

Online appendix to the paper:

“Does economic globalization affect government spending? A meta-analysis”

1. Distinguishing trade globalization, financial globalization and overall economic globalization

The coding of the economic globalization indicators was based on the classification provided in Gräbner et al. (2018). We distinguish trade globalization indicators, financial globalization indicators, and overall economic globalization indicators.

Existing measures of economic globalization can be grouped according to the type of globalization – ‘trade’ or ‘financial’ – they aim to measure, and, second, according to the sources utilized in composing the globalization measure. These sources are either aggregate economic statistics (de-facto measures) or assessments of the institutional foundations of economic globalization, i.e. the legally established barriers to trade and financial transactions (de-jure measures).

Overall economic globalization measures aim to incorporate information on both, real and financial aspects.

	Evaluation of economic globalization with regard to real flows (goods and services)	Evaluation of economic globalization with regard to financial flows	Overall economic globalization measures
Evaluation of outcomes: De-facto measures of economic globalization	De facto measures of trade globalization, for example: <i>total imports</i> or <i>total exports (relative to GDP)</i>	De facto measures of financial globalization, for example: <i>FDI inward/outward</i> or <i>foreign financial assets/liabilities</i>	Measures integrating trade and financial aspects
	Hybrid measures for de-facto globalization		
Evaluation of legal framework: De-jure measures of economic globalization	De jure measures of trade globalization, for example: <i>tariff rates</i> or <i>non-tariff trade barriers</i>	De jure measures of financial globalization, for example: <i>FDI restrictions</i> or <i>capital account restrictions</i>	
	Hybrid measures for de-jure globalization		

Table: Types of economic globalization indicators.

De-facto measures are outcome-oriented indicators, reflecting a country’s actual degree of integration into the world economy. De-jure measures, on the other hand, are based upon an evaluation of a country’s legal framework: they reflect a country’s willingness to be open as expressed by the prevailing regulatory environment. Typically, de-jure

measures on trade are based on tariff rates (such as duties and surcharges), information on non-tariff trade barriers (such as licensing rules and quotas) or tax revenues emerging from trade activities relative to GDP. Financial de-jure measures indicate the extent to which a country imposes legal restrictions on its cross-border capital transactions. As de-jure indicators evaluate a country's regulatory environment, it is important to keep in mind that this environment is influenced not only by national policies; they are also shaped by the impact of supranational institutions like the European Union or the World Trade Organization.

For a more detailed exposition of the trade globalization, financial globalization and overall economic globalization indicators used in the empirical literature, see Gräbner et al. (2018).

Reference

Gräbner, C.; Heimberger, P.; Kapeller, J.; Springholz, F. (2018): Measuring economic openness: A review of existing measures and empirical practices, ICAE Working Paper No. 86.

2. Studies included in the meta-analysis

Below, we show a table consisting of all the studies that were included in the meta-analysis based on the criteria discussed in the paper (see section 3.1).

Table: Peer-reviewed papers included in the meta-analysis (n=79)

