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Bias and careers: Evidence from the aid effectiveness literature

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ABSTRACT

We collect data on the careers of 189 authors who published aid effectiveness estimates during the 1970 to 2011 period, and apply meta-regression analysis to investigate the impact of authors' careers on the degree of selectivity in which results are reported. Among non-tenured researchers, publication selection bias and research inflation are increasing with age, on average. This bias is highest among older non-tenured researchers. In search for channels, we find suggestive evidence that a portion of the preferential reporting in favour of aid effectiveness is associated with non-tenured authors' links with aid agencies.

"People are people"
Gordon Tullock (2002)

1. Introduction

In this article, we explore the economics of economics. Are researchers altruistic truth seekers striving to maximize social welfare through science, or are we rational humans concerned with the broader good but also seeking to advance our careers? The results of empirical studies in economics often fail to replicate and they often suffer from publication selection bias, with preferential reporting of statistically significant results and inflation of estimates of parameters of interest (e.g., Camerer et al., 2016; Ioannidis et al., 2017; Christensen and Miguel, 2018; Andrews and Kasy, 2019).[1] Such biases emerge when authors engage in data mining and specification search designed to achieve statistical significance, when some empirical studies remain unpublished and unavailable to the public (Franco et al., 2014), or when results are reported only when they are consistent with researchers' priors. Tullock (2005: 124) argues that "scientists are not much better than other men". Frey (2003) points out that success and survival in academia depends on publishing and that authors are tempted to give into the demands of referees to secure publication. Paldam (2018) shows how rational economics researchers distort the research record. Moreover, industry links and funding may affect reported outcomes. For example, industry sponsored research on drug effectiveness tends to be more favorable to the sponsor than non-industry sponsored research (Baker et al., 2003; Lundh et al., 2017). Improving research quality and credibility requires collective action with all the difficulties

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[1] Other disciplines face similar issues regarding the credibility of their research, e.g., see Ioannidis (2005) for medicine and Stanley et al. (2018) for psychology.

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that it entails (Blanco-Perez and Brodeur, 2020).

The objective of this article is to investigate some of the individual researcher career characteristics that may affect the prevalence and magnitude of publication selection biases. We augment the existing meta-data on aid effectiveness on economic growth (Doucouliagos and Paldam, 2015) with information on the individual authors' careers. At the foreground of our interest is the effect of career age and academic tenure (hereafter tenure) on publication selection bias. Researchers are rational and will seek to achieve their objectives in the best possible manner. Incentives to engage in specification search might be higher for younger researchers as they are under greater pressure to publish to move their academic careers forward. The "publish or perish" literature in different fields discusses the potential harmful effects of this pressure (e.g., see De Rond and Miller 2005). Publication bias is one of these effects. On the other hand, established senior researchers might use their skills to find a specification that looks credible, is in line with expectations of the scientific community and thus, is easier to publish, rather than to show the specification which genuinely reflects the data at hand. Moreover, there are tradeoffs between incentives to conform to established scientific consensus versus the rewards of innovation and original findings (Thomas and Thomas, 2020). These varying effects suggest that the *net* effect is an empirical matter. It is this net effect that we investigate here.

Our study contributes to the literature on the determinants of publication selection bias, by studying the role of age and tenure in generating publication selection bias and artificial heterogeneity in reported results. The effects of these biases is to create artificial heterogeneity in the evidence base, suggest poor replication of results, and typically inflate estimates of aid effectiveness, potentially distorting public policy in terms of funds allocated towards aid. Past studies have identified several individual and institutional variables that affect the degree of publication bias. For example: Jarrell and Stanley (2004) on authors' gender, Costa-Font et al. (2013) on journal impact factors, Doucouliagos and Stanley (2013) on theoretical contests and bias, Fidrmuc and Lind (2020) on the type of institution the authors are affiliated with, and Blanco-Perez and Brodeur (2020) on the impact of journal editorial policies. To our knowledge, Brodeur et al. (2016) is the only study to examine academic age and tenure with respect to publication bias. Investigating the statistical properties of estimation results on the population of studies from three top economics journals across seven years, these authors find that non-tenured or younger authors are more likely to inflate their results. Unlike Brodeur et al. (2016), we are able to study the role of age and tenure in a multivariate context and we investigate the role of institutions the researchers are affiliated with. That is, we model the distribution of reported aid effectiveness results and investigate how career considerations impact reported findings. Moreover, compared to Brodeur et al. (2016) who can only study publication selection bias, we investigate bias due to selection, heterogeneity, and exaggeration of the research record.[2]

Our case study is the enormous aid effectiveness literature. Aid allocations totaled $160US billion in 2018,[3] with practically all countries involved as either donor or recipient. The effectiveness of aid is debated by scholars (Askarov and Doucouliagos, 2013; Young and Sheehan, 2014; Arvin and Lew, 2015; Askarov et al., 2015). This literature offers an interesting case study. A wide range of conflicting results have been reported and reports often fail to replicate (e.g., see Jia and Williamson, 2019). According to Doucouliagos and Stanley (2013), there will be greater publication bias in research areas where there is broad theoretical agreement. In contrast, in areas such as aid effectiveness, where there is strong theoretical disagreement, referees and journals make space available for a wide range of empirical results. There is relatively small overall publication bias found in this literature (see discussion in section 5 below). Nevertheless, there may be pockets of bias, within an overall relatively low bias literature. Studying the process by which research is conducted in the aid effectiveness literature is not merely an academic exercise. To the extent that policy decisions regarding aid allocations are made on the basis of evidence, then understanding the way in which research is produced and distributed and revealing biases within, are also critically important for 'evidence based policy'. Some of the research effort may be directed at lobbying governments to allocate resources towards aid, or not to allocate, depending on the direction of the bias.[4] Our study focuses on differences in publication bias between tenured and non-tenured and between younger and older researchers. Moreover, given the specificity of the aid effectiveness field, we additionally explore authors' links with aid agencies as an additional driver of these differences.

In the next section we provide an overview of the literature on publication bias in empirical economics and discuss the role academic career and tenure could exert on publication bias. In Section 3 we discuss the data on estimates of aid effectiveness and authors' career characteristics. In Section 4, we review the meta-regression methodology. The publication selection bias findings are presented in Section 5. In Section 6 we explore the interactions between careers and aid industry links. Robustness checks are reported in Section 7. The last section concludes. The online appendix presents auxiliary results and robustness analyses.

2. Bias in empirical economics

Paldam (2018) shows that in conducting research, economists behave as predicted by economic theory. For example, we make rational choices with regard to how many regressions we produce and which results are submitted to the market (conferences, working

[2] Brodeur et al. (2016) analyze different subsets of *t*-values and calculate the bias in each subset (e.g., "tenured" versus "non-tenured" *t*-values). However, their data does not allow them to study the effects of data, specification, and estimation on reported estimates, simultaneously. The benefit of our data is that we have more information on estimates of aid-effectiveness, including partial correlations, *t*-values, and a long list of variables that affect reported estimates. These variables are listed in Table A1 of the appendix.

[3] Net official development assistance and official aid received (constant 2016 US$). Source: World Development Indicators.

[4] Some of the research may involve rent seeking and lead to social loses. See Hagen (2015) on rents associated with development aid.

papers, and journals).[5] The number of estimates produced is determined by the marginal costs and benefits of running regressions. Which regressions are reported is a function of researcher preferences and which regressions are published is influenced by referee and journal preferences.

There are several processes by which research is generated and communicated to the public. At one level, arguably most authors merely apply the best methods to the available data and report the findings of models that meet the prevailing protocols and standards in reporting.[6] These estimates can be taken to be unbiased in the sense that the authors are neutral and not seeking to report a particular *type* of result (though they may still suffer from other biases such as endogeneity and omitted variable bias). However, some authors might report biased estimates if 'industry norms' are such that journals have a revealed preference for statistically significant results, on average. This would add pressure on some authors to re-estimate models until they find a statistically significant result. Another possibility is that some authors are actively engaged in seeking results that meet their priors. This is distinct from the incentives to publish, as researchers might have theoretical and ideological priors. In our case study, some authors may believe that aid 'works' and seek evidence that encourages policy makers to use aid to eradicate the miseries arising from poverty. Others might be convinced that aid is a misallocation of scarce resources, that it leads to the Samaritan's dilemma (Buchanan, 1975), fuels conflict, and has other unintended consequences that end up doing more harm than good to the very people it is trying to help. Such priors may affect the type of evidence reported and potentially distort inferences and policy decisions.

Research on the measurement and moderators (i.e. determinants) of publication bias in economics is growing, but remains relatively thin. Broadly speaking, there are two methodological approaches. One strand of research uses 'meta-research' that pools estimates from several research areas (e.g., Ioannidis et al., 2017; Blanco-Perez and Brodeur, 2020) and only investigates publication bias from the distribution of the *t*- or *p*-values. We use here the second approach, where the population of estimates on the same parameter along with its *t*-values is collected and investigated via a meta-regression analysis (e.g. Jarrell and Stanley, 2004; Costa-Font et al., 2013). In our case we employ the population of aid effectiveness estimates between 1970 and 2011. Using meta-regression models we estimate the *mean* of this distribution of parameter estimates, corrected for publication selection and model misspecification biases. We can then identify which studies deviate from this mean effect and by how far, and we can identify some of the characteristics that result in publication bias. In particular, we look at the impact of authors' careers on publication bias conditional on allowing for heterogeneity, such as regional and temporal differences in the effects of aid on growth.

Several factors have been documented to moderate publication bias in economics. In their study of the effects of labor unions on productivity, Doucouliagos and Laroche (2003), find that management journals publish much larger positive effects, while published effects were on average small and negative in labor economics journals. Costa-Font et al. (2013) investigate the price elasticities of prescription drugs and income elasticities of health care published by health economic journals and find that the reported absolute values of these elasticity estimates are larger in higher impact journals.[7] Well-tailored journal policies might mitigate the prevalence of publication bias. The editorial statement issued by eight health economic journals in 2015 called their reviewers to judge submitted papers by their scientific merit, rather than the statistical significance of the reported estimates. The effect of this journal intervention on publication bias was studied by Blanco-Perez and Brodeur (2020), who find a 17 percentage points decrease in the proportion of test statistics rejecting the null hypothesis.

Field and affiliation specific bias have also been revealed as moderators of publication bias. A meta-meta-analysis of 81 different economic fields by Doucouliagos and Stanley (2013) shows that publication bias is smaller in fields with no settled agreement on the sign and magnitude of the studied effect. An interesting institutional bias in reported estimates was revealed by a recent study by Fidrmuc and Lind (2020). These authors show that studies by authors from private banks estimate larger effects of the Basel III macroeconomic regulation. Bruns et al. (2019) study publication biases in innovation research, and find that reporting biases are far more prevalent in research results associated with the field of management, than economics.

Bias might be related to econometric methods. Evaluating 20 different kinds of development programs, Vivalt (2019) shows that estimates from randomized control trials (RCT) are less biased than quasi-experimental (QE) approaches. Moreover, bias in RCTs decreases over time, while the QE bias does not. In a similar vein, in their analysis of the population of *t*-statistics from the 25 top economic journals in the year 2015, Brodeur et al. (2018) find that estimates based on RCT and regression discontinuity approaches are less inflated than difference-in-differences results, while the most inflated estimates are drawn from instrumental variables regressions.[8]

Finally, the focus of our article, individual author characteristics, are relatively less studied in relation to publication bias, but there is some relevant literature. Two consecutive meta-studies analyze estimates of the gender wage gap in the US; Stanley and Jarrell (1998) and Jarrell and Stanley (2004). Given the gender wage gap is a gender sensitive topic, Jarrell and Stanley studied, among other aspects, the role of authors' gender on the size of the reported wage gap. Surprisingly, studies by only male authors showed on average larger estimates of the gender wage gap, compared to studies where at least one author was female. Brodeur et al. (2016) estimate

[5] Our data includes estimates reported in journal articles, books, and unpublished works.

[6] These standards obviously change over time. There has been increased effort in recent years to increase transparency in economics, especially with regard to sharing of data and code and preregistration (Christensen and Miguel, 2018), and development of codes of ethics (Levy and Peart, 2008). Analysis of the impact of changing standards is beyond the scope of our analysis. However, the scant available evidence suggests that not all changes improve science. For example, Brodeur et al. (2016) found that specification searching coexists with a data and code sharing policy.

[7] In contrast, Havránek (2015) finds no difference in the magnitude of reported estimates of intertemporal substitution in consumption between the top and all other journals.

[8] None of the estimates of aid effectiveness in our data come from RCTs or based on regression discontinuity.

publication bias in the population of *t*-statistics collected from three top journals in economics and find that non-tenured and younger authors are more likely to statistically "inflate" their results.

2.1. Age, tenure, and bias

In this article we study how two career characteristics of researchers, the number of years since PhD and tenure, matter to publication selection bias. We look at the bias in one specific literature, namely the population of estimates on the effects of development aid on growth. Studying a specific literature on the same effect allows us to use a meta-analytic approach where we can detect the extent and moderators of publication selection bias simultaneously.

Our focus is on the moderating effects of age and tenure on bias. Age is correlated with tenure, but they seem to be distinct dimensions in our data. The correlation between the age and tenure is 0.54 (p-value = 0.000). Moreover, as we show below, there is an important characteristic in the aid effectiveness literature of older non-tenured academics, most of whom have direct links with the aid industry.

The effect of age on reported findings, and for that matter bias, could be varied. Younger researchers may be more up to date with regards to latest research methods, be more curious, energetic, and innovative, and thus less bound to 'what was said before'. In contrast, older researchers, protected by tenure, may choose to conform with the literature, not seek to innovate, and may thus produce more biased research. Age could also be correlated with research craftsmanship. With experience, researchers could become more efficient in producing and communicating research, thus finding it easier to publish. Of course, the opposite is also possible. Protected by tenure, senior researchers may be more willing to report findings that challenge the settled view on an issue. On the other hand, younger researchers may be under greater pressure to publish to meet tenure or promotion requirements.

Tenure is highly prized in academia, providing job and income security, career progression, and research support. The incentives are substantial for non-tenured researchers to meet publication requirements. Our working hypothesis is that non-tenured researchers may be under more pressure to engage in publication selection to secure publication. For the majority of academics, tenure requires publications; though the number and quality of publications varies between institutions, publications are essential for academic progress. Graber et al. (2008) estimate that in order to secure tenure during the 1970–2006 period, researchers in German speaking countries were required to publish the equivalent of 1.5 top-five articles, or 2.3 standardized *European Economic Review* articles. A comparable finding is evidenced via a survey of US economic departments, where an average of 1.62 of top-ten articles were required to grant tenure or promotion (Liner and Sewell, 2009).

Getting published might involve doing what referees demand (Frey, 2003). However, since the aid on growth literature theoretically 'allows' for varied results, non-tenured scholars might be swayed either way if all they seek is to be published. That is, *a priori*, we cannot predict the direction of the bias; it could be positive or negative, or there may be no bias at all. However, if our hypothesis that non-tenured researchers are more prone to bias is correct, then we expect an exaggeration in either direction; it is an empirical matter as to which direction this will be.[9] Not all non-tenured researchers will do this. Rather this is a possibility that will be revealed in the data and thereby can be tested. The situation is less clear if the authors' team is mixed in age or tenure. If the team includes some tenured and more senior academics, then there could be less inclination to exaggerate results for publication. On the other hand, it is possible that some teams may be more willing to exaggerate the statistical significance of results if that helps junior researchers to publish.

Some authors argue that academics become less productive after tenure, while others argue that this depends on whether incentives to produce remain weak after tenure (e.g. Rauber and Ursprung, 2008). Moreover, the effect of tenure will depend on the age of the researcher. Older tenured researchers may face different incentives to publish compared to young tenured researchers, as the latter group may still long for promotion. Similarly, young non-tenured researchers are eager to get tenure while older non-tenured researchers might have already secured their careers well outside universities. Therefore, it is the *interaction* between age and tenure that is the critical dimension, and bias may vary over the course of researchers' careers.

3. Data

We use two sources of data. First, we commence with the meta-data collected by Doucouliagos and Paldam (2015).[10] This data is the population of estimates of the effect of aid on growth. Second, we match these estimates with self-collected data on authors' careers using information on tenure and post-PhD age from the curricula of the authors of studies included in this meta-analysis. Doucouliagos and Paldam collect 1361 comparable estimates of the aggregate effects of aid on growth. These estimates of the effect of aid stem from 133 papers written by 189 distinct authors over the period 1970 and 2011. These data were the population of estimates on the effects of aid on growth (μ) based on models of the following types:

[9] This assumes that the primary objective is tenure. Researchers may also be concerned about their reputation and this may limit the degree to which they are willing to report results that quantitatively or qualitatively differ after tenure; this would then result in autocorrelation in their reported findings over time. We do not have the data to explore this dimension.

[10] Doucouliagos and Paldam (2015) is the most recent version of earlier meta-analyses by the same authors (2008, 2009, and 2011a). For the purposes of replication of the original meta-results with our extension, we mostly used the working paper version of Doucouliagos and Paldam (2015), namely Doucouliagos and Paldam (2011b) which presents the most extensive set of estimation results.

$$g_{it} = \alpha + \mu h_{it} + \gamma_j x_{jit}^{'} + u_{it} \quad or \quad g_{it} = \alpha + \mu h_{it} + \omega z h_{it} + \delta z_{it} + \gamma_j x_{jit}^{'} + u_{it}.$$

Thus these are models where the effect of a measure of aid (e.g. aid per capita or as a share of GDP), h_{it}, on growth rate, g_{it}, in the presence of control (x_{jit}) and sometimes also conditionality (z_{it}) variable(s) was estimated. The index i denotes country or region and t stands for data year. The meta-data include all published and unpublished studies on the effectiveness of aid up to that point.[11] The included estimates are comparable within and between the 133 included primary econometric studies. The studies use various scaling and measures of aid and growth and they use different estimators and model specifications. Doucouliagos and Paldam convert all these estimates into a comparable metric, partial correlations. In addition to aid effectiveness estimates and the underlying standard errors, they also collect information on the type of data and specification details from the primary studies. The information is thoroughly coded into 50 variables covering 7 region and time dummies, 9 data properties variables, 20 model specification dummies, 3 estimation setting dummies and finally 11 journal and author detail dummies. We report definitions and descriptive statistics of the original meta-data in Table A1. As Doucouliagos and Paldam, we use these variables in our multiple meta-regression analysis (see Sections 5, 6 and 7).

Our own self-collected meta-data summarized in Table 1 concentrate on authors' career age and tenure collected from the authors' CVs, authors' websites, or LinkedIn profiles. We calculate age as the number of years elapsed since an author's PhD graduation and the year of the published paper in our dataset.[12] We call this the post-PhD age. Our core specification uses the average post-PhD age of all authors where there are multiple authors. In our sensitivity analysis we consider two variants of this measure: we assign to the study either the highest post-PhD age or the lowest where there are multiple authors. We also consider authors' tenure status. Tenure conditions differ between countries. Hence, we identified from authors' CVs whether they had already attained tenure at the time they published their aid effectiveness study. This was based on information about their academic rank and tenure rules in the country of their current affiliation.[13] To account for lags between submission and publication, we looked at the tenure status of each co-author two years before the official publication year of a study. Again for the core models, we calculate the mean tenure for co-authored papers. In the sensitivity analysis we use two alternative measures of tenure. In the stricter alternative we code one if all coauthors are tenured, and in the looser we code one if at least one author is tenured.

We also specifically look at the effect of links to an international aid organization. For this, we code a study as one if at least one coauthor was affiliated with an international aid organization at any stage before reporting their results. This information was also collected from CVs.[14]

In our sample of 189 researchers, 64% were not tenured at the time they reported aid effectiveness results. However, 40 researchers (or 21%) attained tenure after publishing an aid effectiveness paper. This is not to say that they secured tenure because of these articles, but this is consistent with the notion that publications may have been an incentive to get tenure. Among those who achieved tenure, on average, it took 4.8 years from the publication date. Some of those without subsequent academic tenure report in their CV employment at research institutes or held adjunct positions at universities, while the most prevalent career without academic tenure is employment as economists or managers in an aid organization.

