing Effectiveness

Sara T.M. Kremer, Tammo H.A. Bijmolt, Jaap E. Wieringa, Peter S.H. Leeflang: Department of Marketing, University of Groningen, The Netherlands

Marketing activities employed by pharmaceutical companies are subject of public debate worldwide. Part of this debate is due to the fact that the effects of promotion variables are proliferated in numerous empirical studies that have been done. We performed a meta-analysis to formulate generalizations on effectiveness of pharmaceutical marketing instruments. A broad literature search across various disciplines yielded 71 (published and non-published) sources with over 1100 marketing effects. This paper presents results on the overall effects of marketing mix in pharmaceutical market. In addition, we discuss several moderator variables, including direct-to-consumer versus direct-to-physician elasticities.

Agglomeration, Innovation and Regional Development: Theoretical Perspectives and Meta-Analysis

Henri L.F. de Groot : Dept. of Spatial Economics, Vrije Universiteit, Amsterdam, The Netherlands
Jacques Poot : Dept. of Spatial Economics, Vrije Universiteit, Amsterdam, The Netherlands
Martijn J. Smit: Dept. of Spatial Economics, Vrije Universiteit, Amsterdam, The Netherlands

Innovation and technological change are central to the quest for regional development and, ultimately, wellbeing of the population. In the globally-connected knowledge-driven economy, agglomeration forces that rely on proximity continue to increase in significance, paradoxically despite declining real costs of information, communication and transportation. Globally, the proportion of the population in cities continues to grow and sprawling cities remain the engines of regional economic transformation. The growth of cities results from a complex chain that starts with scale, density and geography, which then combine with industrial structure characterised by specialisation/localisation, competition and diversity, to yield innovation and productivity growth that encourages employment expansion, and further urban growth through inward migration. This paper revisits the central part of this virtuous circle, namely the Marshall-Arrow-Romer externalities (specialization), Jacobs externalities (diversity) and Porter externalities (competition) that have provided alternative explanations for innovation and urban growth. The paper evaluates the statistical robustness of evidence for such externalities by means of 31 articles, triggered by the seminal work of Glaeser et al. (1992). These articles yield 202 indicators of statistical significance. These are linked to study characteristics by means of ordered probit analysis. The evidence in the literature on the role of the specific externalities

is rather mixed, although for each type of externality we can identify clearly how various aspects of primary study design, such as the adopted proxy for growth, the data used, and the choice of covariates influence the outcomes. We find that, although a relatively greater percentage of investigations of the competition effect support the Porter perspective, it is easier to explain differences between results on the impacts of diversity and specialization.

The Demand for Alcohol: A Meta-Analysis of Elasticities

Craig Gallet: Dept. of Economics, California State University, Sacramento, California, USA.

Numerous studies have estimated elasticities of alcohol demand using different procedures. Because of widespread differences in demand estimates, however, it is difficult to synthesize the literature into coherent meaning. This study improves our understanding of alcohol demand by reporting results from a meta-analysis of 132 studies. Specifically, regressing estimated price, income, and advertising elasticities of alcohol on variables accounting for study characteristics, we find alcohol elasticities to be particularly sensitive to demand specification, data issues, and various estimation methods. Furthermore, compared to other alcoholic beverages, beer elasticities tend to be more inelastic.

Parallel Session B1:

Whither Corruption? A Meta-Regression Analysis Study

Nauro F. Campos: Department of Economics, Brunel University, London
Ahmad Saleh: Department of Economics, Brunel University, London

In the last decade or so, economists started paying a great deal of attention to the issue of corruption in developed and developing countries. A number of theoretical models have been proposed and these have been accompanied by an even larger number of econometric analyses of the economic determinants and consequences of corruption. In the present study, we focus our attention on the econometric literature on the impacts of corruption on economic performance (as measured by per capita GDP growth rates). The underlying debate is whether corruption "greases or sands the wheels of commerce" or, in our case, the wheels of growth. For this paper we put together a data set comprising 469 coefficients of the effect of corruption on economic growth from 42 different studies. We use this data set to understand the effects of differences in estimation methods and econometric specification features on the significance and magnitude of the effect. We also pay special attention to the possibility of publication bias and to the important measurement issue uncover by recent research (which stresses the differences between the use of subjective vis-à-vis objective measures of corruption).

Meta-Analysis of the Business Cycle Correlation Between the Euro Area and the CEECS

Jarko Fidrmuc: Dept. of Economics, University of Munich, Germany and Department of Applied Mathematics and Statistics, Comenius University Bratislava, Slovakia
Iikka Korhonen: Institute for Economies in Transition, Bank of Finland, Helsinki.