Adam and Kammas (2007)	Garrett (2001)	Mourao (2011)
Alesina and Wacziarg (1998)	Gemmel et al. (2008)	Musau (2018)
Amable et al. (2006)	Gizelis (2005)	Nooruddin and Simmons (2009)
Annett (2001)	Gürkan Yay and Aksoy (2018)	Onaran and Bösch (2014)
Ashraf et al. (2017)	Ha (2008)	Pampel and Williamson (1988)
Avelino et al. (2005)	Ha (2015)	Potrafke (2011)
Balle and Vaidja (2005)	Hausken et al. (2004)	Profeta et al. (2013)
Benarroch and Pandey (2008)	Hays et al. (2005)	Quinn (1997)
Benarroch and Pandey (2012)	Hicks and Swank (1992)	Ram (2009)
Blais et al. (1993)	Huber and Stephens (2000)	Razin et al. (2002)
Brady and Lee (2014)	Huber et al. (2008)	Remmer (2004)
Brady et al. (2005)	Iversen and Cusack (2000)	Rodrik (1998)
Bretschger and Hettich (2002)	Jahn (2006)	Rudra (2002)
Brown and Hunter (2004)	Jeanneney and Hua (2004)	Rudra and Haggard (2005)
Burgoon (2001)	Jensen (2010)	Rodden (2003)
Busemeyer (2009)	Jin and Zhou (2002)	Sanz and Velasquez (2007)
Castles (2001)	Kaufman and Segura-Ubierno (2001)	Shelton (2007)
Chuaire et al. (2017)	Kim et al. (2013)	Shelton (2008)
Crepaz and Moser (2004)	Kimakova (2009)	Skidmore et al. (2004)
Cusack (1997)	Kittel and Obinger (2003)	Stein (1999)
Dreher (2006)	Kittel and Winner (2005)	Swank (2001)
Dreher et a. (2008b)	Kwon and Pontusson (2010)	Wibbels (2006)
Epifani and Gancia (2009)	Lane (2003)	Wong (2016)
Ferris (2003)	Leibrecht et al. (2011)	Wu and Lin (2012)
Fiva (2006)	Martin-Mayoral and Fernandez-Sastre (2017)	Zakaria and Shakoob (2011)
Garen and Trask (2005)	Marshall and Fisher (2015)	
Garrett (1995)	Meinhard and Potrafke (2012)	

Notes: Studies published in peer-reviewed journals prior to October 2018 were included. Criteria of inclusion are described in the text.

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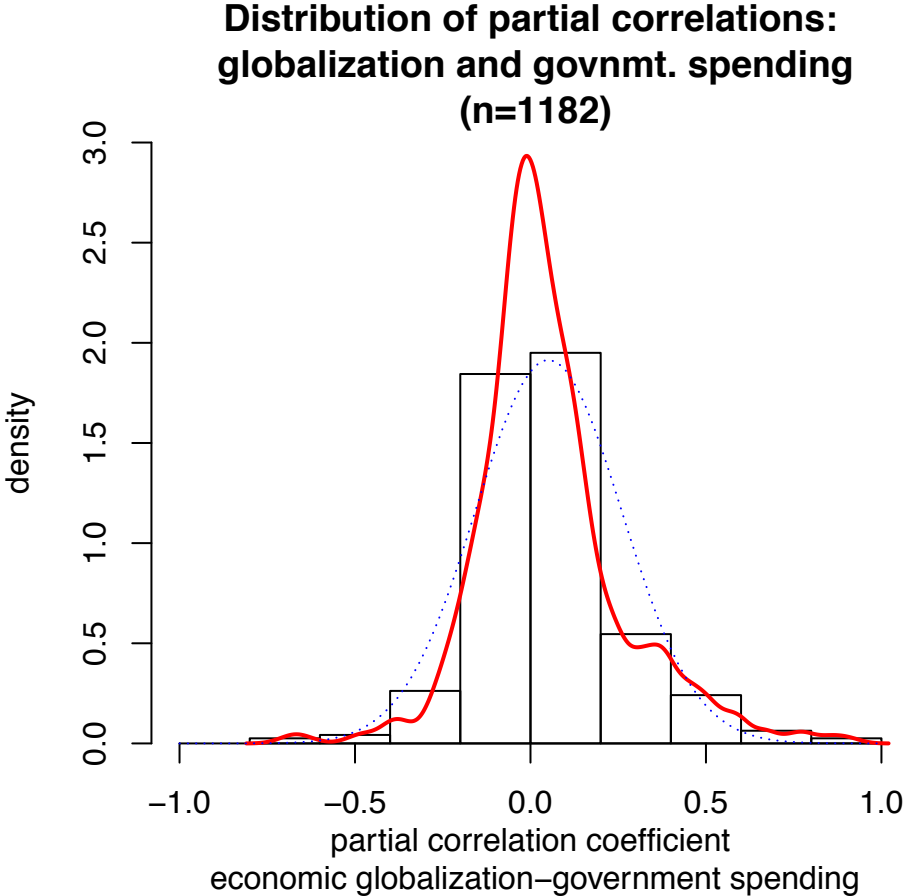
3. Meta-analysis: Descriptive statistics

This section of the appendix reports descriptive statistics regarding the meta-study data used in the paper.