3.1. Outliers and leverage points

In their meta-analysis, Doucouliagos and Paldam (2015) use 1361 estimates of aid effectiveness. These authors did not accommodate outliers in their data. Following the MAER-Net guidelines and current practice in meta-regression (Havranek et al., 2020), we removed outliers and leverage points from the data. To identify outliers, we first run an unrestricted weighted least squares meta--regression.[15] We then identify as an outlier any estimate of aid effectiveness whose standardized residual was greater than 2.5. With outliers removed, we then identified as leverage point any estimate whose DFBETA was greater than $2/\sqrt{n}$ (see Belsley et al., 1980). This process identifies 32 estimates as outliers and 39 estimates as leverage points.

4. Empirical approach

A primary objective of meta-analysis is to provide an estimate of the overall *effect size* based on the population of reported research results; known as the meta-average. Three steps are necessary to provide credible estimates of the meta-average. First, meta-averages are weighted using either sample size or inverse variance weights (Hunter and Schmidt, 2004; Stanley and Doucouliagos, 2012).

[11] Note however that Doucouliagos and Paldam (2011b) exclude several studies. First, only studies in English are included. Second, studies had to report an estimate of the effect of aid on growth and its associated estimated standard error, or the associated p-value or t-statistic had to be reported. Third, to avoid duplication, the same estimates by the same authors reported in more than one outlet (e.g. a prior working paper version) were excluded. Fourth, they include only estimates of the effect of aid on growth and not the effect of aid on specific sectors.

[12] For 24 authors we found no information on PhD year. In these cases, we proxied the PhD year with the year of the first publication available in https://ideas.repec.org/. For 10 authors, the highest degree was a Master or a Bachelor degree; for these authors the post-PhD age was calculated as years since this degree. Estimating the models without authors with missing data produces similar results.

[13] The appendix, Table A2, lists the lowest academic rank by which tenure is granted by country.

[14] Aid links include internships, consultancies, and employment with international aid organizations.

[15] That is, we estimate a simple weighted least squares regression: $r_{ij} = \beta_0 + \varepsilon_{ij}$, where r_{ij} denotes the partial correlation and i and j denote the ith estimate from the jth study. This is estimated using inverse variance weights.

Table 1
Descriptive statistics of authors' characteristics.

Autobiographical variable	Mean	(Std. dev.)	Min	Max
Post-PhD age (average)	9.22	(7.06)	−5	30
Highest post-PhD age	13.35	(10.13)	−5	45
Lowest post-PhD age	5.08	(7.05)	−6	30
Tenure (average)	0.41	(0.39)	0	1
All tenured (share)	0.22	(0.41)	0	1
At least one tenured (share)	0.61	(0.49)	0	1
At least one author aid link (share)	0.50	(0.50)	0	1

Notes: Measures are calculated per study (N = 133).

Inverse variance weights are either fixed-effect or random-effects.[16] Fixed-effect weights are constructed as $\frac{1}{SE_{ij}^2}$, where *i* and *j* denote the *i*th estimate from the *j*th study, and *SE* denotes the standard error of the partial correlation. Random effect weights are constructed as $\frac{1}{SE_{ij}^2+\tau^2}$, where τ^2 is the estimated between-study heterogeneity variance. While random effects are widely used, recent research reveals that they produce more biased estimates when there is publication selection, i.e. when some of the reported estimates are preferentially chosen based on their statistical significance (Stanley and Doucouliagos, 2015, 2017). Kvarven et al. (2020) show that random effects exaggerate meta-averages by nearly three-fold and have high rates of false positives, i.e. they find evidence of an empirical effect when there is none. In this article, we use fixed effects meta-analysis estimated using unrestricted weighted least squares (UWLS). Simulations show that UWLS produces meta-averages with smaller bias, especially when there is heterogeneity and publication selection bias in the evidence base (Stanley and Doucouliagos, 2015, 2017).[17]

A second necessary step is to *correct* the evidence base of publication selection bias. Publication selection bias typically results in inflated reported estimates and hence any average (be it based on meta-analysis or a narrative review) of a biased evidence base will itself be biased. The most widely used method for correcting the evidence base of publication selection bias involves some variant of the Egger regression (Egger et al., 1997; Stanley, 2001; Stanley and Doucouliagos, 2012), regressing an effect size (the partial correlation, *r*, in our case) on a constant and the standard error of the partial correlation, *SE*):

$$r_{ij} = \beta_0 + \beta_1 SE_{ij} + \varepsilon_{ij} \tag{1}$$

Eqn. (1) is known as the 'Funnel Asymmetry, Precision Effect Test' (FAT-PET); see Stanley and Doucouliagos (2012). Simulations show that β_1 provides an estimate of the magnitude and direction of publication selection bias, while β_0 provides an estimate of the underlying empirical effect, corrected for publication selection bias (see Stanley and Doucouliagos, 2012 and references therein).

If enough researchers are engaged in publication selection bias, then their actions will leave a statistical trail. Specifically, if researchers are searching for statistically significant results, they will then search through datasets, specifications, and estimators until they attain a given level of statistical significance. This would then result in an association between the reported estimated effect size and its estimated standard error. Hence, if there is no publication selection, then $\beta_1 = 0$. Eqn. (1) has low power to identify publication selection bias, i.e. the test can reject the presence of publication selection bias when it is present. Further, it does not identify the factors that may drive the propensity to differentially report results. Following Stanley et al. (2008) and Stanley and Doucouliagos (2012), we estimate a more general publication selection bias model:

$$r_{ij} = \beta_0 + \beta_1 SE_{ij} + \sum \delta_k \boldsymbol{k}_{ij} \cdot SE_{ij} + v_{ij}; \tag{2}$$

where $\boldsymbol{k}$ is a vector of variables that influence publication selection. In our study, we are particularly interested in the effects of age and tenure. Specifically, we estimate the following publication selection bias model:

$$r_{ij} = \beta_0 + \beta_1 SE_{ij} + \delta_1 Age_{ij} \cdot SE_{ij} + \delta_2 Tenure_{ij} \cdot SE_{ij} + \delta_3 Age_{ij} \cdot Tenure_{ij} \cdot SE_{ij} + \sum \delta_k \boldsymbol{k}_{ij} \cdot SE_{ij} + v_{ij}, \tag{3}$$

where *Age* denotes the average year post-PhD of all co-authors of study *j* and *Tenure* is the share of authors of this study who have tenure. This model investigates whether researchers are selectively reporting results and whether this preferential reporting is a function of post-PhD age and researchers' tenure status. In Eqn. (3), publication bias is a complex function of *all* the moderator variables. Eqn. (3) enables us to test whether selection bias is a function of age and tenure. Following the discussion in Section 2, we investigate whether tenured researchers or non-tenured researchers are more likely to engage in publication selection. In a literature that is free of publication bias, there should be no differences in publication selection by age and tenure (i.e., $\delta_1 = \delta_2 = \delta_3 = 0$).

A third consideration is heterogeneity. Reported estimates can vary because of random sampling errors, model misspecification and omitted variable bias, and because of genuine heterogeneity arising from underlying structural differences in aid effectiveness (e.g., the effects of aid on growth could vary over time and between countries). Most heterogeneity arises from research flexibility (e.g. from research design choices) and publication selection bias. These sources of heterogeneity can be modelled by appending Eqn. (3) with ***x***,

[16] In meta-analysis, these terms refer to the weights used and not to the structure of panel data.
[17] UWLS produces the same meta-averages as fixed effects weights, but with wider confidence intervals.

a vector of control variables that include regional and temporal differences and researchers' modelling choices:

$$r_{ij} = \beta_0 + \beta_1 SE_{ij} + \delta_1 Age_{ij} \cdot SE_{ij} + \delta_2 Tenure_{ij} \cdot SE_{ij} + \delta_3 Age_{ij} \cdot Tenure_{ij} \cdot SE_{ij} + \sum \delta_k \boldsymbol{k}_{ij} \cdot SE_{ij} + \sum \beta_x \boldsymbol{x}_{ij} + u_{ij}. \quad (4)$$

Eqn. (4) models publication selection and also allows for a distribution of aid-effectiveness that varies between regions and over time. Some of the variables in $\boldsymbol{x}$ also allow for investigation of econometric misspecification. Hence, Eqn. (4) enables testing the effects of careers on publication selection bias, conditional upon controlling for heterogeneity and misspecification bias.

In addition to the moderators of our interest (age and tenure), we include in some estimation variants of Eqs. (3) and (4) in the $\boldsymbol{k}$ and $\boldsymbol{x}$ vectors, the moderator variables used in the original meta-analysis by Doucouliagos and Paldam (2015).

Before presenting our results, we briefly discuss what the evidence base concludes regarding aid effectiveness. This is important in terms of understanding the impact of incentives on which empirical results are reported to the public.[18]

As in Doucouliagos and Paldam (2015), we use meta-analysis to provide an overall estimate of the overall average effect of aid on growth. We follow Ioannidis et al. (2017) and use four alternate estimates of the mean effect of aid on growth. Table 2, Column (1) reports the UWLS meta-average.[19] This produces a small partial correlation, $r = 0.04$. Column (2) reports the FAT-PET, Eqn. (1). Corrected for publication bias, the estimated meta-average mean effect is effectively zero. Column (3) reports the UWLS using only the top 10% most precise estimates (Stanley et al., 2010). Column (4) reports the estimated effect from the single most precise estimate, Top 1. Column (5) reports an additional meta-average using only those estimates published in the top 5 economics journals.[20] The top panel uses the data with outliers and leverage points removed, while the second panel includes all estimates. The estimates reported in Columns (3) to (5) are reported merely for sensitivity analysis; there is no scientific reason to remove most of the data as these columns do.

Table 2 informs that the weighted average partial correlation lies between 0.01 and 0.05. This is the best estimate of the mean of the distribution of reported aid-effectiveness results. According to Cohen (1988), a correlation of 0.1 or less is small. We conclude that the mean effect of aid on growth is negligible and of no practical policy significance. If the underlying mean effect of aid on growth were large, it would be easier to detect in the data and easier to replicate prior findings. With a small to zero mean effect, it becomes harder to find a statistically significant positive effect of aid on growth. Consequently, more effort is needed among those researchers engaged in publication selection.

5. Results

We commence our results section with a visual depiction of the distribution of reported aid on growth correlations. This can give a first indication of publication selection bias which manifests as an asymmetric distribution of reported estimates (Stanley and Doucouliagos, 2012). Fig. 1 illustrates the data using funnel plots for tenured and non-tenured researchers. The top row of Fig. 1 compares all tenured to all non-tenured research results. The distribution of results for both groups are moderately right-skewed without any evident difference. The skewness measures are 0.91 and 1.06 for all tenured and all non-tenured researchers, respectively. Moreover, the difference between the weighted means of reported partial correlations is statistically insignificant (p-value = 0.56). As stated earlier, in the aid on growth literature theory allows for a wide set of results, from negative to positive effects on growth, and also no affect at all. This theoretical space 'allows' scholars to publish a variety of results. As Fig. 1 illustrates, younger non-tenured and older tenured researchers do indeed report a wide distribution of results. What is striking in Fig. 1, is the unbalanced reporting patterns of younger tenured and older non-tenured researchers, where statistically significant negative partial correlations do not appear. The weighted means of the partial correlation for these subgroups are the largest and they are significantly different from their counterparts in the same age group (p-value <0.01). While the group of younger and tenured researchers is too small for a valid comparison, as young researchers are rarely tenured, the groups of older researchers with or without tenure are both well represented.[21] Older non-tenured researchers tend to report mainly positive effects of aid on growth, whereas older tenured cohort report a wider distribution of estimates. In particular, note that among older non-tenured researchers, all the statistically significant results are for positive growth effects. This is the first indication that the effect of tenure on reporting patterns in the aid effectiveness literature may be influenced by researchers' age and tenure status. We turn to meta-regression analysis to formally investigate these initial observations.

Table 3 reports the results of meta-regressions of publication bias.[22] In Column (1) we report the FAT-PET model, Eqn. (1). These

[18] Doucouliagos and Paldam (2015) focus entirely on economic growth. For discussion and evidence on other aid impacts, such as education, health, and conflict, see Arvin and Lew (2015) and Doucouliagos (2019).

[19] Table 2 reports unconditional meta-averages. These are fairly representative of the evidence base unless heterogeneity (I^2) exceeds 80%. For the sake of completeness, in the appendix we report conditional averages (Table A14). These range from -0.06 to +0.11, with 95% confidence intervals that always include zero. So, the basic conclusion of aid ineffectiveness remains regardless of how the mean effect of aid effectiveness is calculated.

[20] In our data, Top 5 journals are *American Economic Review* and *Journal of Political Economy*.

[21] Young and tenured is rare in our data, with only four studies with five authors in this category. With evidence this thin, we do not attempt to draw any inferences for this group of researchers (Doucouliagos et al., 2018).

[22] The table reports only the results of the variables of interest; see the appendix Table A3 for the full set of results. We also report the same set of estimation results without outliers and leverage points removed in Table A4. These are quantitatively similar to the baseline results. Specifically, the *Age*Tenure* variable has a statistically significant negative coefficient and the magnitude of the coefficient is similar, being −0.098 and −0.090 in the general and reduced models with outliers included, respectively, compared to −0.106 and −0.096 with outliers removed. Appendix Figure A1 illustrates, within a funnel plot, the outliers and leverage points relative to all the other observations.

Table 2
Meta-average effect of aid on economic growth.

	UWLS	FAT-PET	Top 10% most precise	Top 1 estimate	Top 5 journals
	(1)	(2)	(3)	(4)	(5)
Without outliers and leverage points					
Meta-average	0.035 (4.84)***	0.006 (0.53)	0.024 (5.01)***	0.048 (2.76)**	0.028 (1.32)
N	1290	1290	129	1	30
K	133	133	18	1	4
I^2	66%	65%	69%	–	62%
Doucouliagos and Paldam (2015) data					
Meta-average	0.042 (4.52)***	0.028 (1.83)*	0.039 (3.39)***	0.048 (2.76)**	0.052 (1.03)
N	1361	1361	136	1	33
K	133	133	12	1	4
I^2	74%	74%	83%	–	80%

Notes: The dependent variable is the partial correlation between aid and growth. Except for Column (4), all estimations use unrestricted weighted least squares with inverse variance weights. Figures in round brackets are *t*-statistics, using standard errors adjusted for clustering of estimates within studies. N and K denote the number of estimates and studies, respectively. The first panel uses the data without outliers and leverage points. The

estimates suggest that there is statistically significant publication selection bias (the coefficient on *SE*) and that there is no effect of aid on growth after correcting for this bias (the constant). The coefficient on *SE* is positive, confirming that researchers in this literature are, on average, preferentially reporting larger effects of aid on growth. The magnitude of this bias (0.566) is however modest. Doucouliagos and Stanley (2013) show that there is 'modest' selectivity when the publication selection bias coefficient is less than 1.

Columns (2) to (6) report estimation results based on Eq. (3), where we investigate whether age and tenure influence the propensity to report statistically significant estimates. Column (2) reports the baseline results that only include a constant, post-PhD age, tenure, and the post-PhD age and tenure interaction. In Column (3) we extend the baseline model to include 39 moderator variables that account for specification and data differences that might co-determine publication selection bias. In Column (4) we report the general model with additional 11 journal and author specific moderator variables, relating to journal dummies and author characteristics.[23] To explore the robustness of these results, in Column (5) we report the results of a reduced model where statistically insignificant moderator variables are removed sequentially (as recommended by Stanley and Doucouliagos, 2012). As a further robustness check, in Column (6) we add to the general model from Column (4), 103 (co-)author fixed effects to control for any unobservable author specific factors.[24]

Post-PhD Age and *Tenure* have positive coefficients, and the age and tenure interaction is always negative and statistically significant. Tests for the joint tests of the age and tenure terms suggest that these terms are jointly statistically significant in explaining publication selection bias. It is important to note that the coefficient on *Tenure* does not estimate the marginal effect in the presence of the interaction term. Rather, it represents the effect of tenure when Post-Phd age is 0. We have few such observations and hence this coefficient has limited meaningful interpretation. Instead, it is necessary to calculate the marginal effect to assess the effect of tenure. Without loss of generality we discuss the results based on the general model, Column (4). These results suggest that publication selection bias is increasing with age for non-tenured researchers and decreasing for tenured researchers. We visualize these relationships in Fig. 2, plotting the predicted marginal effect of career age on the degree of publication selection bias using the coefficients from the meta-regression analysis (MRA) models. As Fig. 2 illustrates, publication bias is increasing with age for non-tenured researchers but falling for tenured researchers. Specifically, publication selection bias rises by 0.80 for research teams with non-tenured researchers 15 years from receiving their PhD (p-value = 0.022). On the contrary, for all tenured researchers of the same academic age, selection bias is predicted to rise less, by 0.60 and is only weakly significant (p-value = 0.076). Thus, with increasing academic age, publication bias gradually vanishes for tenured researchers, while it becomes more pronounced for non-tenured researchers. [25]

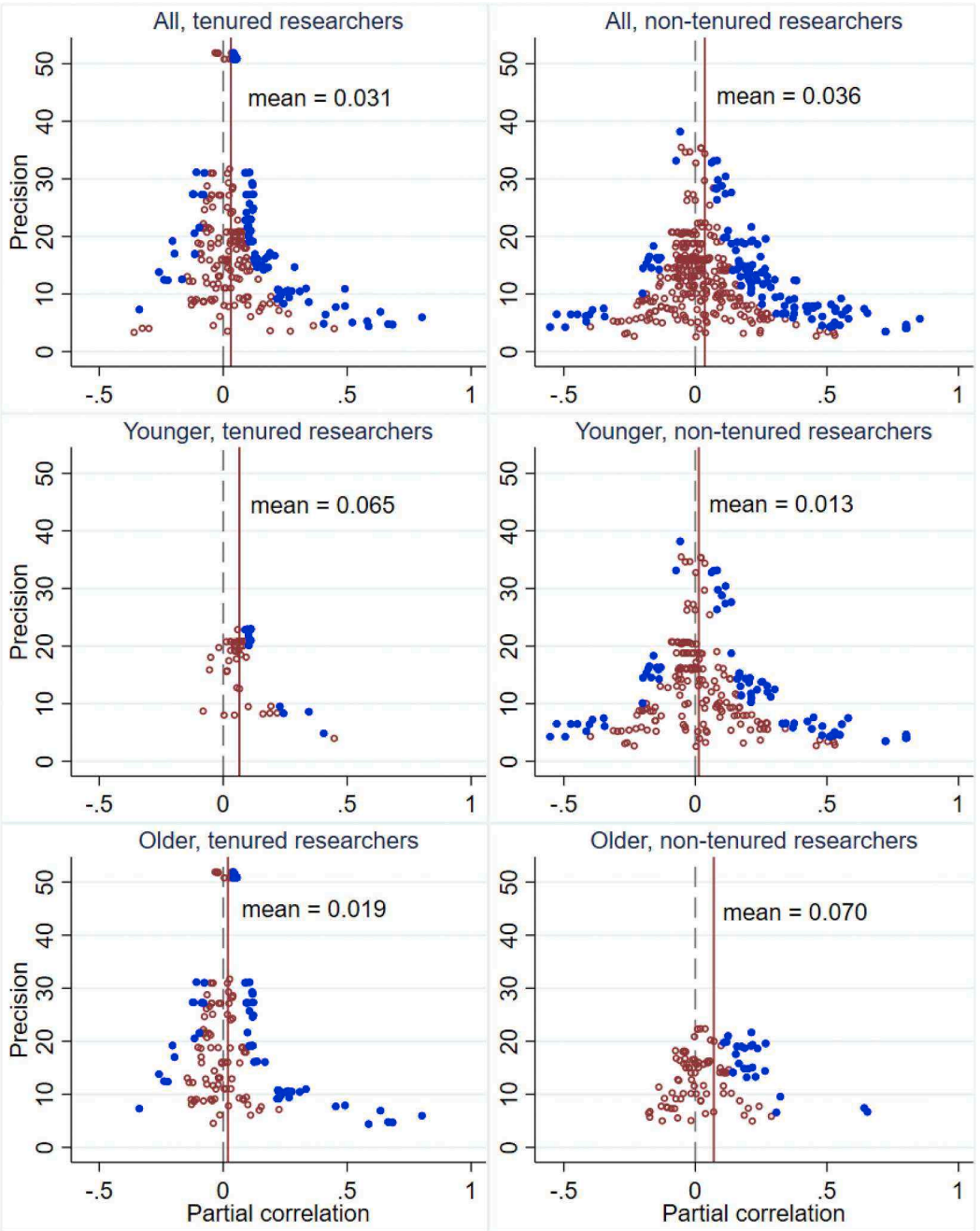
Nearly half (47%) of the reported research is produced by mixed teams of tenured and non-tenured researchers. We evaluate the extent of publication bias for these groups at the equal proportion of authors with and without tenure (0.5) and estimate that publication selection bias increases by about 0.7 regardless of the career age. This effect is statistically significant.