We review the literature on business cycle correlation between the euro area and the Central and Eastern European countries (CEECs), a topic that has gained attention as the newest EU members approach monetary union. Our meta-analysis of 35 identified publications suggests some CEECs already have comparably high correlation with the euro area business cycle. We find that estimation methodologies can have a significant effect on correlation coefficients. While CEEC central bankers

tend to be more conservative in their estimates than academics or eurosystem researchers, we find no evidence of a geographical bias in the studies.

Inflation and Central Bank Independence: A Meta Regression Analysis

Jeroen G. Klomp: Department of Economics, University of Groningen, The Netherlands
Jakob de Haan: Department of Economics, University of Groningen, The Netherlands

Using 59 studies, we perform a meta-regression analysis of studies examining the relationship between inflation and central bank independence (CBI). There is a negative and significant relation between inflation and CBI in OECD countries, although the results are sensitive to the indicator used and the estimation period chosen. Studies based on simple bivariate regressions suffer from an omitted variable bias, but our results suggest that only an interaction variable of labour market characteristics and CBI reduces the significance of the CBI indicator. We find no significant differences between studies based on a cross-country or panel settings. Interestingly, over time the reported impact of CBI on inflation in journal articles increases.

Parallel Session B2:

Capital-Energy Substitution and Shifts in Factor Demand: A meta-analysis

Mark J. Koetse : Dept. of Spatial Economics, Vrije Universiteit, Amsterdam, The Netherlands
Henri L.F. de Groot : Dept. of Spatial Economics, Vrije Universiteit, Amsterdam, The Netherlands
Raymond J.G.M. Florax: Dept. of Spatial Economics, Vrije Universiteit, Amsterdam, The Netherlands

This paper presents a meta-analysis of capital-energy substitution elasticities. We distinguish between Morishima elasticities, which measure technological substitution potential, and cross-price elasticities, which measure actual percentage changes in capital demand in response to energy price changes. We estimate a meta-regression model with separate coefficients for the two elasticity samples. The results show that the heterogeneity in both the cross-price and Morishima elasticity samples can to a large extent be explained by study differences in, among others, model specification, data characteristics, region and time period. Controlling for potential sources of misspecification and aggregation bias we subsequently calculate short- and long-run elasticities for different regions and time periods. The resulting elasticities show that technological substitution potential is large, especially in the long run for North America. Despite substantial differences across regions and time periods, the estimated cross-price elasticities suggest capital-energy substitutability without exception.

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20 Years of Stated Preference Valuation of Non-Timber Benefits from Fennoscandian Forests: A Meta-Analysis

Henrik Lindhjem: Department of Economics and Resource Management, Norwegian University of Life Sciences, Ås, Norway

Stated preference (SP) surveys have been conducted to value non-timber benefits (NTBs) from forests in Norway, Sweden and Finland for about 20 years. The paper first reviews the literature and summarises methodological traditions in SP research in the three countries. Second, a meta-regression analysis is conducted explaining systematic variation in Willingness-to-Pay (WTP). Two important conclusions emerge, with relevance for future research: (1) WTP is found to be insensitive to the size of the forest, casting doubt on the use of simplified WTP/area measures for complex environmental

goods; and (2) WTP tends to be higher if people are asked as individuals rather than on behalf of their household.

A Comparative Investigation of 'Top Ten' versus Alternative Methods to Reduce Publication Bias

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We explore the validity of "top-ten," a newly proposed meta-analysis method that averages the top 10 percent of the reported estimates, as measured by precision. Meta-analysts have long recognized that not all reported estimates are generated by an unbiased sampling from the population of potential estimates. The conventional solution has been to employ various weighting schemes (*e.g*, standard errors, variances, or sample size) to produce more accurate estimates. In the same vein, but more simply, the 'top-ten' (T10) first orders the estimates by their precision, the inverse of the standard errors of the estimates gathered from their original studies. It then averages the top 10% of these ordered estimates (*i.e.,* the ones found at the top of the funnel graph). Lastly, T10 is compared to several other publication-reduction methods, including 'trim and fill' and 'precision-effect estimate with standard error,' over ten different economic meta-analyses, covering a wide array of research areas (*e.g.*, international trade, demand elasticities, political economy, industrial relations, macroeconomics, health economics, and alcohol consumption). These meta-analyses were chosen largely for their large observed publication bias (as measured by the intercept of FAT-PET-MRA). T10 is simpler to compute and yet correlates almost perfectly with both 'trim and fill' and 'precision-effect estimate with standard error'.

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