3.1 How are partial correlations distributed?

Figure A1 shows the distribution of globalization-government spending partial correlations in our meta-analysis data set. The minimum partial correlation coefficient is -0.71 and the maximum is 0.93; the standard deviation is 0.21. While the unweighted mean (0.05) and median (0.02) are positive but relatively small in terms of magnitude, Figure A1 reveals that there is clearly considerable dispersion in the results. We also conduct Cochran's Q-Test, which provides clear evidence that there is excess heterogeneity in the results beyond what could be expected by measured random sampling ($p < 0.0001$).

Figure A1: Distribution of partial correlations



Notes: The figure plots the distribution of partial correlation estimates (kernel density plot). The blue dotted curve represents a normal distribution.

3.2 Descriptive meta-analysis on the globalization-spending relationship

By comprising all globalization-spending studies and by using precision-weights, the average globalization-spending estimate derived from the meta-analysis is arguably the best estimate of the entire empirical literature on the effect of globalization on government spending. Here, we report descriptive statistics uncorrected for publication selection bias.

Formally, the weighted average partial correlation can be written as:

$$wr = \frac{\sum[P_{ij}r_{ij}]}{\sum[P_{ij}]} \quad (3)$$

where r is the partial correlation coefficient as defined above from the i th regression estimate of the j th study, and P is the associated precision, where precision is measured as the inverse of the variance. This weighted partial correlation coefficient can be used to shed light on two questions. First, is the average impact of globalization on government spending positive, negative or inconclusive? Second, is the effect small or large? According to the guidelines derived by Doucouliagos (2011), a partial correlation can be considered to be small if its absolute value is less than 0.07, while 0.17 is considered to be moderate and 0.33 is large.

Table A1 shows summary results for the meta-analysis data by reporting the median, unweighted and weighted average globalization-spending partial correlations. Note that those results do not account for potential publication selection (see section 4 of the paper). Furthermore, we report results from estimating a Random Effects Model and Fixed Effects model.¹ In addition, we included credibility intervals and two sets of confidence intervals. Column (1) of Table A1 reports the results for the whole set of estimates ($n=1182$). The results show that there is a small positive partial correlation between globalization on government spending. Although the average effects are quite small, the possibility of a negative average partial correlation is ruled out by the reported 95% confidence intervals (note again that we do not account for potential publication selection). However, it should be reemphasized that the positive effect is

¹ In Table A1, both the random effects models and the fixed effects models were specified without moderator variables.

small, which raises skepticism about claims regarding strong effects of globalization on public expenditures (see section 2.2 in the paper). As a sensitivity check, column (2) of Table A1 repeats the summary meta-analysis after removing the 10% of the smallest and highest partial correlation estimates. The results in column (2) are in substance very similar to those in column (1).

Average partial correlation estimates corrected for publication selection bias are presented in section 4 of the paper.

Table A1: Published globalization-government spending effects (79 studies, 1182 estimates)