We conclude that in the aid effectiveness literature, selection bias increases with post-PhD age for all non-tenured researchers and that publication selection among all tenured research teams converges to zero. As a result, older researchers without tenure are the most biased and older tenured academics are the least biased. Younger non-tenured researchers are generally unbiased, too. This group

[23] Column (3) includes variables on the type of data used, the number of countries analyzed, measurement and econometric specification differences, and the estimator used. Column (4) additionally includes journal, influence, institutional and gender dummies. See the appendix for details and estimated coefficients.

[24] Where a study is co-authored, we construct *group* author effects, that is, we code as 1 if a study includes the same author even when the composition of the group changes. The parameters of interest in the model with the fixed effects are identified from variation within papers written by the same authors or author groups. Altogether, we have 27 such multiple-contributor groups.

[25] Adding these marginal effects to the constant gives predicted publication bias, holding all other factors constant. Publication selection bias gradually increases from 0.75 for younger to 2.1 for older research teams with non-tenured researchers. In contrast, for all tenured researchers, selection bias is steadily decreasing, from 2.1 for younger to 0 for older researchers.



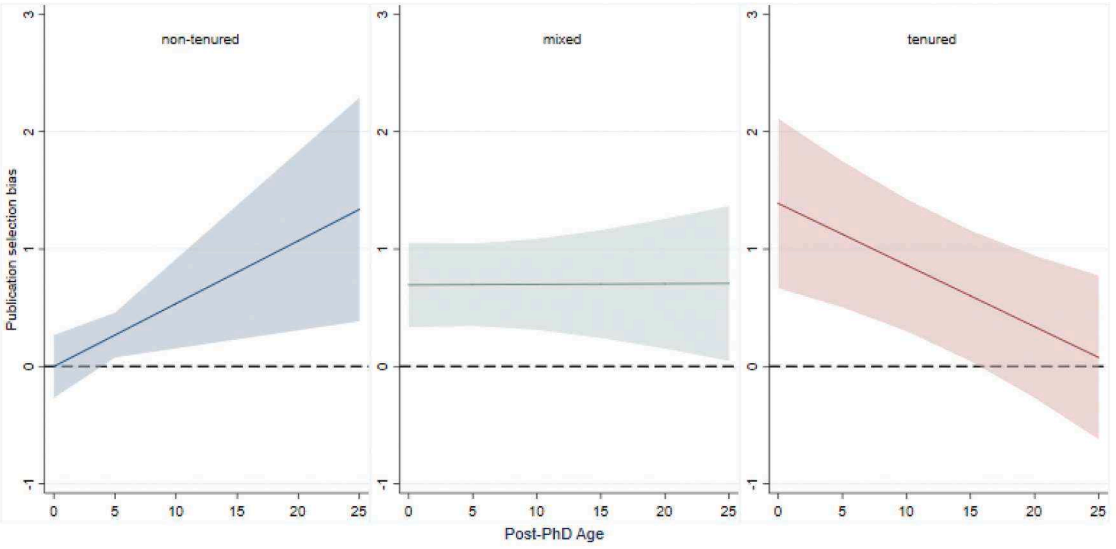
Notes: Continuous lines denote the weighted mean partial correlation for the underlying subgroup. Filled circles denote statistically significant correlations. Younger researchers are those whose post PhD age is not larger than 6, while older are those whose academic age is at least 15. Reported means are weighted by inverse variance.

Fig. 1. Funnel plots by tenure and academic age.

Table 3
Age, tenure, and publication selection bias in the aid effectiveness literature.

	FAT-PET	Baseline	Expanded	General	Reduced	With auth. FE
	(1)	(2)	(3)	(4)	(5)	(6)
Standard error	0.566 (2.07)**	0.402 (1.22)	0.489 (0.71)	0.760 (1.12)	1.280 (4.23)***	1.616 (1.38)
Post-PhD Age		0.006 (0.17)	0.032 (1.27)	0.054 (2.33)**	0.046 (1.81)*	0.208 (3.43)***
Tenure		1.267 (2.83)***	1.505 (3.73)***	1.389 (3.19)***	1.014 (2.77)***	1.772 (1.42)
Post-PhD Age*Tenure		−0.079 (−2.02)**	−0.098 (−2.85)***	−0.106 (−3.36)***	−0.096 (−2.89)***	−0.257 (−3.47)***
Constant	0.006 (0.53)	0.007 (0.60)	0.011 (0.68)	0.003 (0.20)	−0.005 (−0.41)	0.032 (1.33)
Specification and data variables	NO	NO	YES	YES	YES	YES
Journal and author characteristics	NO	NO	NO	YES	YES	YES
Joint test-age		5.120 [0.007]	5.144 [0.007]	5.673 [0.004]	4.803 [0.010]	6.528 [0.002]
Joint test-tenure		4.019 [0.020]	7.141 [0.001]	6.629 [0.002]	4.917 [0.009]	8.053 [0.001]
N	1290	1290	1273	1273	1273	1273
Adjusted R2	0.030	0.061	0.225	0.252	0.227	0.449

Notes: The dependent variable is the partial correlation between aid and growth. Table reports results of estimating the publication selection bias model, Eqn. (3): $r_{ij} = \beta_0 + \beta_1 SE_{ij} + \delta_1 Age_{ij} \cdot SE_{ij} + \delta_2 Tenure_{ij} \cdot SE_{ij} + \delta_3 Age_{ij} \cdot Tenure_{ij} \cdot SE_{ij} + \sum \delta_k \boldsymbol{k}_{ij} \cdot SE_{ij} + v_{ij}$. All estimations use unrestricted weighted least squares with inverse variance weights. Sample size varies due to incomplete information on country composition in some studies. Figures in round brackets are *t*-statistics, using standard errors adjusted for clustering of estimates within studies. *, **, *** denote statistical significance at the 10%, 5%, and 1% levels, respectively. Figures in square brackets are *p*-values of the underlying joint tests. See the appendix Table A3 for the full set of results.



Notes: Graphs trace the predicted marginal effect of age on publication bias separately for non-tenured, mixed (tenure share = 0.5), and tenured researchers, using the coefficients from Column (4), Table 3. Shaded regions map the 90% confidence intervals.

Fig. 2. Marginal effect of age on publication selection bias by tenure status.

is large and heterogeneous, and offers interesting insights into the evolution of different career paths. Overall, these results are consistent with the notion that tenure reduces the incentives to report biased results of aid effectiveness. Nevertheless, age and tenure explain only a small proportion of the selection process.[26]

Fig. 1 illustrates, regardless of the subgroup, a large heterogeneity in reported findings. This heterogeneity may be real, indicating that there is a distribution of aid on growth effects, e.g., due to regional and temporal differences in aid effectiveness.[27] Or, the

[26] The publication selection process is largely an unobservable process. Hence, we expect that these models will have low explanatory power as measured by R^2. Nevertheless, our general model explains one quarter of the variation in the reported correlations.

[27] In this case, the meta-average is the estimate of the mean value of this distribution and meta-regression moderator variables identify the distribution.

heterogeneity may be an artefact of the way in which research was conducted, e.g., through the choice of econometric specification, estimator, and datasets. Accordingly, we extend the selection model (Table 3) with the addition of variables that might reflect genuine and artificial heterogeneity in the evidence base. For example, an argument can be made that younger researchers use newer data, specifications, and estimators. Eqn. (4) takes these into account and investigates whether career concerns impact on reported regression coefficients after controlling for data, specification and estimator differences. These results are reported in Table 4. All columns include the full set of controls as per the general selection model reported in Column (4) of Table 3. In Column (1) of Table 4 we add 39 variables that reflect heterogeneity in the evidence base, due to region, time, data, specification, and estimation differences.[28] Multicollinearity is a major problem with such models. Accordingly, in columns (2) and (3) of Table 4, we also report two stripped down versions. First, we carry out a general-to-specific model reduction where the dependent variable is the partial correlation and all the other potential heterogeneity variables are included as independent variables. That is, we estimate:

$$r_{ij} = \beta_0 + \beta_1 SE_{ij} + \sum \beta_x \boldsymbol{x}_{ij} + u_{ij}, \tag{5}$$

where $\boldsymbol{x}$ is a vector of the 39 heterogeneity-controlling variables. The general-to-specific modelling strategy sequentially removes variables that are not statistically significant. This model reduction identifies 8 variables as statistically significant in explaining differences in reported partial correlations. We then add these additional 8 variables to expand the publication bias and heterogeneity model, Eqn. (4). Key results of this model are presented in Column (2) of Table 4. As an alternative way to expand our baseline model, Eqn. (4), we use Bayesian Model Averaging (BMA) which deals with model uncertainty. Specifically, we follow Masanjala and Papageorgiou (2008) and estimate heterogeneity models as in Eq. (5) with all possible combination of variables. We retain in all estimated models the constant, the standard error, the region and time dummies, i.e. all models allow for regional and time variation. Allowing for all combinations in the other variables, we estimate 4.3 billion models. A posterior mean/SD ratio greater than 1 suggests that a variable is robustly correlated with our dependent variable (the partial correlation between aid and growth) and should be included in our analysis of heterogeneity. A ratio of 1.3 is equivalent to a 90% confidence interval (see Masanjala and Papageorgiou, 2008). The BMA results are reported in the appendix (Table A16). Most of the regional and time dummies have a ratio greater than 1.3 and eight other variables appear to be robust determinants of heterogeneity in this literature.[29]

Column (3) reports the results of a publication selection model with the BMA identified heterogeneity variables. The results confirm the findings from Table 3. That is, conditional on heterogeneity in the evidence base, we still find that older tenured academics engage in less publication bias in this literature. Also, the inclusion of the heterogeneity variables adds little explanatory power to the MRA. Moreover the regional and temporal heterogeneity variables are jointly insignificant in these models, suggesting that there are neither regional nor temporal differences in aid-effectiveness after controlling for publication selection. It thus appears that the observed variation in reported estimates is predominantly characterized by publication selection rather than genuine underlying differences in aid-effectiveness. The marginal effects associated with the model that includes both bias and heterogeneity using the BMA model reduction are essentially the same as those illustrated in Fig. 2.

Recall from Fig. 1 that younger non-tenured researchers report a wide range of aid effectiveness results, from statistically significant adverse growth effects to statistically significant positive effects on growth. To explore whether reporting patterns are indicative of future career paths, we trace in Table 5 the subsequent type of employment of younger non-tenured researchers.[30] We focus on the 16 authors who reported negative and statistically significant correlations and the 27 authors who reported statistically significant positive aid on growth effects. Of the authors who reported negative effects, only one had a subsequent career with aid agencies. In contrast, one-third of non-tenured researchers who reported positive effects, subsequently had a career with aid agencies. The other notable difference is academia, with 37% of those reporting statistically significant aid effectiveness going into academia compared with 75% of those reporting negative growth effects of aid. These counts are suggestive about preferential career paths. However, we hasten to add that these patterns are based on small samples and are descriptive only. Nevertheless, they led us to investigate an apparently important channel of publication bias, namely authors' links with aid organizations.

6. Do links with aid organizations affect publication selection bias?

Our finding of large publication selection bias in the reported results of older non-tenured researchers deviates from the evidence of

[28] We do not include publication outlet and author details dummies as potential heterogeneity variables as these are publication selection variables.

[29] These are: whether authors use a sub-sample, whether the estimated model allows for interactions between aid and policy or aid and an institution, whether aid enters the estimation model in non-linear fashion, the number of years of data included in the sample, whether the estimate is based on a single country, how many years are involved in data averaging, and whether the estimated model controls for the size of the government. Only controlling for the size of government and nonlinear aid variable result in a higher reported aid effectiveness. The remaining six variables result in lower reported aid effectiveness; see the appendix for BMA results (Table A16). The general-to-specific model reduction led to a high overlap of the heterogeneity variables selected by BMA. The two differences are that the general-to-specific procedure selects controlling for political instability but not the number of years of data in the sample.

[30] One approach toward a firm academic career is to publish in a top journal. Thus, it may be the case that the reported results might be larger for higher ranked journals. To look at this issue we offer a small descriptive evidence in the appendix (Table A15 and the accompanying text). We conclude that non-tenured researchers report larger aid effectiveness results and this is true for both general interest journals and field journals. This holds even more so for top journals, however the counts are too small here, and we thus treat this evidence only as suggestive.

Table 4
Age, tenure, publication selection bias and heterogeneity in the aid effectiveness literature.

	All moderator variables	General-to-specific model reduction	BMA model reduction
	(1)	(2)	(3)
Standard error	0.569 (0.43)	0.247 (0.31)	0.572 (0.56)
Post-PhD Age	0.038 (1.62)	0.058 (2.63)***	0.051 (2.30)**
Tenure	1.252 (2.93)***	1.518 (3.47)***	1.495 (3.39)***
Post-PhD Age*Tenure	−0.082 (−2.44)**	−0.112 (−3.61)***	−0.110 (−3.44)***
Constant	0.069 (0.45)	0.036 (1.91)*	0.023 (0.27)
Joint test-age	3.036 [0.051]	6.539 [0.002]	6.020 [0.003]
Joint test-tenure	4.594 [0.012]	7.738 [0.001]	7.022 [0.001]
Joint test-regional and temporal dummies	1.323 [0.244]		0.868 [0.534]
N	1273	1273	1273
Adjusted R2	0.326	0.277	0.267

Notes: The dependent variable is the partial correlation between aid and growth. Table reports results of estimating Eqn. (4): $r_{ij} = \beta_0 + \beta_1 SE_{ij} + \delta_1 Age_{ij} \cdot SE_{ij} + \delta_2 Tenure_{ij} \cdot SE_{ij} + \delta_3 Age_{ij} \cdot Tenure_{ij} \cdot SE_{ij} + \sum \delta_k \boldsymbol{k}_{ij} \cdot SE_{ij} + \sum \beta_x \boldsymbol{x}_{ij} + u_{ij}$. All columns include the full set of publication selection variables as per Table 3, Column (4) with the addition of variables that reflect heterogeneity. Column (1) includes 39 variables for heterogeneity. Column (2) includes 8 variables that are statistically significant in a general-to-specific modelling strategy. The regional and temporal heterogeneity variables dropped out of the model, thus the test does not apply. Column (3) includes 15 variables that are identified by Bayesian Model Averaging. All models include specification and data variables, journal and author characteristics in $\boldsymbol{k}_{ij}$, as well as heterogeneity variables in $\boldsymbol{x}_{ij}$. Figures in round brackets are *t*-statistics, using standard errors adjusted for clustering of estimates within studies. *, **, *** denote statistical significance at the 10%, 5%, and 1% levels, respectively. Figures in square brackets are *p*-values of the underlying joint tests. See the appendix Table A5 for the full set of results.

Table 5
Career paths of younger non-tenured researchers.

	Number of young non-tenured researchers	Academic career	Career with aid agency	Private sector	Public sector	Other and/or unknown	From developing countries
Reported with	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Statistically significant negative effects	16	12 (75%)	1 (6.3%)	2 (12.5%)	–	1 (6.3%)	2 (12.5%)
Statistically significant positive effects	27	10 (37%)	9 (33.3%)	3 (11.1%)	2 (7.4%)	4 (14.8%)	8 (29.6%)

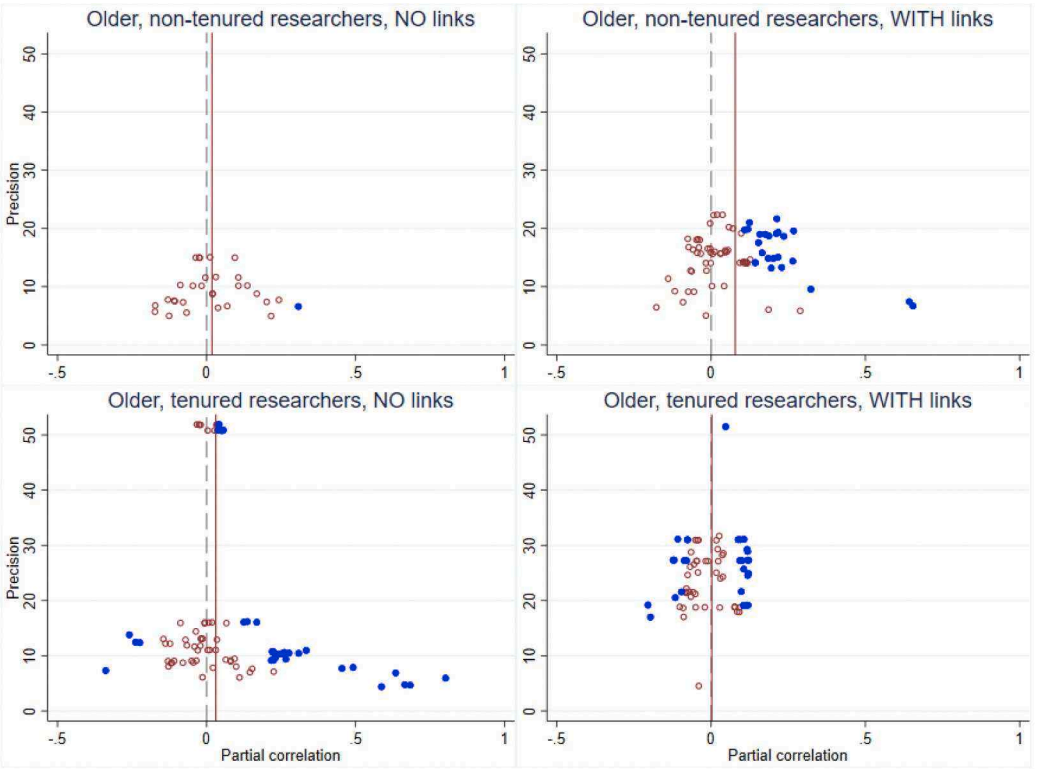
Notes: Cells report principal career path after publishing aid-effectiveness results. Column (3) includes researchers with dual career paths; employment with academia and aid agencies.

Brodeur et al. (2016). One possible explanation of this difference is that in the field of aid effectiveness these authors might be differentially predisposed to support aid, or otherwise preferentially prefer to report results that show aid effectiveness. One specific feature of the aid effectiveness literature is that some authors had or still have direct links with aid funding agencies.[31] For example, several authors have worked, or still work for the World Bank, while others were or remain affiliated with other aid funding agencies. A career at an aid organization is prevalent among older (more than 10 years after PhD) and non-tenured researchers. More than 70% researchers of this subgroup were at the time of submission affiliated with an aid organization. To dig deeper into the careers of older non-tenured researchers, we construct an aid link dummy and investigate whether the links with aid agencies might be driving the above findings with regard to age and tenure status.[32] Table 6 compares the weighted means of partial correlations of reported aid effectiveness of authors with and without links to aid agencies. Older non-tenured researchers (i.e. at least 15 years post-PhD) with aid agency links report larger positive correlations ($r = 0.078$) compared to their non-tenured and tenured counterparts without links ($r = 0.018$ and $r = 0.031$, respectively). The difference in average reported correlations is largest compared to older tenured researchers with aid industry links ($r = 0.002$). Fig. 3 extends some of these findings by illustrating the asymmetries in the distribution of the reported estimates by subgroups under consideration. Here too, the only group which stands out in terms of funnel asymmetry, is the group of older non-tenured researchers with aid industry links. On the contrary, tenured researchers with aid-industry links seem to report results in a more balanced way, with a mean partial correlation close to zero, which is also close to the meta-mean of this literature. These descriptive findings suggest that an aid industry employment might be a plausible explanation for the higher and

[31] Fuchs and Richert (2018) show that officeholders of development ministries, with prior professional experience in development cooperation, provide higher-quality development assistance. However, we are unable to link this experience with the quality of reporting on aid effectiveness.
[32] We construct an aid links dummy variable that covers any affiliation, past or current, with any of the following institutions: Asian Development Bank, African Development Bank, Inter-American Development Bank, IMF, DFID, USAID, AusAID, UNU-WIDER, UNICEF, OECD, and the World Bank.

Table 6
Links with aid agencies and the reported effects of aid on growth.

	Number of estimates	Number of authors	Mean partial correlation	Differences in means
	(1)	(2)	(3)	(4)
Older non-tenured, with links	77	7	0.078	
Older tenured, with links	69	10	0.002	0.077 [0.000]
Older non-tenured, no links	30	1	0.018	0.061 [0.004]
Older tenured, no links	93	8	0.031	0.048 [0.001]



Notes: Continuous lines denote the mean partial correlation for the subgroups of older researchers by tenure and aid industry links. Filled circles denote statistically significant correlations. Older refers to researchers 15 or more years post-PhD.

Fig. 3. Distribution of the reported estimates of older researchers by tenure and aid link.

asymmetric distributed correlations reported by non-tenured older researchers. Moreover, tenured researchers also report estimates that have higher precision, on average. This group of researchers have served as consultants or interns for aid agencies. In contrast, the older non-tenured group of researchers with aid links are actively working for aid agencies. Hence, it appears from Table 6 and Fig. 3 that having links with an aid agency *per se, is not the principal* driver of publication selection bias. Instead, the underlying story relates to the interaction between non-tenure and aid links.

To investigate this more formally, we re-estimate the publication selection bias model (Eqn. (4)) including *Aid Link*, a binary variable taking the value of 1 if an author has links with aid funding body and 0 otherwise, and interact this with age and tenure.[33] The

[33] Due to multicollinearity between the various interactions and the small number of cells in some of the groupings, most of the coefficients are statistically insignificant when all interactions are included in the meta-regression; these results are reported in the appendix, Table A17. The marginal effects from this model are similar, however the confidence intervals are wider.

Table 7
Publication selection bias and aid links.

	Publication selection bias	Publication selection bias and heterogeneity
	(1)	(2)
Standard error	0.623 (0.93)	0.720 (0.70)
Post-PhD Age	0.041 (1.71)*	0.042 (1.87)*
Tenure	1.835 (4.23)***	2.093 (4.91)***
Aid Link	−0.058 (−0.16)	−0.179 (−0.54)
Post-PhD Age*Tenure	−0.090 (−2.89)***	−0.101 (−3.41)***
Post-PhD Age*Tenure*Aid Link	−0.058 (−1.84)*	−0.078 (−2.54)**
Constant	−0.007 (−0.42)	−0.008 (−0.09)
Joint test-age	5.275 [0.002]	8.656 [0.000]
Joint test-tenure	6.635 [0.000]	9.330 [0.000]
Joint test-aid	3.452 [0.035]	7.100 [0.001]
N	1273	1273
Adjusted R2	0.259	0.285

Notes: The dependent variable is the partial correlation between aid and growth. Column (1) includes the full set of publication selection variables (as Table 3, Column (4)). In the Column (2) we also add 15 variables that reflect heterogeneity (same as we added in Table 4, Column (3)). Figures in round brackets are *t*-statistics, using standard errors adjusted for clustering of estimates within studies. *, **, *** denote statistical significance at the 10%, 5%, and 1% levels, respectively. Figures in square brackets are *p*-values of the underlying joint tests. See the appendix Table A6 for the full set of results.

coefficients are reported in Table 7 and Fig. 4 illustrates the marginal effects (using results from Column (2)). Publication selection bias is rising for non-tenured researchers with aid links.[34] In contrast, publication selection bias is falling for older, tenured researchers with and without aid industry links. Aid links make a noticeable difference in publication selection between tenured and non-tenured, i.e. publication selection is a function of the interaction of aid links with tenure status. One explanation for the results for non-tenured researchers with aid links is that they are more likely to have been continuously employed by the aid industry. Perhaps this affects the aid effectiveness results they report, on average. Researchers are human and have preferences and beliefs. Some researchers may believe that aid is effective in generating growth, while others may believe that aid is not effective. These preferences and beliefs may affect the type of results reported (Paldam, 2018). There is also emerging evidence that researchers may be affected by the views of their employer. For example, in a recent study, Fabo et al. (2020) find that researchers employed by central banks report larger macroeconomic effects of quantitative easing. One explanation these authors offer is that central banks are in favor of this policy. Nevertheless, we caution that the results with regard to aid links are only suggestive as they are based on a small number of observations and require additional investigations into the underlying channels.

7. Robustness and further analysis

The above results confirm that careers influence the selective reporting of econometric results in this literature. One way through which publication selection process might occur is through reporting larger aid effectiveness effects. We corroborate this with two auxiliary meta-regressions. First, we investigate whether career concerns influence the magnitude of aid-effectiveness, estimating the following meta-regression model:

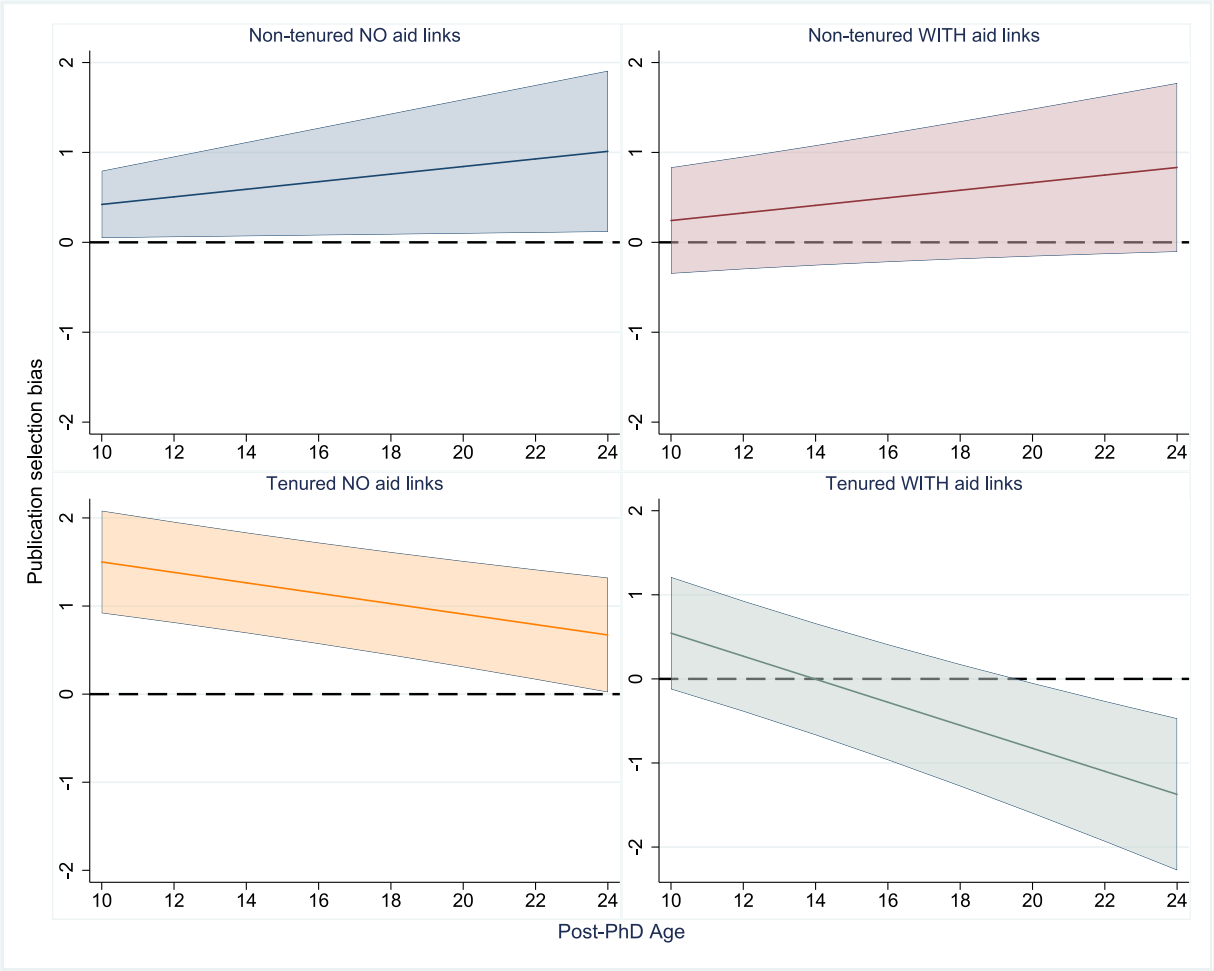
$$r_{ij} = \beta_0 + \beta_1 SE_{ij} + \beta_2 Age_{ij} + \beta_3 Tenure_{ij} + \beta_4 Age_{ij} \cdot Tenure_{ij} + \sum \beta_x \boldsymbol{x}_{ij} + u_{ij}. \quad (6)$$

In particular, in Eqn. (6), we test whether *Age* and *Tenure* affect the size of the reported partial correlation, rather than the magnitude of publication selection bias. There is no genuine reason why the reported aid effectiveness results should vary by researchers' age and tenure status conditional on data, modelling, and estimation differences between studies. In a literature that is free of bias, we should find age and tenure to be statistically insignificant in moderating the *magnitude* of estimates of aid effectiveness, conditional on data, specification, and estimation differences (i.e., $\beta_2 = \beta_3 = \beta_4 = 0$).

These results are reported in Table 8, in three variants in columns (1) to (3), and all show that tenure and post-PhD age impact the magnitude of the reported partial correlation.[35] The coefficients of interest have a similar sign to the results of Tables 3 and 4. *Post-PhD Age* and *Tenure* have positive coefficients, whilst the interaction term has a negative coefficient. The MRA coefficients can again be used to evaluate the impact of age for tenured and non-tenured researchers. Using the coefficients from the general model, Column (1), we find that the average partial correlation reported by older (15 years post-PhD) non-tenured researchers is about 0.06, conditional on a

[34] The group of older non-tenured researchers without aid industry links is very small (upper left panel in Figs. 3 and 4). In our data there are just two studies stemming from older non-tenured researchers without an aid links. The remaining three career alternatives are far more frequent, each representing estimates from 7 to 8 distinct studies.

[35] Authors can make methodological errors or they may have inadequate data for the tasks at hand. These can lead to specification or omitted variable bias. Our meta-regressions condition estimates of age and tenure on these other variables/factors.



Notes: Graphs trace the predicted marginal effect of age and tenure on publication bias for researchers with and without aid links, using the coefficients from Column (2), Table 7. Shaded regions map the 90% confidence intervals.

Fig. 4. Marginal effect of age on publication selection bias by tenure and aid agency links.

range of factors reflecting publication bias and heterogeneity. Considering that the meta-average is about 0.035 (recall Table 2), this is a large effect. In contrast, the average partial correlation reported by older tenured researchers is about 0.028.[36,37]

Another way to validate whether reported empirical effects are larger than they truly are, is to investigate whether researchers are engaged in research exaggeration, coined as research inflation.[38] Following Ioannidis et al. (2017) we calculate research inflation (*RI*) as:

$$RI_{ij} = \frac{r_{ij} - UWLS}{UWLS},$$

[36] These correlations are conditional on a range of factors reflecting publication bias and heterogeneity and hence differ to the raw averages presented in Fig. 1.

[37] As an additional test of whether the pursuit of tenure leads to larger selection bias and larger reported aid on growth effects, we calculate the difference between sole authored and co-authored studies. The average correlation for articles by sole authored non-tenured researchers is $r = 0.109$ compared to $r = 0.022$ for co-authored studies.

[38] Ideally, we would analyze longitudinal data and compare the estimates reported by authors before and after tenure. However, in our data, we have only four instances where the same team of authors changed tenure status and only one of these involved a single author for which we can compare before and after tenure. Hence, we are not able to explore such changes and resort to looking at a cross-sectional data. For the four cases we can compare before and after, we find that absolute degree of research exaggeration is much larger before tenure (141%) compared to tenure (38%).

Table 8
Age, tenure, heterogeneity, and research inflation in the aid effectiveness literature.

	Heterogeneity			Research inflation		
	General	Reduced	General with author FE	General	Reduced	General with author FE
	(1)	(2)	(3)	(4)	(5)	(6)
Standard error	1.062 (2.96)***	0.824 (3.83)***	0.753 (1.45)			
Post-PhD Age	0.004 (2.11)**	0.004 (3.16)***	0.013 (2.45)**	0.115 (2.18)**	0.139 (3.32)***	0.358 (2.33)**
Tenure	0.073 (2.33)**	0.089 (3.84)***	0.208 (1.93)*	2.268 (2.44)**	3.052 (4.06)***	7.606 (2.66)***
Post-PhD Age*Tenure	−0.007 (−2.85)***	−0.007 (−4.28)***	−0.019 (−2.66)***	−0.193 (−2.83)***	−0.241 (−4.98)***	−0.585 (−2.97)***
Constant	−0.013 (−0.11)	−0.027 (−1.45)	−0.035 (−0.25)	3.620 (1.54)	−0.044 (−0.05)	1.561 (0.52)
Joint test-age	4.056 [0.020]	9.416 [0.000]	3.575 [0.031]	4.003 [0.021]	12.465 [0.000]	4.802 [0.010]
Joint test-tenure	4.341 [0.015]	10.015 [0.000]	3.874 [0.023]	4.458 [0.013]	13.037 [0.000]	4.397 [0.014]
N	1273	1290	1273	1273	1290	1273
Adjusted R2	0.223	0.184	0.460	0.206	0.163	0.456

Notes: Columns (1)–(3) report results of estimating Eqn. (6): $r_{ij} = \beta_0 + \beta_1 SE_{ij} + \beta_2 Age_{ij} + \beta_3 Tenure_{ij} + \beta_4 Age_{ij} \cdot Tenure_{ij} + \sum \beta_x x_{ij} + u_{ij}$. Columns (4)–(6) report results of estimating: $RI_{ij} = \beta_0 + \beta_2 Age_{ij} + \beta_3 Tenure_{ij} + \beta_4 Age_{ij} \cdot Tenure_{ij} + \sum \beta_x x_{ij} + u_{ij}$. All models include in x_{ij} specification and data variables, as well as journal and author characteristics. Figures in round brackets are *t*-statistics, using standard errors adjusted for clustering of estimates within studies. *, **, *** denote statistical significance at the 10%, 5%, and 1% levels, respectively. Figures in square brackets are *p*-values of the underlying joint tests. See the appendix Table A7 for the full set of results.

where UWLS denotes the unrestricted weighted least squares estimate. These results are reported in Table 8, again in three variants in Columns (4) to (6). The coefficients imply that a young non-tenured researcher will, on average, exaggerate their research findings by 58%, whilst an older non-tenured researcher will on average exaggerate research findings by 173%.

In the appendix we present results of six variants of Table 3. In the first two variants, we look at selection models where age and tenure enter selection models separately (Tables A8 and A9). Neither tenure nor post-PhD age are significant in this case. This is to be expected, given the non-linear nature of the interrelationship between these two career characteristics. The next variants employ two alternatives of post-PhD age, at first replacing average age with maximum age and second, replacing average age with the minimum age (Tables A10 and A11). This only impacts estimates from multi-authored studies. We find that the effect of age on publication bias is stronger if applying minimum age, and weaker for the maximum age, both vis-à-vis the baseline. One way to interpret this is a subtle evidence of larger flexibility towards bias so that the more junior researcher gets published. In the last two variants, we test two alternative measures of tenure, namely a dummy taking the value of 1 if at least one researcher has tenure (weaker variant; Table A12); and second a dummy taking value of 1 if all researchers are tenured (stronger variant; Table A13). This change impacts only studies with tenured and non-tenured researchers, i.e. only a subset of multi-authored studies. There is no apparent change in the results when applying the stronger variant, while the effect of tenure is somewhat smaller and simultaneously the effect of age is somewhat larger when we apply the weaker variant of tenure measure. Using alternative measures for age or tenure hardly changes the size and significance of the interaction term between age and tenure. The measure of fit in these models is comparable to that of the baseline model.

8. Conclusions

In this article we investigate whether career incentives affect researchers' publication decisions and the type of results communicated in the aid effectiveness literature. There is wide heterogeneity in reported results of the effectiveness of aid. Our meta-regression analysis investigates whether some researchers exaggerate research findings and preferentially report statistically significant results.

Our main finding is that, free from some of the pressures faced by non-tenured researchers, older tenured authors appear to report estimates that are closer to the mean value of a near zero effect of aid on growth. In contrast, we find that among non-tenured researchers, publication selection bias increases with post-PhD age. On average, older non-tenured researchers inflate research findings on aid effectiveness and publication selection bias is highest amongst this group. We investigate links with aid agencies as one plausible explanation for these findings. While the evidence base is thin here, we conclude from the available data that aid links *per se* are not notable drivers of publication selection bias. Rather, it is career paths that drive the differences. Specifically, there is little to no bias amongst older tenured academics with aid industry links. However, aid links appear to be important when they interact with non-tenured researchers; older non-tenured researchers with aid links appear to be the most biased, on average.

However, we also find that younger non-tenured researchers report results that are relatively free of publication selection bias. This finding is consistent with the meta-meta-analysis by Doucouliagos and Stanley (2013) who find that in research areas where there is strong theoretical disagreement, researchers have greater opportunity to report a wider range of empirical results. In the case of the aid effectiveness literature, the underlying theory provides conflicting predictions, thereby enabling researchers to report a range of empirical results. This provides space for younger non-tenured researchers to publish divergent results. Clearly, career paths alone do not fully explain the observed patterns in reporting, and we cannot rule out the possibility that there might be other factors that also drive the patterns in the data beyond the career concerns and incentives. Nevertheless, our findings suggest that career incentives influence the type of results reported. These results also speak to an important debate regarding the nature of economics research. Levy

and Peart (2016) note that James Buchanan saw economists as 'truth-seekers', whereas to Gordon Tullock, economics was not a science but a "racket". Our findings suggest that a range of forces are at play, at least in the aid effectiveness literature. While some researchers exaggerate their research findings, others do not. Our results highlight the effects of academic incentives, and also the role of journal policies, such as encouraging publication of studies that do not reject the null to offset such negative consequences (see, for example, Blanco-Perez and Brodeur, 2020).

Finally, our study should definitely not rise suspicion towards research of particular groups of researchers. There is a lot of excellent and informative research produced by any group of scholars; all research should be considered to inform policy. With research synthesis tools such as meta-analysis, it is possible to make sense of the conflicting evidence base and to understand the process by which the market for ideas functions.

The analysis presented here can be extended in at least three directions. First, we have looked at only one case study and thus cannot claim that the results generalize; further research is needed to explore whether our findings replicate in other research areas. Second, we investigated only one aspect of researchers' publications; aid effectiveness research. Most authors publish across a range of research areas and will thus be maximizing their tenure and career potential across a range of research issues. Assessing full publication histories with meta-analyses across several research areas would shed additional light on these matters. Third, we concentrated on only one objective, tenure. Academic and non-academic researchers have other objectives, e.g., career progression, citations, esteem, travel budgets, and access to PhD and post-doctoral fellows, as well as intellectual curiosity. The effects of these other objectives on research are potentially important avenues for future research.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

Data and codes underlying to this study can be found at Mendeley Data repository.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.ejpoleco.2021.102056.