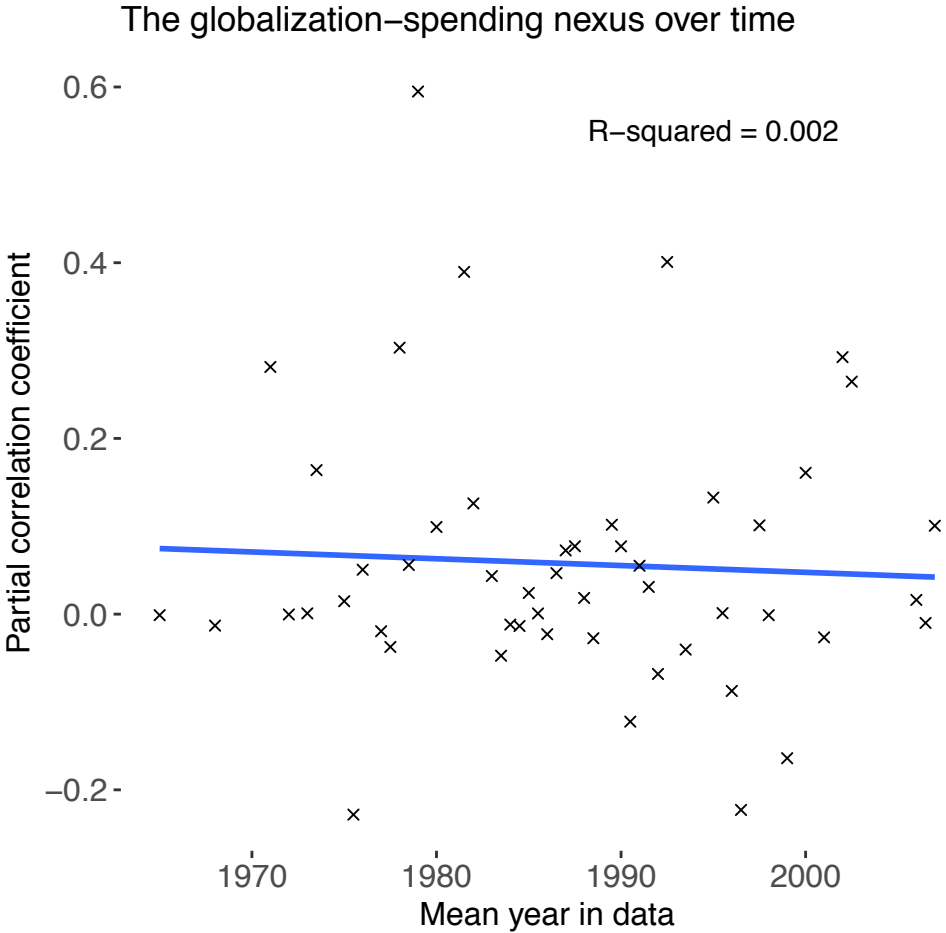
Statistic	All estimates	Excluding Top and Bottom 10%
<i>Number of estimates</i>	1182	946
Median	0.019	0.019
Unweighted average	0.051	0.038
Precision-weighted average	0.028	0.026
Weighted Average (RE)	0.041	0.028
Weighted average (FE)	0.023	0.026
Weighted Average (HS)	0.037	0.028
95% Confidence Interval (RE)	+0.030	+0.022
95% Confidence Interval (HS)	+0.051	+0.035
95% Credibility Interval (HS)	+0.028	+0.022
95% Credibility Interval (FE)	+0.046	+0.035
95% Credibility Interval (RE)	-0.224	-0.132
95% Credibility Interval (FE)	+0.293	+0.187

Notes: RE... Random Effects; FE... Fixed effects; HS... Hunter-Schmidt.

4. Does the time dimension play a role?

In the meta-regression models (see Table 3 in the paper), the time dimension does not seem to be play an important role, since the MeanYearData variable turns out to be statistically insignificant. The question whether the time dimension matters, however, can be investigated in a more visual way. Figure 3 groups the observations according to the mean years of the underlying data samples into 50 equally sized bins. Crosses depict data bins, and the line drawn indicates the linear fit. It can be seen that no systematic relationship is evident, i.e., we see no evidence that the globalization-spending relationship has changed over time.

Figure A2: Globalization-spending estimates over the time horizon



Notes: The figure shows the evolution of the partial correlation coefficient of the globalization-spending relationship over time. The graph groups the mean year of observation into 50 equally sized bins. Data bins are shown as crosses, the regression line indicates the linear fit.