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Online Appendix

Bias and Careers: Evidence from the Aid Effectiveness Literature

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June 28, 2021

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Table A1

Descriptive statistics of the original data from Doucouliagos and Paldam (2015) including and excluding outliers and leverage points

Variable	Description	N	Mean	Std. Dev.
Including outliers and leverage points				
Dependent var.	The partial correlation of aid and economic growth	1,361	0.063	0.192
SEALL	Standard error of the estimate	1,361	0.093	0.059
Region and time				
Africa	BD for countries from Africa included	1,345	0.877	0.328
Asia	BD if countries from Asia included	1,344	0.856	0.351
Latin	BD if countries from Latin America included	1,344	0.801	0.400
Y1960s	BD if data for the 1960s[a]	1,361	0.304	0.460
Y1970s	BD if data for the 1970s	1,361	0.796	0.403
Y1980s	BD if data for the 1980s	1,361	0.877	0.329
Y1990s	BD if data for the 1990s	1,361	0.799	0.401
Y2000	BD if data for the 2000s	1,361	0.251	0.434
Data				
Panel	BD for use of panel data	1,361	0.747	0.435
SingleCo	BD if data from a single country	1,361	0.042	0.200
LowIncome	BD if data relate to a sub-sample of low income countries	1,361	0.108	0.311
SubSample	BD if data relate to a sub-sample of countries	1,361	0.292	0.455
EDA	BD for use of EDA data	1,361	0.271	0.445
Outliers	BD if outliers were removed from the sample	1,361	0.153	0.360
NrCountries	Number of countries included in the sample	1,359	58.927	37.130
NrYears	Number of years covered in the analysis	1,361	25.943	9.807
Average	Number of years involved in data averaging	1,361	7.127	7.594
Specification				
Nonlinear	BD for aid squared added	1,361	0.162	0.368
Aid*Policy	BD for aid interacted with policy	1,361	0.245	0.430
Aid*Institut	BD for other aid interacted terms (mainly institutions)	1,361	0.046	0.210
Capital	BD for control for domestic savings or investment	1,361	0.292	0.455
FDI	BD for control for foreign capital inflows (other than aid)	1,361	0.152	0.359
GapModel	BD for two-gap model	1,361	0.126	0.332
Theory	BD for paper developing a theory	1,361	0.209	0.407
LagUsed	BD for use of lagged value of aid	1,361	0.248	0.432
Inflation	BD for control for inflation	1,361	0.291	0.454
Instability	BD for control for political instability	1,361	0.422	0.494
Fiscal	BD for control for fiscal stance	1,361	0.190	0.392
GovSize	BD for control for size of government	1,361	0.132	0.339
FinDev	BD for control for financial development	1,361	0.407	0.491
Ethno	BD for control for ethnographic fractionalization	1,361	0.370	0.483
Region	BD for regional dummies	1,361	0.441	0.497
HumCap	BD for control for human capital	1,361	0.161	0.368
Open	BD for control for trade openness	1,361	0.357	0.479
PopSize	BD for control for population size	1,361	0.184	0.387
GDPLev	BD for control for per capita income	1,361	0.691	0.462
Policies	BD for control for policies	1,361	0.302	0.459

Variable	Description	N	Mean	Std. Dev.
Estimation				
OLS	BD for use of OLS	1,361	0.608	0.488
Growth&Aid	BD eqns. system with both a growth and an aid eqn.	1,361	0.043	0.202
Growth&Savs	BD eqns. system with both a growth and a savings eqn.	1,361	0.029	0.169
Publication outlet				
WorkPap	BD for unpublished paper	1,361	0.249	0.433
Cato	BD for Cato Journal	1,361	0.012	0.111
JDS	BD for Journal of Development Studies	1,361	0.047	0.212
JID	BD for Journal of International Development	1,361	0.065	0.246
EDCC	BD for Economic Development and Cultural Change	1,361	0.036	0.186
AER	BD for American Economic Review	1,361	0.019	0.137
AE	BD for Applied Economics	1,361	0.040	0.197
Author details				
Female	BD if at least one of the authors is female	1,361	0.206	0.404
Danida	BD for author(s) affiliated with the Danida group	1,361	0.047	0.212
WorldBank	BD for author(s) affiliated with the World Bank	1,361	0.067	0.250
Influence	BD for authors acknowledge feedback[b]	1,361	0.269	0.444
Excluding outliers and leverage points				
Dependent var.	The partial correlation of aid and economic growth	1,290	0.063	0.185
SEALL	Standard error of the estimate	1,290	0.096	0.059
Region and time				
Africa	BD for countries from Africa included	1,274	0.873	0.333
Asia	BD if countries from Asia included	1,273	0.851	0.356
Latin	BD if countries from Latin America included	1,273	0.793	0.406
Y1960s	BD if data for the 1960s[a]	1,290	0.285	0.452
Y1970s	BD if data for the 1970s	1,290	0.793	0.405
Y1980s	BD if data for the 1980s	1,290	0.877	0.329
Y1990s	BD if data for the 1990s	1,290	0.794	0.405
Y2000	BD if data for the 2000s	1,290	0.244	0.430
Data				
Panel	BD for use of panel data	1,290	0.739	0.439
SingleCo	BD if data from a single country	1,290	0.042	0.200
LowIncome	BD if data relate to a sub-sample of low income countries	1,290	0.109	0.312
SubSample	BD if data relate to a sub-sample of countries	1,290	0.297	0.457
EDA	BD for use of EDA data	1,290	0.281	0.450
Outliers	BD if outliers were removed from the sample	1,290	0.158	0.365
NrCountries	Number of countries included in the sample	1,288	57.873	36.246
NrYears	Number of years covered in the analysis	1,290	25.501	9.655
Average	Number of years involved in data averaging	1,290	7.305	7.708
Specification				
Nonlinear	BD for aid squared added	1,290	0.167	0.374
Aid*Policy	BD for aid interacted with policy	1,290	0.257	0.437
Aid*Institut	BD for other aid interacted terms (mainly institutions)	1,290	0.049	0.216
Capital	BD for control for domestic savings or investment	1,290	0.294	0.456
FDI	BD for control for foreign capital inflows (other than aid)	1,290	0.156	0.363
GapModel	BD for two-gap model	1,290	0.127	0.333
Theory	BD for paper developing a theory	1,290	0.210	0.408
LagUsed	BD for use of lagged value of aid	1,290	0.245	0.430

Variable	Description	N	Mean	Std. Dev.
Inflation	BD for control for inflation	1,290	0.298	0.458
Instability	BD for control for political instability	1,290	0.438	0.496
Fiscal	BD for control for fiscal stance	1,290	0.198	0.399
GovSize	BD for control for size of government	1,290	0.130	0.337
FinDev	BD for control for financial development	1,290	0.423	0.494
Ethno	BD for control for ethnographic fractionalization	1,290	0.388	0.488
Region	BD for regional dummies	1,290	0.458	0.498
HumCap	BD for control for human capital	1,290	0.166	0.372
Open	BD for control for trade openness	1,290	0.372	0.484
PopSize	BD for control for population size	1,290	0.183	0.387
GDPLev	BD for control for per capita income	1,290	0.706	0.456
Policies	BD for control for policies	1,290	0.316	0.465
Estimation				
OLS	BD for use of OLS	1,290	0.606	0.489
Growth&Aid	BD eqns. system with both a growth and an aid eqn.	1,290	0.045	0.207
Growth&Savs	BD eqns. system with both a growth and a savings eqn.	1,290	0.030	0.171
Publication outlet				
WorkPap	BD for unpublished paper	1,290	0.247	0.432
Cato	BD for Cato Journal	1,290	0.013	0.114
JDS	BD for Journal of Development Studies	1,290	0.050	0.217
JID	BD for Journal of International Development	1,290	0.053	0.225
EDCC	BD for Economic Development and Cultural Change	1,290	0.036	0.187
AER	BD for American Economic Review	1,290	0.020	0.141
AE	BD for Applied Economics	1,290	0.042	0.200
Author details				
Female	BD if at least one of the authors is female	1,290	0.215	0.411
Danida	BD for author(s) affiliated with the Danida group	1,290	0.049	0.216
WorldBank	BD for author(s) affiliated with the World Bank	1,290	0.068	0.252
Influence	BD for authors acknowledge feedback[b]	1,290	0.272	0.445

Notes: BD: binary dummy that is 1 if condition holds, otherwise 0; [a] *Y1960s* is reference category in the general models; [b] from other authors in the aid effectiveness literature.

Table A2

Lowest academic ranks which are tenured by country

Country	First tenured rank
Australia	lecturer, senior lecturer (after 2000)
Austria	full professor
Belgium	docent after 3 years (Flemish), lecturer (French)
Canada	associate professor
Chile	associate professor
China	associate professor (6-8 years of assist. prof)
Cyprus	associate professor
Denmark	lektor/associate professor
Finland	lecturer (lehtori)
France	maître de conférences
Germany	full professor
Greece	assistant professor after 3 years
Hong Kong	associate professor
Ireland	permanent lecturer
Israel	senior lecturer
Italy	ricercatore (until 2005), professore associato (after 2005)
Japan	Lecturer/assist prof (70s-90s, as of 2000s it depends)
Korea	tenured position are at each level, for sure tenured are professors
Netherland	after 6 years of assist prof
New Zealand	lecturer
Norway	Førsteamanuensis (=associate professor)
Singapore	associate professor
Spain	Professor B
Switzerland	associate professor
Sweden	Adjunkt or Lecturer
UK	lecturer
USA	associate professor

Notes: The basic source for this table is the website of the European University Institute in Florence: www.eui.eu/ProgrammesAndFellowships/AcademicCareersObservatory/AcademicCareersbyCountry, crosschecked via personal communications with researchers having internal knowledge of the academic career systems in the respective countries.

Table A3

Age and tenure in **publication selection models** (Full Table 3 of the main text)

	FAT-PET	Baseline	Expanded	General	Reduced	With auth. FE
	(1)	(2)	(3)	(4)	(5)	(6)
Standard error	0.566	0.402	0.489	0.760	1.280	1.616
	(2.07)**	(1.22)	(0.71)	(1.12)	(4.23)***	(1.38)
Post-PhD Age		0.006	0.032	0.054	0.046	0.208
		(0.17)	(1.27)	(2.33)**	(1.81)*	(3.43)***
Tenure		1.267	1.505	1.389	1.014	1.772
		(2.83)***	(3.73)***	(3.19)***	(2.77)***	(1.42)
Post-PhD		-0.079	-0.098	-0.106	-0.096	-0.257
Age*Tenure		(-2.02)**	(-2.85)***	(-3.36)***	(-2.89)***	(-3.47)***
Africa			-0.067	0.042		-0.338
			(-0.21)	(0.13)		(-0.64)
Asia			-0.445	-0.567	-0.515	0.038
			(-1.41)	(-1.79)*	(-1.92)*	(0.05)
Latin			0.141	0.281		0.177
			(0.47)	(0.87)		(0.35)
Y1970s			0.006	-0.191		0.542
			(0.01)	(-0.48)		(1.36)
Y1980s			-0.292	-0.335		0.217
			(-0.75)	(-0.86)		(0.41)
Y1990s			0.424	-0.075		0.364
			(1.56)	(-0.24)		(1.17)
Y2000			-0.066	-0.166		0.161
			(-0.28)	(-0.68)		(0.51)
Panel			0.560	0.516		0.366
			(1.11)	(0.99)		(0.79)
SingleCo			-0.150	-0.337	-1.080	-0.012
			(-0.19)	(-0.39)	(-2.58)**	(-0.01)
LowIncome			0.296	0.322		-0.038
			(1.10)	(1.23)		(-0.13)
SubSample			-0.370	-0.451		0.025
			(-1.51)	(-1.90)*		(0.10)
EDA			0.169	0.221		-0.254
			(0.83)	(1.03)		(-1.12)
Outliers			-0.150	-0.216		-0.337
			(-0.77)	(-1.20)		(-1.63)
NrCountries			0.001	0.000		-0.007
			(0.33)	(0.07)		(-1.10)
NrYears			-0.026	-0.007		-0.025
			(-1.29)	(-0.35)		(-1.09)
Average			0.006	-0.012	-0.041	-0.003
			(0.23)	(-0.45)	(-4.13)***	(-0.13)
Nonlinear			0.345	0.234		-0.107
			(1.70)*	(1.24)		(-0.61)
Aid*Policy			-0.611	-0.632	-0.549	-0.291
			(-2.47)**	(-2.64)***	(-2.61)**	(-1.42)
Aid*Institut			-0.804	-0.545	-0.898	-0.644
			(-1.95)*	(-1.33)	(-2.53)**	(-1.21)
Capital			0.084	0.029		0.276
			(0.30)	(0.11)		(0.86)

	FAT-PET	Baseline	Expanded	General	Reduced	With auth. FE
	(1)	(2)	(3)	(4)	(5)	(6)
FDI			0.228	0.269		-0.791
			(0.73)	(0.86)		(-2.07)**
GapModel			0.483	0.394		-0.079
			(1.07)	(0.92)		(-0.08)
Theory			0.071	0.031		0.120
			(0.25)	(0.11)		(0.32)
LagUsed			0.278	0.406		0.754
			(0.85)	(1.22)		(1.49)
Inflation			-0.140	-0.284		0.152
			(-0.41)	(-0.86)		(0.37)
Instability			-0.534	-0.241	-0.448	0.039
			(-2.11)**	(-1.03)	(-2.09)**	(0.12)
Fiscal			0.026	0.071		0.210
			(0.08)	(0.23)		(0.61)
GovSize			0.812	1.030	0.951	0.666
			(3.12)***	(3.99)***	(3.57)***	(1.63)
FinDev			0.280	0.236		0.262
			(1.31)	(0.94)		(1.23)
Ethno			0.093	-0.118		0.029
			(0.36)	(-0.51)		(0.12)
Region			-0.153	-0.178		-0.036
			(-0.80)	(-0.94)		(-0.19)
HumCap			0.037	0.133		0.051
			(0.14)	(0.51)		(0.20)
Open			0.361	0.304		0.332
			(1.48)	(1.37)		(1.82)*
PopSize			0.308	0.365	0.412	0.596
			(1.32)	(1.58)	(1.99)**	(1.98)**
GDPLev			-0.136	-0.181		-0.141
			(-0.44)	(-0.61)		(-0.33)
Policies			0.355	0.255		-0.059
			(1.08)	(0.87)		(-0.23)
OLS			-0.212	-0.223		-0.182
			(-1.05)	(-1.12)		(-0.71)
Growth&Aid			-0.263	-0.443		-0.607
			(-0.75)	(-1.37)		(-1.10)
Growth&Savs			-0.306	-0.280		0.265
			(-0.49)	(-0.50)		(0.75)
WorkPap				0.352		-0.797
				(1.54)		(-2.42)**
Cato				-0.353		-3.954
				(-0.54)		(-5.38)***
JDS				0.751	0.576	-0.510
				(1.93)*	(2.04)**	(-0.97)
JID				0.035		0.123
				(0.09)		(0.23)
EDCC				-1.510	-1.281	-2.829
				(-3.20)***	(-4.60)***	(-1.78)*
AER				0.275		7.401
				(0.56)		(4.55)***

	FAT-PET	Baseline	Expanded	General	Reduced	With auth. FE
	(1)	(2)	(3)	(4)	(5)	(6)
AE				-0.198		-0.783
				(-0.34)		(-0.36)
Female				-0.299		-1.100
				(-1.54)		(-1.63)
Danida				0.763	0.997	0.000
				(1.46)	(2.39)**	(.)
WorldBank				-0.309		-8.395
				(-0.70)		(-3.43)***
Influence				0.071		1.524
				(0.29)		(2.33)**
Constant	0.006	0.007	0.011	0.003	-0.005	0.032
	(0.53)	(0.60)	(0.68)	(0.20)	(-0.41)	(1.33)
Joint test-age		5.120	5.144	5.673	4.803	6.528
		[0.007]	[0.007]	[0.004]	[0.010]	[0.002]
Joint test-tenure		4.019	7.141	6.629	4.917	8.053
		[0.020]	[0.001]	[0.002]	[0.009]	[0.001]
N	1290	1290	1273	1273	1273	1273
Adjusted R2	0.030	0.061	0.225	0.252	0.227	0.449

Notes: The dependent variable is the partial correlation between aid and growth. Table reports results of estimating the publication selection bias model: $r_{ij} = \beta_0 + \beta_1 SE_{ij} + \delta_1 Age_{ij} \cdot SE_{ij} + \delta_2 Tenure_{ij} \cdot SE_{ij} + \delta_3 Age_{ij} \cdot Tenure_{ij} \cdot SE_{ij} + \sum \delta_k k_{ij} \cdot SE_{ij} + v_{ij}$. Column (6) additionally includes 103 author or authors' group fixed effects which are not reported. All estimations use unrestricted weighted least squares with inverse variance weights. Sample size varies due to incomplete information on country composition in some studies. Figures in round brackets are *t*-statistics, using standard errors adjusted for clustering of estimates within studies. Figures in square brackets are *p*-values of the underlying joint tests. *, **, *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Table A4

Age and tenure in **publication selection models** (Table A3 replicated when outliers and leverage points included)

	FAT-PET	Baseline	Expanded	General	Reduced	With auth. FE
	(1)	(2)	(3)	(4)	(5)	(6)
Standard error	0.329	0.141	0.428	0.631	1.113	1.659
	(1.20)	(0.38)	(0.48)	(0.73)	(3.07)***	(1.15)
Post-PhD Age		0.017	0.046	0.077	0.060	0.255
		(0.47)	(1.55)	(2.96)***	(2.14)**	(3.65)***
Tenure		1.066	1.236	1.359	0.711	0.872
		(1.95)*	(2.38)**	(2.47)**	(1.45)	(0.56)
Post-PhD Age*Tenure		-0.094	-0.104	-0.116	-0.113	-0.245
		(-1.89)*	(-2.49)**	(-3.05)***	(-2.55)**	(-2.66)***
Africa			0.279	0.402		0.041
			(0.73)	(1.12)		(0.06)
Asia			-0.193	-0.355	-0.544	0.238
			(-0.49)	(-0.96)	(-1.66)*	(0.31)
Latin			0.117	0.391		0.305
			(0.33)	(1.10)		(0.58)
Y1970s			-0.149	-0.358		0.510
			(-0.30)	(-0.79)		(1.13)
Y1980s			-0.288	-0.357		0.160
			(-0.63)	(-0.81)		(0.31)
Y1990s			0.528	-0.160		0.495
			(1.65)	(-0.46)		(1.52)
Y2000			-0.247	-0.323		0.043
			(-0.89)	(-1.11)		(0.13)
Panel			0.430	0.511		0.524
			(0.76)	(0.87)		(0.91)
SingleCo			-0.482	-0.436	-1.198	-0.619
			(-0.55)	(-0.48)	(-2.41)**	(-0.42)
LowIncome			0.119	0.203		-0.088
			(0.38)	(0.70)		(-0.28)
SubSample			-0.417	-0.528		-0.136
			(-1.63)	(-2.18)**		(-0.54)
EDA			0.096	0.149		-0.123
			(0.37)	(0.58)		(-0.66)
Outliers			0.031	-0.067		-0.260
			(0.11)	(-0.29)		(-1.10)
NrCountries			-0.006	-0.009		-0.011
			(-1.45)	(-1.82)*		(-1.83)*
NrYears			-0.028	-0.011		-0.029
			(-1.18)	(-0.49)		(-1.18)
Average			0.012	-0.004	-0.037	-0.006
			(0.46)	(-0.15)	(-3.57)***	(-0.21)
Nonlinear			0.218	0.089		-0.127
			(0.82)	(0.36)		(-0.63)
Aid*Policy			-0.570	-0.540	-0.607	-0.156
			(-2.09)**	(-2.08)**	(-2.43)**	(-0.67)
Aid*Institut			-0.773	-0.483	-0.935	-0.588
			(-1.84)*	(-1.16)	(-2.45)**	(-1.13)
Capital			0.110	0.033		0.287
			(0.30)	(0.10)		(0.92)

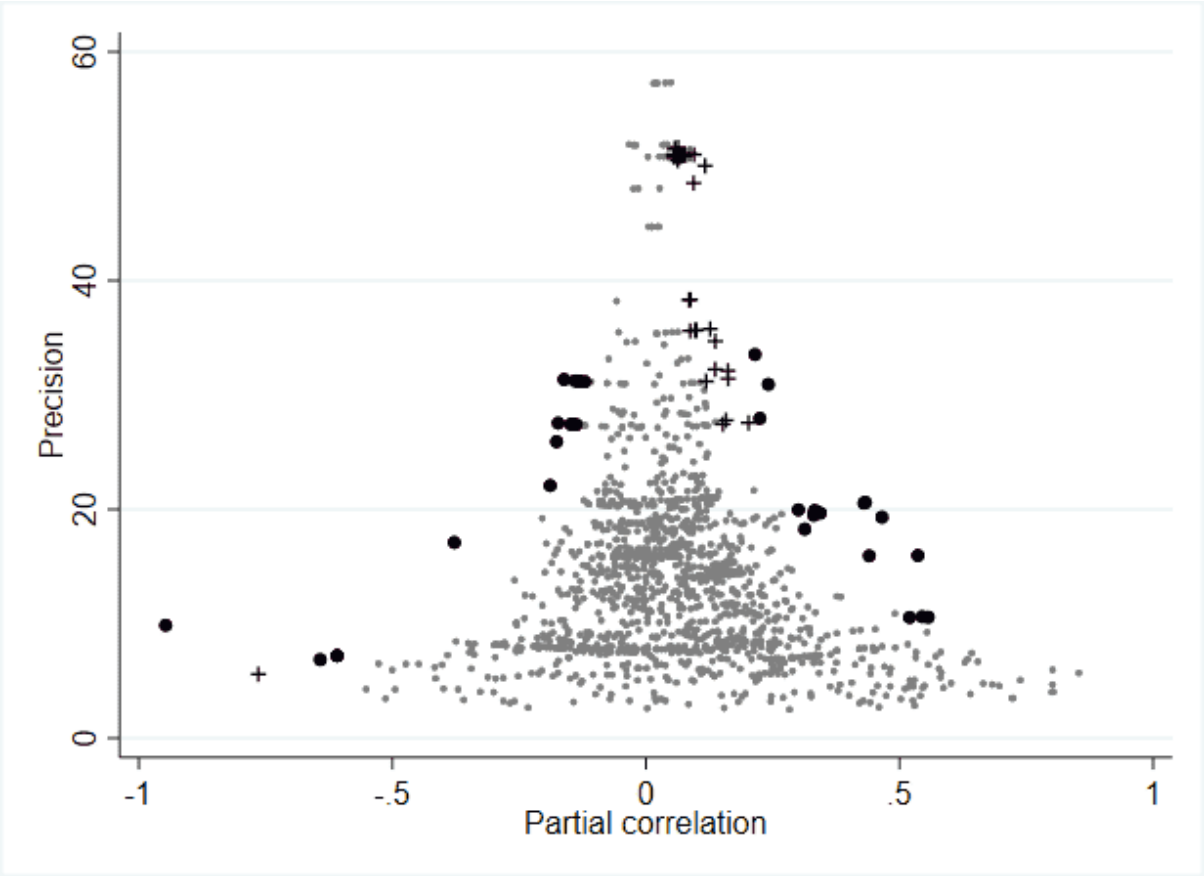
	FAT-PET	Baseline	Expanded	General	Reduced	With auth. FE
	(1)	(2)	(3)	(4)	(5)	(6)
FDI			0.349	0.314		-0.821
			(0.96)	(0.87)		(-1.97)*
GapModel			0.605	0.503		-0.655
			(1.13)	(0.98)		(-0.50)
Theory			0.235	0.244		0.255
			(0.65)	(0.72)		(0.63)
LagUsed			0.340	0.585		0.846
			(0.77)	(1.31)		(1.18)
Inflation			0.017	-0.146		0.186
			(0.04)	(-0.37)		(0.37)
Instability			-0.522	-0.137	-0.549	0.324
			(-1.59)	(-0.45)	(-2.09)**	(0.79)
Fiscal			-0.207	-0.177		0.202
			(-0.51)	(-0.48)		(0.63)
GovSize			0.849	1.224	0.981	0.820
			(2.82)***	(4.14)***	(3.24)***	(2.15)**
FinDev			0.446	0.337		0.243
			(1.61)	(1.08)		(1.07)
Ethno			-0.079	-0.397		-0.058
			(-0.24)	(-1.33)		(-0.18)
Region			-0.210	-0.276		-0.175
			(-0.98)	(-1.30)		(-0.71)
HumCap			0.063	0.258		-0.010
			(0.20)	(0.78)		(-0.04)
Open			0.252	0.147		0.148
			(0.94)	(0.59)		(0.63)
PopSize			0.291	0.315	0.431	0.636
			(1.13)	(1.27)	(1.65)	(2.02)**
GDPLev			-0.204	-0.308		-0.318
			(-0.65)	(-1.05)		(-0.86)
Policies			0.166	0.044		-0.305
			(0.43)	(0.13)		(-0.89)
OLS			-0.514	-0.492		-0.288
			(-1.95)*	(-1.91)*		(-0.89)
Growth&Aid			-0.415	-0.743		-0.677
			(-1.05)	(-2.06)**		(-1.12)
Growth&Savs			-0.624	-0.504		-0.215
			(-0.98)	(-0.90)		(-0.59)
WorkPap				0.601		-1.045
				(1.96)*		(-3.57)***
Cato				-0.466		-3.723
				(-0.58)		(-5.27)***
JDS				0.861	0.532	-1.016
				(1.90)*	(1.67)*	(-1.92)*
JID				-0.169		0.104
				(-0.34)		(0.18)
EDCC				-2.501	-1.901	-3.499
				(-3.78)***	(-5.03)***	(-1.82)*
AER				-0.176		8.924
				(-0.30)		(4.93)***

	FAT-PET	Baseline	Expanded	General	Reduced	With auth. FE
	(1)	(2)	(3)	(4)	(5)	(6)
AE				-0.193		1.876
				(-0.33)		(0.67)
Female				-0.323		-1.146
				(-1.30)		(-1.57)
Danida				0.865	1.208	-2.923
				(1.47)	(2.52)**	(-2.56)**
WorldBank				0.037		-10.649
				(0.07)		(-3.95)***
Influence				0.264		2.001
				(0.91)		(2.70)***
Constant	0.028	0.034	0.049	0.039	0.021	0.035
	(1.83)*	(2.49)**	(2.79)***	(2.06)**	(1.42)	(1.22)
Joint test-age		2.975	3.233	5.337	3.273	6.857
		[0.054]	[0.043]	[0.006]	[0.041]	[0.001]
Joint test-tenure		2.143	3.461	4.802	3.376	8.250
		[0.121]	[0.034]	[0.010]	[0.037]	[0.000]
N	1361	1361	1344	1344	1344	1344
Adjusted R2	0.008	0.035	0.200	0.247	0.184	0.461

Notes: See notes to Table A3. The position of outliers and leverage points within the set of all reported aid efficiency correlations is depicted on Figure A1.

Figure A1

Funnel plot with highlighted outliers and leverage points



Notes: Outlier observations denoted by black circles, leverage points by black plus signs.

Table A5:

Age, tenure, publication selection bias and heterogeneity in the aid effectiveness literature (Full Table 4 of the main text)

	All moderator variables	General-to-specific model reduction	BMA model reduction
	(1)	(2)	(3)
Standard error	0.569	0.247	0.572
	(0.43)	(0.31)	(0.56)
Post-PhD Age	0.038	0.058	0.051
	(1.62)	(2.63)***	(2.30)**
Tenure	1.252	1.518	1.495
	(2.93)***	(3.47)***	(3.39)***
Post-PhD	-0.082	-0.112	-0.110
Age*Tenure	(-2.44)**	(-3.61)***	(-3.44)***
Africa	-0.499	-0.045	-0.033
	(-0.80)	(-0.15)	(-0.05)
Asia	-0.480	-0.625	-0.310
	(-1.09)	(-2.03)**	(-0.72)
Latin	-0.516	0.220	-0.238
	(-0.97)	(0.71)	(-0.42)
Y1970s	-0.975	-0.173	-0.876
	(-1.80)*	(-0.43)	(-1.53)
Y1980s	-0.486	-0.224	-0.070
	(-0.91)	(-0.57)	(-0.12)
Y1990s	-0.177	-0.077	-0.215
	(-0.37)	(-0.24)	(-0.45)
Y2000	-1.376	-0.177	-0.487
	(-2.13)**	(-0.64)	(-0.93)
Panel	2.643	0.581	0.560
	(2.23)**	(0.95)	(0.76)
SingleCo	0.790	-0.358	-0.639
	(0.39)	(-0.19)	(-0.32)
LowIncome	0.911	0.477	0.349
	(2.10)**	(1.90)*	(1.31)
SubSample	-0.598	-0.367	-0.435
	(-1.62)	(-1.25)	(-1.27)
EDA	-0.832	0.187	0.256
	(-1.17)	(0.92)	(1.22)
Outliers	-0.898	-0.198	-0.213
	(-1.74)*	(-1.08)	(-1.16)
NrCountries	0.023	0.005	0.002
	(1.92)*	(1.04)	(0.47)
NrYears	-0.031	-0.020	-0.004
	(-0.78)	(-1.00)	(-0.10)
Average	0.191	0.060	0.040
	(1.81)*	(0.76)	(0.49)
Nonlinear	1.172	1.670	0.735
	(1.46)	(2.58)**	(0.99)

	All moderator variables	General-to-specific model reduction	BMA model reduction
	(1)	(2)	(3)
Aid*Policy	-0.469	0.215	-0.145
	(-0.84)	(0.48)	(-0.36)
Aid*Institut	-1.304	-1.192	-0.932
	(-1.61)	(-1.63)	(-1.30)
Capital	-0.922	0.121	0.174
	(-1.69)*	(0.50)	(0.67)
FDI	0.052	0.196	0.195
	(0.09)	(0.67)	(0.64)
GapModel	-0.174	0.320	0.411
	(-0.27)	(0.74)	(0.97)
Theory	0.054	0.056	-0.010
	(0.08)	(0.19)	(-0.04)
LagUsed	-0.214	0.605	0.409
	(-0.51)	(1.87)*	(1.22)
Inflation	-0.849	-0.303	-0.154
	(-1.07)	(-1.01)	(-0.47)
Instability	-1.161	-1.720	-0.243
	(-1.69)*	(-2.97)***	(-1.07)
Fiscal	-1.690	0.015	-0.087
	(-1.69)*	(0.05)	(-0.27)
GovSize	1.503	2.073	2.191
	(2.54)**	(4.68)***	(4.77)***
FinDev	0.645	0.355	0.314
	(0.92)	(1.43)	(1.24)
Ethno	-0.981	-0.153	-0.186
	(-1.24)	(-0.67)	(-0.81)
Region	-0.481	-0.186	-0.119
	(-1.11)	(-1.03)	(-0.66)
HumCap	-0.395	-0.093	-0.027
	(-0.87)	(-0.38)	(-0.12)
Open	0.868	0.420	0.364
	(2.40)**	(1.93)*	(1.65)
PopSize	1.318	0.432	0.523
	(2.55)**	(1.88)*	(2.29)**
GDPLev	0.088	-0.070	-0.126
	(0.15)	(-0.22)	(-0.39)
Policies	1.177	0.326	0.233
	(1.66)	(1.15)	(0.83)
OLS	-0.016	-0.224	-0.246
	(-0.04)	(-1.11)	(-1.24)
Growth&Aid	0.535	-0.467	-0.435
	(0.45)	(-1.29)	(-1.30)
Growth&Savs	-0.349	-0.169	-0.262
	(-0.34)	(-0.32)	(-0.50)

	All moderator variables	General-to-specific model reduction	BMA model reduction
	(1)	(2)	(3)
WorkPap	0.199	0.292	0.278
	(0.91)	(1.34)	(1.29)
Cato	-0.520	-0.352	-0.560
	(-0.85)	(-0.57)	(-0.97)
JDS	0.409	0.821	0.874
	(1.15)	(1.99)**	(2.18)**
JID	-0.426	-0.170	-0.225
	(-1.03)	(-0.45)	(-0.55)
EDCC	-1.855	-1.580	-1.351
	(-3.70)***	(-3.10)***	(-2.69)***
AER	0.128	0.131	0.217
	(0.31)	(0.29)	(0.42)
AE	-0.345	-0.043	-0.150
	(-0.50)	(-0.08)	(-0.24)
Female	-0.410	-0.329	-0.275
	(-2.07)**	(-1.68)*	(-1.35)
Danida	0.257	0.589	0.717
	(0.55)	(1.20)	(1.41)
WorldBank	-0.292	-0.239	-0.142
	(-0.86)	(-0.64)	(-0.33)
Influence	0.380	0.308	0.143
	(1.66)*	(1.35)	(0.62)
Heterogeneity variables:			
Africa	0.029		-0.008
	(0.44)		(-0.12)
Asia	-0.021		-0.036
	(-0.41)		(-0.69)
Latin	0.053		0.049
	(0.74)		(0.61)
Y1970s	0.070		0.068
	(1.90)*		(1.75)*
Y1980s	0.018		-0.020
	(0.47)		(-0.46)
Y1990s	-0.001		0.001
	(-0.04)		(0.04)
Y2000	0.068		0.025
	(1.97)*		(1.12)
Panel	-0.188		
	(-1.30)		
SingleCo	0.092	0.035	0.070
	(0.25)	(0.11)	(0.19)
LowIncome	-0.043		
	(-1.43)		
SubSample	0.026	-0.008	-0.002
	(1.11)	(-0.49)	(-0.12)

	All moderator variables	General-to-specific model reduction	BMA model reduction
	(1)	(2)	(3)
EDA	0.068		
	(1.53)		
Outliers	0.050		
	(1.43)		
NrCountries	-0.001		
	(-1.49)		
NrYears	0.001		-0.001
	(0.31)		(-0.49)
Average	-0.022	-0.008	-0.005
	(-1.94)*	(-0.89)	(-0.63)
Nonlinear	-0.052	-0.099	-0.025
	(-1.02)	(-2.49)**	(-0.54)
Aid*Policy	0.002	-0.057	-0.028
	(0.06)	(-1.83)*	(-1.00)
Aid*Institut	0.055	0.048	0.028
	(0.89)	(0.86)	(0.53)
Capital	0.076		
	(1.89)*		
FDI	0.027		
	(0.53)		
GapModel	0.037		
	(0.50)		
Theory	-0.007		
	(-0.16)		
LagUsed	0.069		
	(2.34)**		
Inflation	0.056		
	(1.22)		
Instability	0.049	0.097	
	(1.23)	(2.90)***	
Fiscal	0.117		
	(1.80)*		
GovSize	-0.029	-0.071	-0.083
	(-0.74)	(-3.23)***	(-3.36)***
FinDev	0.002		
	(0.05)		
Ethno	0.062		
	(1.27)		
Region	0.021		
	(0.82)		
HumCap	0.005		
	(0.12)		
Open	-0.053		
	(-2.09)**		

	All moderator variables	General-to-specific model reduction	BMA model reduction
	(1)	(2)	(3)
PopSize	-0.076		
	(-1.77)*		
GDPLev	-0.008		
	(-0.22)		
Policies	-0.081		
	(-1.56)		
OLS	-0.012		
	(-0.41)		
Growth&Aid	-0.079		
	(-1.02)		
Growth&Savs	0.016		
	(0.14)		
Constant	0.069	0.036	0.023
	(0.45)	(1.91)*	(0.27)
Joint test-age	3.036	6.539	6.020
	[0.051]	[0.002]	[0.003]
Joint test-tenure	4.594	7.738	7.022
	[0.012]	[0.001]	[0.001]
Joint test-regional and temporal dummies	1.323		0.868
	[0.244]		[0.534]
N	1273	1273	1273
Adjusted R2	0.326	0.277	0.267

Notes: The dependent variable is the partial correlation between aid and growth. Table reports results of estimating Eqn. (4): $r_{ij} = \beta_0 + \beta_1 SE_{ij} + \delta_1 Age_{ij} \cdot SE_{ij} + \delta_2 Tenure_{ij} \cdot SE_{ij} + \delta_3 Age_{ij} \cdot Tenure_{ij} \cdot SE_{ij} + \sum \delta_k k_{ij} \cdot SE_{ij} + \sum \beta_x x_{ij} + u_{ij}$. All columns include the full set of publication selection variables as per Table 4, with the addition of variables that reflect heterogeneity. The regional and temporal heterogeneity variables dropped out of the model using general-to-specific model reduction, thus the test does not apply in Column (2). *, **, *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Table A6

Publication selection bias and aid links (Full Table 7 of the main text)

	Publication selection bias	Publication selection bias and heterogeneity
	(1)	(2)
Standard error	0.623	0.720
	(0.93)	(0.70)
Post-PhD Age	0.041	0.042
	(1.71)*	(1.87)*
Tenure	1.835	2.093
	(4.23)***	(4.91)***
Aid Link	-0.058	-0.179
	(-0.16)	(-0.54)
Post-PhD Age*Tenure	-0.090	-0.101
	(-2.89)***	(-3.41)***
Post-PhD Age*Tenure*Aid Link	-0.058	-0.078
	(-1.84)*	(-2.54)**
Africa	-0.019	-0.117
	(-0.06)	(-0.19)
Asia	-0.540	-0.262
	(-1.56)	(-0.59)
Latin	0.429	-0.102
	(1.36)	(-0.18)
Y1970s	-0.187	-1.123
	(-0.48)	(-1.89)*
Y1980s	-0.306	-0.138
	(-0.78)	(-0.22)
Y1990s	0.077	-0.042
	(0.27)	(-0.09)
Y2000	-0.178	-1.019
	(-0.78)	(-1.91)*
Panel	0.830	0.950
	(1.47)	(1.28)
SingleCo	0.293	0.644
	(0.33)	(0.33)
LowIncome	0.383	0.353
	(1.54)	(1.42)
SubSample	-0.426	-0.459
	(-1.76)*	(-1.38)
EDA	0.037	-0.008
	(0.18)	(-0.04)
Outliers	-0.228	-0.232
	(-1.32)	(-1.29)
NrCountries	0.004	0.007
	(0.82)	(1.41)
NrYears	-0.019	-0.015
	(-0.96)	(-0.41)

	Publication selection bias	Publication selection bias and heterogeneity
	(1)	(2)
Average	-0.001	0.032
	(-0.05)	(0.39)
Nonlinear	0.249	0.653
	(1.28)	(0.91)
Aid*Policy	-0.648	-0.315
	(-2.70)***	(-0.75)
Aid*Institut	-0.662	-1.091
	(-1.75)*	(-1.57)
Capital	-0.036	0.072
	(-0.14)	(0.28)
FDI	0.502	0.525
	(1.51)	(1.62)
GapModel	0.198	0.109
	(0.48)	(0.28)
Theory	-0.041	-0.151
	(-0.15)	(-0.55)
LagUsed	0.471	0.503
	(1.40)	(1.45)
Inflation	-0.120	-0.005
	(-0.37)	(-0.02)
Instability	-0.416	-0.481
	(-1.74)*	(-2.15)**
Fiscal	0.041	-0.094
	(0.14)	(-0.30)
GovSize	0.996	2.453
	(3.84)***	(4.90)***
FinDev	0.252	0.386
	(1.12)	(1.72)*
Ethno	-0.032	-0.073
	(-0.14)	(-0.33)
Region	-0.257	-0.210
	(-1.42)	(-1.23)
HumCap	-0.024	-0.208
	(-0.09)	(-0.94)
Open	0.178	0.227
	(0.78)	(1.07)
PopSize	0.201	0.351
	(0.88)	(1.60)
GDPLev	-0.169	-0.050
	(-0.58)	(-0.16)
Policies	0.389	0.351
	(1.21)	(1.14)
OLS	-0.219	-0.240
	(-1.14)	(-1.29)

	Publication selection bias	Publication selection bias and heterogeneity
	(1)	(2)
Growth&Aid	-0.450	-0.381
	(-1.36)	(-1.07)
Growth&Savs	-0.248	-0.273
	(-0.45)	(-0.54)
WorkPap	0.211	0.106
	(0.95)	(0.52)
Cato	-0.350	-0.423
	(-0.53)	(-0.81)
JDS	0.726	0.830
	(2.07)**	(2.41)**
JID	-0.117	-0.415
	(-0.34)	(-1.22)
EDCC	-1.401	-1.360
	(-2.92)***	(-2.76)***
AER	0.256	0.458
	(0.57)	(0.97)
AE	-0.440	-0.651
	(-0.83)	(-1.15)
Female	-0.310	-0.234
	(-1.64)	(-1.18)
Influence	0.296	0.395
	(0.99)	(1.40)
Heterogeneity variables:		
Africa		-0.016
		(-0.21)
Asia		-0.033
		(-0.61)
Latin		0.045
		(0.54)
Y1970s		0.091
		(2.17)**
Y1980s		-0.011
		(-0.21)
Y1990s		-0.004
		(-0.13)
Y2000		0.050
		(2.12)**
SingleCo		-0.008
		(-0.02)
SubSample		0.007
		(0.40)
NrYears		-0.001
		(-0.56)
Average		-0.003
		(-0.30)

	Publication selection bias	Publication selection bias and heterogeneity
	(1)	(2)
Nonlinear		-0.019
		(-0.42)
Aid*Policy		-0.015
		(-0.51)
Aid*Institut		0.032
		(0.67)
GovSize		-0.109
		(-3.55)***
Constant	-0.007	-0.008
	(-0.42)	(-0.09)
Joint test-age	5.275	8.656
	[0.002]	[0.000]
Joint test-tenure	6.635	9.330
	[0.000]	[0.000]
Joint test-aid	3.452	7.100
	[0.035]	[0.001]
N	1273	1273
Adjusted R2	0.259	0.285

Notes: The dependent variable is the partial correlation between aid and growth. Column (1) include the full set of publication selection variables (as Table 3, Column (4)). In Column (2) we also add 14 variables that reflect heterogeneity (same as we added in Table 4, Column (3)). Both models exclude dummy variables: Danida, and WorldBank as they overlap with our Aid Link variable. *, **, *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Table A7

Age, tenure, heterogeneity, and research inflation in the aid effectiveness literature (Full Table 8 of the main text)

	Heterogeneity			Research inflation		
	General	Reduced	General with auth. FE	General	Reduced	General with auth. FE
	(1)	(2)	(3)	(4)	(5)	(6)
Standard error	1.062	0.824	0.753			
	(2.96)***	(3.83)***	(1.45)			
Post-PhD Age	0.004	0.004	0.013	0.115	0.139	0.358
	(2.11)**	(3.16)***	(2.45)**	(2.18)**	(3.32)***	(2.33)**
Tenure	0.073	0.089	0.208	2.268	3.052	7.606
	(2.33)**	(3.84)***	(1.93)*	(2.44)**	(4.06)***	(2.66)***
Post-PhD Age*Tenure	-0.007	-0.007	-0.019	-0.193	-0.241	-0.585
	(-2.85)***	(-4.28)***	(-2.66)***	(-2.83)***	(-4.98)***	(-2.97)***
Africa	-0.002		0.001	-0.917		-0.233
	(-0.05)		(0.02)	(-0.93)		(-0.13)
Asia	-0.043		0.010	-1.682		0.025
	(-1.23)		(0.15)	(-1.49)		(0.01)
Latin	0.042		0.018	1.232		0.220
	(1.15)		(0.29)	(1.13)		(0.12)
Y1970s	0.008		0.016	0.330		0.359
	(0.24)		(0.35)	(0.35)		(0.28)
Y1980s	-0.036		0.010	-1.119		0.273
	(-1.12)		(0.21)	(-1.16)		(0.21)
Y1990s	-0.011		0.023	-0.373		0.531
	(-0.60)		(1.19)	(-0.70)		(0.96)
Y2000	0.000		0.004	-0.148		0.097
	(0.02)		(0.24)	(-0.32)		(0.20)
Panel	0.042		0.069	-0.276		0.970
	(0.68)		(1.57)	(-0.17)		(0.93)
SingleCo	-0.105		-0.064	-0.228		-0.260
	(-0.89)		(-0.30)	(-0.07)		(-0.04)
LowIncome	0.015		-0.019	0.940		-0.396
	(0.78)		(-1.00)	(1.75)*		(-0.80)
SubSample	-0.028	-0.015	0.011	-1.041		0.235
	(-1.57)	(-1.75)*	(0.73)	(-2.12)**		(0.59)
EDA	0.016		-0.014	0.478		-0.465
	(1.16)		(-1.12)	(1.17)		(-1.40)
Outliers	-0.012		-0.020	-0.332		-0.590
	(-1.02)		(-1.59)	(-0.94)		(-1.62)
NrCountries	-0.000		-0.000	-0.005		-0.009
	(-0.28)		(-0.25)	(-0.81)		(-0.78)
NrYears	-0.000		-0.000	-0.028	-0.043	-0.020
	(-0.16)		(-0.24)	(-0.77)	(-2.10)**	(-0.61)
Average	-0.003	-0.004	-0.001	-0.059		0.001
	(-1.51)	(-2.68)***	(-0.69)	(-1.03)		(0.01)

	Heterogeneity			Research inflation		
	General	Reduced	General with auth. FE	General	Reduced	General with auth. FE
	(1)	(2)	(3)	(4)	(5)	(6)
Nonlinear	0.016		-0.013	0.590		-0.387
	(1.20)		(-1.10)	(1.47)		(-1.17)
Aid*Policy	-0.050	-0.044	-0.020	-1.259	-0.911	-0.520
	(-2.54)**	(-3.79)***	(-1.46)	(-2.24)**	(-2.55)**	(-1.33)
Aid*Institut	-0.031		-0.038	-0.942		-1.041
	(-0.85)		(-0.90)	(-0.83)		(-0.83)
Capital	-0.011		0.003	-0.401		0.102
	(-0.53)		(0.15)	(-0.61)		(0.20)
FDI	0.007		-0.082	0.155		-2.350
	(0.22)		(-2.24)**	(0.17)		(-2.19)**
GapModel	0.070	0.085	0.115	2.702	3.231	3.636
	(1.41)	(2.03)**	(0.79)	(1.79)*	(2.89)***	(0.90)
Theory	-0.007		-0.040	-0.122		-0.722
	(-0.37)		(-1.13)	(-0.21)		(-0.73)
LagUsed	0.034		0.063	0.784		1.759
	(1.24)		(2.17)**	(0.96)		(2.04)**
Inflation	0.015		0.017	0.023		0.237
	(0.65)		(0.64)	(0.04)		(0.35)
Instability	-0.008		0.002	-0.154		-0.000
	(-0.49)		(0.10)	(-0.33)		(-0.00)
Fiscal	0.016		0.011	0.842		0.383
	(0.69)		(0.58)	(1.30)		(0.69)
GovSize	0.062	0.045	0.028	1.903	1.177	0.773
	(3.07)***	(3.28)***	(1.02)	(3.16)***	(2.32)**	(0.89)
FinDev	0.012		0.023	0.472		0.653
	(0.60)		(1.37)	(0.84)		(1.34)
Ethno	-0.019		-0.006	-0.488		-0.177
	(-1.24)		(-0.35)	(-1.13)		(-0.36)
Region	-0.010	-0.026	0.000	-0.390	-0.986	0.031
	(-0.88)	(-2.66)***	(0.04)	(-1.25)	(-2.92)***	(0.09)
HumCap	0.032		0.018	1.373		0.644
	(1.52)		(1.02)	(2.21)**		(1.30)
Open	-0.019		0.015	-0.516		0.571
	(-1.05)		(1.07)	(-0.98)		(1.37)
PopSize	0.004		0.027	0.018		0.815
	(0.26)		(1.09)	(0.03)		(1.10)
GDPLev	-0.016		-0.004	-0.368		-0.078
	(-0.90)		(-0.15)	(-0.72)		(-0.10)
Policies	0.018		0.006	0.511		0.200
	(0.74)		(0.31)	(0.73)		(0.35)
OLS	-0.011		-0.009	-0.431		-0.304
	(-0.78)		(-0.49)	(-1.07)		(-0.62)
Growth&Aid	-0.013		-0.046	-0.432		-1.267
	(-0.51)		(-1.04)	(-0.58)		(-0.93)

	Heterogeneity			Research inflation		
	General	Reduced	General with auth. FE	General	Reduced	General with auth. FE
	(1)	(2)	(3)	(4)	(5)	(6)
Growth&Savs	0.027		0.088	0.814		2.506
	(0.47)		(1.54)	(0.49)		(1.53)
WorkPap	0.029	0.030	-0.056	0.760	1.059	-1.619
	(1.61)	(2.39)**	(-2.22)**	(1.45)	(2.57)**	(-2.06)**
Cato	-0.103		-0.253	-2.629		-7.601
	(-1.48)		(-3.42)***	(-1.23)		(-3.59)***
JDS	0.043		-0.035	0.858		-0.912
	(1.25)		(-0.94)	(0.87)		(-0.85)
JID	-0.011		-0.023	-0.859		-0.605
	(-0.44)		(-0.70)	(-1.10)		(-0.61)
EDCC	-0.134	-0.053	-0.423	-3.766	-1.560	-11.311
	(-2.94)***	(-1.86)*	(-2.29)**	(-2.74)***	(-2.43)**	(-2.21)**
AER	0.035		0.509	0.602		13.174
	(0.90)		(3.63)***	(0.54)		(3.43)***
AE	-0.002		-0.039	-0.241		-2.158
	(-0.04)		(-0.13)	(-0.19)		(-0.26)
Female	-0.019		-0.065	-0.564		-2.242
	(-1.23)		(-1.22)	(-1.21)		(-1.46)
Danida	0.072	0.095	-0.225	2.101	2.580	-7.056
	(1.76)*	(2.81)***	(-2.52)**	(1.87)*	(2.62)***	(-2.78)***
WorldBank	-0.031		-0.571	-0.742		-14.666
	(-0.94)		(-2.93)***	(-0.75)		(-2.76)***
Influence	-0.014		0.146	-0.362		4.143
	(-0.70)		(3.08)***	(-0.60)		(2.96)***
Constant	-0.013	-0.027	-0.035	3.620	-0.044	1.561
	(-0.11)	(-1.45)	(-0.25)	(1.54)	(-0.05)	(0.52)
Joint test-age	4.056	9.416	3.575	4.003	12.465	4.802
	[0.020]	[0.000]	[0.031]	[0.021]	[0.000]	[0.010]
Joint test-tenure	4.341	10.015	3.874	4.458	13.037	4.397
	[0.015]	[0.000]	[0.023]	[0.013]	[0.000]	[0.014]
N	1273	1290	1273	1273	1290	1273
Adjusted R2	0.223	0.184	0.460	0.206	0.163	0.456

Notes: Columns (1)-(3) report results of estimating Eqn. (5): $r_{ij} = \beta_0 + \beta_1 SE_{ij} + \beta_2 Age_{ij} + \beta_3 Tenure_{ij} + \beta_4 Age_{ij} \cdot Tenure_{ij} + \sum \beta_x x_{ij} + u_{ij}$. Columns (4)-(6) report results of estimating: $RI_{ij} = \beta_0 + \beta_2 Age_{ij} + \beta_3 Tenure_{ij} + \beta_4 Age_{ij} \cdot Tenure_{ij} + \sum \beta_x x_{ij} + u_{ij}$. All models include in x_{ij} specification and data variables, as well as journal and author characteristics. *, **, *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Table A8

Publication selection models: Only Post-PhD age, no tenure

	Baseline	Expanded	General	Reduced	With auth. FE
	(1)	(2)	(3)	(4)	(5)
Standard error	0.806	1.223	1.541	1.730	1.516
	(3.35)***	(1.84)*	(2.32)**	(6.42)***	(1.35)
Post-PhD Age	-0.023	-0.004	0.008	-0.003	0.012
	(-1.07)	(-0.24)	(0.49)	(-0.24)	(0.36)
Africa		-0.281	-0.200		-0.252
		(-0.88)	(-0.66)		(-0.48)
Asia		-0.361	-0.529	-0.537	0.085
		(-1.06)	(-1.54)	(-2.23)**	(0.12)
Latin		-0.010	0.182		0.303
		(-0.03)	(0.56)		(0.60)
Y1970s		0.161	-0.032		0.505
		(0.39)	(-0.08)		(1.12)
Y1980s		-0.276	-0.307		0.344
		(-0.73)	(-0.80)		(0.63)
Y1990s		0.378	-0.073		0.455
		(1.42)	(-0.23)		(1.58)
Y2000		0.023	-0.023		0.249
		(0.09)	(-0.09)		(0.79)
Panel		0.300	0.246		0.390
		(0.62)	(0.49)		(0.85)
SingleCo		-0.503	-0.723	-1.279	-0.152
		(-0.66)	(-0.89)	(-2.98)***	(-0.09)
LowIncome		0.412	0.410		-0.113
		(1.66)*	(1.68)*		(-0.36)
SubSample		-0.477	-0.565	-0.341	-0.043
		(-2.17)**	(-2.52)**	(-1.88)*	(-0.18)
EDA		0.177	0.260		-0.227
		(0.74)	(1.09)		(-0.80)
Outliers		-0.141	-0.187		-0.307
		(-0.72)	(-1.02)		(-1.52)
NrCountries		0.001	-0.000		-0.012
		(0.27)	(-0.03)		(-2.08)**
NrYears		-0.032	-0.014		-0.038
		(-1.50)	(-0.65)		(-1.53)
Average		0.003	-0.015	-0.040	0.009
		(0.12)	(-0.57)	(-3.88)***	(0.42)
Nonlinear		0.337	0.241		-0.026
		(1.64)	(1.24)		(-0.14)
Aid*Policy		-0.599	-0.585	-0.723	-0.269
		(-2.41)**	(-2.42)**	(-4.06)***	(-1.29)
Aid*Institut		-0.945	-0.674	-0.929	-0.643
		(-2.58)**	(-1.80)*	(-3.07)***	(-1.17)
Capital		0.168	0.097		0.072
		(0.59)	(0.36)		(0.25)
FDI		0.184	0.281		-0.878
		(0.55)	(0.84)		(-2.34)**
GapModel		0.405	0.266		0.128
		(0.92)	(0.61)		(0.16)

	Baseline	Expanded	General	Reduced	With auth. FE
	(1)	(2)	(3)	(4)	(5)
Theory		0.242	0.141		0.351
		(0.77)	(0.47)		(0.82)
LagUsed		0.202	0.304		0.795
		(0.61)	(0.90)		(1.60)
Inflation		-0.088	-0.196		0.336
		(-0.26)	(-0.59)		(0.86)
Instability		-0.437	-0.107		-0.066
		(-1.80)*	(-0.47)		(-0.23)
Fiscal		0.110	0.101		0.271
		(0.32)	(0.32)		(0.82)
GovSize		0.837	1.083	1.084	0.585
		(3.63)***	(4.59)***	(4.94)***	(1.47)
FinDev		0.297	0.235		0.223
		(1.24)	(0.90)		(1.02)
Ethno		-0.064	-0.227		-0.035
		(-0.24)	(-0.96)		(-0.13)
Region		-0.061	-0.083		0.015
		(-0.31)	(-0.43)		(0.08)
HumCap		-0.010	0.047		0.315
		(-0.04)	(0.16)		(1.26)
Open		0.391	0.309		0.290
		(1.65)	(1.42)		(1.59)
PopSize		0.268	0.359	0.412	0.624
		(1.13)	(1.58)	(1.94)*	(1.98)**
GDPLev		-0.003	-0.073		-0.089
		(-0.01)	(-0.25)		(-0.20)
Policies		0.320	0.165		0.198
		(0.96)	(0.58)		(0.73)
OLS		-0.213	-0.226		-0.179
		(-1.00)	(-1.09)		(-0.70)
Growth&Aid		-0.495	-0.699	-0.580	-0.265
		(-1.20)	(-1.78)*	(-2.11)**	(-0.43)
Growth&Savs		-0.262	-0.226		0.109
		(-0.43)	(-0.42)		(0.30)
WorkPap			0.216		-0.945
			(0.97)		(-2.60)**
Cato			-0.719		-4.351
			(-1.11)		(-5.82)***
JDS			0.821	0.753	-0.237
			(1.85)*	(2.37)**	(-0.38)
JID			0.059		-0.005
			(0.17)		(-0.01)
EDCC			-1.178	-1.053	-2.062
			(-2.69)***	(-5.03)***	(-1.37)
AER			0.116		2.521
			(0.24)		(2.21)**
AE			-0.159		1.066
			(-0.31)		(0.48)
Female			-0.269		0.078
			(-1.23)		(0.12)

	Baseline	Expanded	General	Reduced	With auth. FE
	(1)	(2)	(3)	(4)	(5)
Danida			0.974	1.096	-1.471
			(1.93)*	(2.65)***	(-1.63)
WorldBank			-0.166		-2.969
			(-0.38)		(-1.45)
Influence			0.102		1.025
			(0.34)		(1.70)*
Constant	0.007	0.016	0.007	-0.010	0.033
	(0.64)	(0.99)	(0.45)	(-0.88)	(1.48)
N	1290	1273	1273	1273	1273
Adjusted R2	0.039	0.202	0.232	0.210	0.438

Notes: The dependent variable is the partial correlation between aid and growth. Table reports results of estimating the publication selection bias model: $r_{ij} = \beta_0 + \beta_1 SE_{ij} + \delta_1 Age_{ij} \cdot SE_{ij} + \sum \delta_k k_{ij} \cdot SE_{ij} + v_{ij}$. All estimations use unrestricted weighted least squares with inverse variance weights. Column (5) additionally includes 103 author or authors' group fixed effects which are not reported. Figures in round brackets are *t*-statistics, using standard errors adjusted for clustering of estimates within studies. *, **, *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Table A9

Publication selection models: Only tenure, no post-PhD age

	Baseline	Expanded	General	Reduced	With auth. FE
	(1)	(2)	(3)	(4)	(5)
Standard error	0.510	1.040	1.405	0.894	2.900
	(1.74)*	(1.55)	(1.98)**	(2.26)**	(2.22)**
Tenure	0.173	0.356	0.318	0.129	-1.224
	(0.51)	(1.16)	(0.95)	(0.45)	(-1.44)
Africa		-0.301	-0.165		-0.345
		(-0.95)	(-0.55)		(-0.65)
Asia		-0.393	-0.544		0.077
		(-1.13)	(-1.60)		(0.11)
Latin		0.142	0.264		0.201
		(0.43)	(0.76)		(0.39)
Y1970s		0.085	-0.032		0.452
		(0.20)	(-0.08)		(1.02)
Y1980s		-0.278	-0.287		0.346
		(-0.74)	(-0.74)		(0.62)
Y1990s		0.329	-0.050		0.482
		(1.24)	(-0.17)		(1.69)*
Y2000		0.028	-0.036		0.255
		(0.11)	(-0.14)		(0.85)
Panel		0.399	0.328	0.769	0.447
		(0.81)	(0.65)	(2.96)***	(1.00)
SingleCo		-0.276	-0.570		-0.286
		(-0.36)	(-0.69)		(-0.18)
LowIncome		0.376	0.400		-0.097
		(1.57)	(1.66)*		(-0.31)
SubSample		-0.507	-0.572	-0.353	-0.012
		(-2.39)**	(-2.61)**	(-1.92)*	(-0.05)
EDA		0.181	0.240		-0.330
		(0.80)	(1.01)		(-1.35)
Outliers		-0.175	-0.208		-0.310
		(-0.93)	(-1.16)		(-1.49)
NrCountries		-0.000	-0.001		-0.009
		(-0.04)	(-0.17)		(-1.35)
NrYears		-0.032	-0.017	-0.033	-0.036
		(-1.51)	(-0.78)	(-3.31)***	(-1.53)
Average		0.006	-0.012		0.011
		(0.25)	(-0.46)		(0.49)
Nonlinear		0.343	0.246		-0.080
		(1.67)*	(1.27)		(-0.44)
Aid*Policy		-0.588	-0.596	-0.700	-0.298
		(-2.35)**	(-2.41)**	(-4.30)***	(-1.42)
Aid*Institut		-0.945	-0.691	-0.949	-0.657
		(-2.56)**	(-1.84)*	(-3.15)***	(-1.20)
Capital		0.194	0.082		0.068
		(0.70)	(0.30)		(0.23)
FDI		0.199	0.317	0.533	-0.801
		(0.61)	(0.97)	(1.69)*	(-2.13)**
GapModel		0.390	0.276		-0.984
		(0.89)	(0.64)		(-0.88)

	Baseline	Expanded	General	Reduced	With auth. FE
	(1)	(2)	(3)	(4)	(5)
Theory		0.241	0.088		0.510
		(0.77)	(0.30)		(1.20)
LagUsed		0.225	0.318		0.795
		(0.69)	(0.94)		(1.60)
Inflation		-0.082	-0.166		0.287
		(-0.24)	(-0.50)		(0.76)
Instability		-0.442	-0.114		-0.063
		(-1.83)*	(-0.50)		(-0.23)
Fiscal		0.079	0.057		0.271
		(0.22)	(0.19)		(0.83)
GovSize		0.893	1.120	1.110	0.482
		(3.70)***	(4.51)***	(4.64)***	(1.21)
FinDev		0.285	0.216		0.218
		(1.22)	(0.82)		(1.01)
Ethno		-0.007	-0.192		-0.030
		(-0.03)	(-0.81)		(-0.11)
Region		-0.081	-0.102		0.024
		(-0.41)	(-0.53)		(0.12)
HumCap		-0.003	0.054		0.381
		(-0.01)	(0.18)		(1.66)*
Open		0.373	0.305		0.301
		(1.60)	(1.38)		(1.66)*
PopSize		0.278	0.344		0.743
		(1.19)	(1.53)		(2.30)**
GDPLev		0.022	-0.087		-0.068
		(0.07)	(-0.30)		(-0.15)
Policies		0.342	0.194		0.138
		(1.01)	(0.66)		(0.55)
OLS		-0.241	-0.227		-0.168
		(-1.20)	(-1.12)		(-0.65)
Growth&Aid		-0.460	-0.725	-0.604	-0.179
		(-1.20)	(-1.82)*	(-2.38)**	(-0.29)
Growth&Savs		-0.242	-0.252		0.164
		(-0.40)	(-0.47)		(0.48)
WorkPap			0.243		-1.077
			(1.11)		(-2.48)**
Cato			-0.683		-4.286
			(-1.04)		(-5.68)***
JDS			0.816	0.759	-0.429
			(1.84)*	(2.49)**	(-0.69)
JID			-0.010		0.115
			(-0.03)		(0.22)
EDCC			-1.035	-1.038	-1.122
			(-2.40)**	(-5.21)***	(-0.68)
AER			0.165		3.511
			(0.34)		(2.91)***
AE			-0.215		2.173
			(-0.42)		(1.05)
Female			-0.282		-0.497
			(-1.33)		(-0.74)

	Baseline	Expanded	General	Reduced	With auth. FE
	(1)	(2)	(3)	(4)	(5)
Danida			0.784	0.822	-1.549
			(1.51)	(1.85)*	(-1.70)*
WorldBank			-0.070		-4.878
			(-0.15)		(-2.13)**
Influence			0.212		0.473
			(0.68)		(0.74)
Constant	0.005	0.015	0.006	0.004	0.032
	(0.40)	(1.01)	(0.41)	(0.41)	(1.44)
N	1290	1273	1273	1273	1273
Adjusted R2	0.030	0.206	0.233	0.212	0.441

Notes: The dependent variable is the partial correlation between aid and growth. Table reports results of estimating the publication selection bias model: $r_{ij} = \beta_0 + \beta_1 SE_{ij} + \delta_2 Tenure_{ij} \cdot SE_{ij} + \sum \delta_k k_{ij} \cdot SE_{ij} + v_{ij}$. All estimations use unrestricted weighted least squares with inverse variance weights. Column (5) additionally includes 103 author or authors' group fixed effects which are not reported. Figures in round brackets are *t*-statistics, using standard errors adjusted for clustering of estimates within studies. *, **, *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Table A10

Publication selection models: Replacing average age with maximum age

	Baseline	Expanded	General	Reduced	With auth. FE
	(1)	(2)	(3)	(4)	(5)
Standard error	0.409	0.496	0.830	0.823	1.001
	(1.27)	(0.72)	(1.20)	(2.63)***	(0.88)
Post-PhD Age	0.006	0.026	0.038	0.026	0.107
	(0.25)	(1.47)	(2.20)**	(1.49)	(2.98)***
Tenure	1.192	1.635	1.638	1.225	1.649
	(2.85)***	(4.20)***	(3.71)***	(3.60)***	(1.46)
Post-PhD Age*Tenure	-0.060	-0.090	-0.099	-0.076	-0.150
	(-2.23)**	(-3.27)***	(-3.73)***	(-3.47)***	(-3.18)***
Africa		-0.109	0.037		-0.357
		(-0.35)	(0.12)		(-0.67)
Asia		-0.479	-0.623		0.011
		(-1.49)	(-1.93)*		(0.02)
Latin		0.196	0.328		0.163
		(0.66)	(1.02)		(0.32)
Y1970s		0.016	-0.170		0.449
		(0.04)	(-0.42)		(1.08)
Y1980s		-0.315	-0.338		0.239
		(-0.83)	(-0.87)		(0.44)
Y1990s		0.463	-0.026		0.385
		(1.75)*	(-0.09)		(1.28)
Y2000		-0.019	-0.183		0.139
		(-0.08)	(-0.73)		(0.44)
Panel		0.634	0.610	0.732	0.406
		(1.27)	(1.20)	(2.92)***	(0.90)
SingleCo		-0.091	-0.245		0.359
		(-0.12)	(-0.29)		(0.24)
LowIncome		0.358	0.373		-0.021
		(1.39)	(1.49)		(-0.07)
SubSample		-0.356	-0.440		0.045
		(-1.49)	(-1.89)*		(0.19)
EDA		0.115	0.137		-0.288
		(0.55)	(0.64)		(-1.38)
Outliers		-0.168	-0.238		-0.348
		(-0.90)	(-1.36)		(-1.67)*
NrCountries		0.004	0.003		-0.005
		(1.03)	(0.79)		(-0.77)
NrYears		-0.026	-0.006	-0.028	-0.025
		(-1.28)	(-0.29)	(-3.28)***	(-1.06)
Average		0.005	-0.014		0.001
		(0.22)	(-0.52)		(0.05)
Nonlinear		0.339	0.238		-0.101
		(1.70)*	(1.28)		(-0.57)
Aid*Policy		-0.627	-0.670	-0.689	-0.307
		(-2.48)**	(-2.73)***	(-3.71)***	(-1.49)
Aid*Institut		-0.832	-0.566	-0.974	-0.609
		(-2.04)**	(-1.39)	(-2.70)***	(-1.13)
Capital		0.062	-0.071		0.237
		(0.22)	(-0.26)		(0.75)

	Baseline	Expanded	General	Reduced	With auth. FE
	(1)	(2)	(3)	(4)	(5)
FDI		0.303	0.366		-0.826
		(0.95)	(1.16)		(-2.15)**
GapModel		0.378	0.290		0.201
		(0.86)	(0.67)		(0.20)
Theory		0.035	-0.055		0.225
		(0.12)	(-0.20)		(0.57)
LagUsed		0.283	0.371		0.773
		(0.86)	(1.10)		(1.54)
Inflation		-0.149	-0.264		0.169
		(-0.44)	(-0.79)		(0.42)
Instability		-0.595	-0.332		-0.055
		(-2.34)**	(-1.39)		(-0.17)
Fiscal		-0.019	-0.010		0.155
		(-0.06)	(-0.03)		(0.45)
GovSize		0.784	0.995	1.013	0.578
		(3.01)***	(3.78)***	(3.71)***	(1.43)
FinDev		0.243	0.233		0.289
		(1.15)	(0.94)		(1.33)
Ethno		0.158	-0.028		0.040
		(0.63)	(-0.12)		(0.16)
Region		-0.226	-0.249	-0.512	-0.017
		(-1.18)	(-1.33)	(-2.63)***	(-0.09)
HumCap		-0.009	0.123		0.101
		(-0.04)	(0.48)		(0.40)
Open		0.325	0.262		0.355
		(1.36)	(1.16)		(1.99)**
PopSize		0.286	0.335		0.566
		(1.23)	(1.46)		(1.91)*
GDPLev		-0.112	-0.192		-0.113
		(-0.38)	(-0.66)		(-0.26)
Policies		0.322	0.237		-0.030
		(0.96)	(0.81)		(-0.12)
OLS		-0.183	-0.176		-0.198
		(-0.94)	(-0.91)		(-0.77)
Growth&Aid		-0.308	-0.524		-0.765
		(-0.81)	(-1.45)		(-1.37)
Growth&Savs		-0.206	-0.222		0.319
		(-0.34)	(-0.41)		(0.85)
WorkPap			0.234		-0.891
			(1.06)		(-2.34)**
Cato			-0.409		-4.030
			(-0.63)		(-5.29)***
JDS			0.638		-0.517
			(1.69)*		(-0.93)
JID			-0.096		0.160
			(-0.26)		(0.30)
EDCC			-1.401	-1.377	-2.405
			(-3.15)***	(-6.72)***	(-1.55)
AER			0.495		4.038
			(1.00)		(3.61)***

	Baseline	Expanded	General	Reduced	With auth. FE
	(1)	(2)	(3)	(4)	(5)
AE			-0.304		-1.065
			(-0.54)		(-0.49)
Female			-0.301		-0.828
			(-1.58)		(-1.30)
Danida			0.660	0.861	-2.068
			(1.28)	(1.78)*	(-2.41)**
WorldBank			-0.477		-5.301
			(-1.11)		(-2.46)**
Influence			0.158		1.304
			(0.60)		(2.16)**
Constant	0.008	0.002	-0.005	0.003	0.032
	(0.73)	(0.15)	(-0.31)	(0.37)	(1.35)
Joint test-age	7.816	7.383	7.872	9.397	5.334
	[0.001]	[0.001]	[0.001]	[0.000]	[0.006]
Joint test-tenure	4.139	8.993	8.316	7.842	6.537
	[0.020]	[0.000]	[0.000]	[0.001]	[0.002]
N	1290	1273	1273	1273	1273
Adjusted R2	0.060	0.230	0.257	0.219	0.448

Notes: The dependent variable is the partial correlation between aid and growth. Table reports results of estimating the publication selection bias model: $r_{ij} = \beta_0 + \beta_1 SE_{ij} + \delta_1 Age_{ij} \cdot SE_{ij} + \delta_2 Tenure_{ij} \cdot SE_{ij} + \delta_3 Age_{ij} \cdot Tenure_{ij} \cdot SE_{ij} + \sum \delta_k k_{ij} \cdot SE_{ij} + v_{ij}$. All estimations use unrestricted weighted least squares with inverse variance weights. Column (5) additionally includes 103 author or authors' group fixed effects which are not reported. Figures in round brackets are *t*-statistics, using standard errors adjusted for clustering of estimates within studies. Figures in square brackets are *p*-values of the underlying joint tests. *, **, *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Table A11

Publication selection models: Replacing average age with minimum age

	Baseline	Expanded	General	Reduced	With auth. FE
	(1)	(2)	(3)	(4)	(5)
Standard error	0.396	0.666	0.807	0.937	3.768
	(1.32)	(0.99)	(1.16)	(2.88)***	(2.86)***
Post-PhD Age	0.010	0.039	0.065	0.055	0.204
	(0.28)	(1.63)	(3.14)***	(3.18)***	(1.84)*
Tenure	0.736	0.988	0.896	0.738	0.249
	(1.72)*	(2.68)***	(2.20)**	(2.21)**	(0.19)
Post-PhD Age*Tenure	-0.057	-0.075	-0.087	-0.077	-0.264
	(-1.41)	(-2.28)**	(-3.01)***	(-3.23)***	(-1.92)*
Africa		-0.149	-0.030		-0.308
		(-0.45)	(-0.10)		(-0.57)
Asia		-0.434	-0.545	-0.557	0.081
		(-1.35)	(-1.73)*	(-2.27)**	(0.11)
Latin		0.105	0.272		0.194
		(0.34)	(0.83)		(0.38)
Y1970s		0.044	-0.136		0.561
		(0.11)	(-0.36)		(1.32)
Y1980s		-0.230	-0.290		0.250
		(-0.61)	(-0.75)		(0.47)
Y1990s		0.402	-0.076		0.423
		(1.47)	(-0.25)		(1.42)
Y2000		-0.003	-0.023		0.248
		(-0.01)	(-0.09)		(0.80)
Panel		0.354	0.291		0.412
		(0.68)	(0.55)		(0.87)
SingleCo		-0.328	-0.505	-1.079	-0.831
		(-0.41)	(-0.59)	(-2.36)**	(-0.60)
LowIncome		0.291	0.294		-0.123
		(1.08)	(1.13)		(-0.38)
SubSample		-0.461	-0.499	-0.359	-0.019
		(-1.98)*	(-2.20)**	(-2.30)**	(-0.08)
EDA		0.205	0.283		-0.241
		(0.96)	(1.21)		(-0.90)
Outliers		-0.150	-0.189		-0.303
		(-0.77)	(-1.03)		(-1.48)
NrCountries		-0.001	-0.002		-0.011
		(-0.26)	(-0.39)		(-1.58)
NrYears		-0.029	-0.010		-0.035
		(-1.40)	(-0.49)		(-1.46)
Average		0.001	-0.015	-0.039	0.007
		(0.06)	(-0.55)	(-4.05)***	(0.34)
Nonlinear		0.334	0.226		-0.098
		(1.64)	(1.16)		(-0.53)
Aid*Policy		-0.578	-0.579	-0.683	-0.286
		(-2.36)**	(-2.44)**	(-3.90)***	(-1.37)
Aid*Institut		-0.843	-0.621	-0.772	-0.715
		(-2.09)**	(-1.49)	(-2.29)**	(-1.31)
Capital		0.194	0.155		0.196
		(0.71)	(0.60)		(0.63)

	Baseline	Expanded	General	Reduced	With auth. FE
	(1)	(2)	(3)	(4)	(5)
FDI		0.179	0.255		-0.773
		(0.57)	(0.80)		(-2.01)**
GapModel		0.517	0.458	0.658	-1.181
		(1.15)	(1.07)	(2.02)**	(-1.06)
Theory		0.196	0.114		0.189
		(0.67)	(0.40)		(0.49)
LagUsed		0.258	0.439		0.756
		(0.80)	(1.33)		(1.47)
Inflation		-0.098	-0.255		0.246
		(-0.29)	(-0.78)		(0.63)
Instability		-0.472	-0.191		0.001
		(-1.90)*	(-0.84)		(0.00)
Fiscal		0.046	0.119		0.283
		(0.14)	(0.38)		(0.83)
GovSize		0.868	1.103	1.168	0.615
		(3.45)***	(4.34)***	(5.01)***	(1.54)
FinDev		0.333	0.252		0.223
		(1.46)	(0.99)		(1.05)
Ethno		-0.028	-0.211		-0.013
		(-0.10)	(-0.88)		(-0.05)
Region		-0.066	-0.120		0.004
		(-0.33)	(-0.61)		(0.02)
HumCap		0.039	0.131		0.254
		(0.14)	(0.48)		(0.99)
Open		0.381	0.323		0.291
		(1.56)	(1.48)		(1.57)
PopSize		0.319	0.390	0.418	0.720
		(1.36)	(1.65)	(1.99)**	(2.22)**
GDPLev		-0.084	-0.121		-0.093
		(-0.28)	(-0.41)		(-0.21)
Policies		0.388	0.282		0.084
		(1.19)	(0.97)		(0.33)
OLS		-0.247	-0.226		-0.157
		(-1.24)	(-1.12)		(-0.61)
Growth&Aid		-0.194	-0.248		0.021
		(-0.54)	(-0.69)		(0.03)
Growth&Savs		-0.289	-0.205		0.194
		(-0.46)	(-0.38)		(0.62)
WorkPap			0.462	0.349	-0.933
			(1.97)*	(1.82)*	(-2.56)**
Cato			-0.452		-4.196
			(-0.66)		(-5.71)***
JDS			0.888	0.875	-0.355
			(2.14)**	(2.91)***	(-0.62)
JID			0.004		0.064
			(0.01)		(0.12)
EDCC			-1.598	-1.292	-2.517
			(-3.50)***	(-5.05)***	(-1.34)
AER			0.075		9.957
			(0.16)		(2.68)***

	Baseline	Expanded	General	Reduced	With auth. FE
	(1)	(2)	(3)	(4)	(5)
AE			-0.206		1.121
			(-0.37)		(0.52)
Female			-0.214		-1.217
			(-1.06)		(-1.60)
Danida			0.993	1.201	-3.522
			(1.90)*	(2.68)***	(-2.30)**
WorldBank			-0.123		-10.467
			(-0.28)		(-2.62)***
Influence			-0.038		1.128
			(-0.15)		(1.50)
Constant	0.005	0.018	0.009	-0.002	0.036
	(0.44)	(1.17)	(0.63)	(-0.16)	(1.56)
Joint test-age	2.354	2.677	5.416	5.725	1.835
	[0.099]	[0.072]	[0.005]	[0.004]	[0.164]
Joint test-tenure	1.593	4.007	4.674	5.251	3.213
	[0.207]	[0.020]	[0.011]	[0.006]	[0.004]
N	1290	1273	1273	1273	1273
Adjusted R2	0.045	0.216	0.248	0.227	0.443

Notes: The dependent variable is the partial correlation between aid and growth. Table reports results of estimating the publication selection bias model: $r_{ij} = \beta_0 + \beta_1 SE_{ij} + \delta_1 Age_{ij} \cdot SE_{ij} + \delta_2 Tenure_{ij} \cdot SE_{ij} + \delta_3 Age_{ij} \cdot Tenure_{ij} \cdot SE_{ij} + \sum \delta_k k_{ij} \cdot SE_{ij} + v_{ij}$. All estimations use unrestricted weighted least squares with inverse variance weights. Column (5) additionally includes 103 author or authors' group fixed effects which are not reported. Figures in round brackets are *t*-statistics, using standard errors adjusted for clustering of estimates within studies. Figures in square brackets are *p*-values of the underlying joint tests. *, **, *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Table A12

Publication selection models: Replacing the average tenure with a dummy taking the value of 1 if at least one researcher has tenure

	Baseline	Expanded	General	Reduced	With auth. FE
	(1)	(2)	(3)	(4)	(5)
Standard error	0.368	0.516	0.951	1.521	-0.009
	(1.08)	(0.71)	(1.36)	(5.09)***	(-0.01)
Post-PhD Age	0.027	0.039	0.062	0.061	0.149
	(0.82)	(1.42)	(2.60)**	(2.58)**	(1.90)*
Tenure	0.887	0.919	0.815	0.615	3.886
	(2.30)**	(2.67)***	(2.21)**	(2.18)**	(3.08)***
Post-PhD Age*Tenure	-0.080	-0.078	-0.089	-0.083	-0.234
	(-2.01)**	(-2.36)**	(-3.03)***	(-2.91)***	(-2.45)**
Africa		-0.063	0.027		-0.191
		(-0.19)	(0.09)		(-0.35)
Asia		-0.458	-0.599	-0.541	0.046
		(-1.37)	(-1.75)*	(-2.11)**	(0.06)
Latin		0.080	0.224		0.289
		(0.26)	(0.69)		(0.57)
Y1970s		0.068	-0.163		0.587
		(0.17)	(-0.43)		(1.43)
Y1980s		-0.273	-0.359		0.257
		(-0.72)	(-0.93)		(0.48)
Y1990s		0.456	-0.090		0.432
		(1.64)	(-0.29)		(1.46)
Y2000		-0.046	-0.180		0.170
		(-0.19)	(-0.73)		(0.53)
Panel		0.463	0.395		0.440
		(0.90)	(0.77)		(0.95)
SingleCo		-0.254	-0.468	-1.315	1.032
		(-0.31)	(-0.55)	(-2.99)***	(0.76)
LowIncome		0.336	0.306		-0.083
		(1.24)	(1.19)		(-0.27)
SubSample		-0.390	-0.457	-0.282	0.002
		(-1.61)	(-1.98)**	(-1.82)*	(0.01)
EDA		0.122	0.167		-0.247
		(0.55)	(0.75)		(-0.97)
Outliers		-0.101	-0.161		-0.336
		(-0.51)	(-0.86)		(-1.70)*
NrCountries		0.002	0.001		-0.011
		(0.39)	(0.13)		(-1.92)*
NrYears		-0.028	-0.004		-0.033
		(-1.34)	(-0.20)		(-1.34)
Average		0.004	-0.014	-0.033	0.005
		(0.16)	(-0.54)	(-3.50)***	(0.22)
Nonlinear		0.310	0.212		-0.010
		(1.49)	(1.09)		(-0.05)
Aid*Policy		-0.617	-0.636	-0.630	-0.250
		(-2.55)**	(-2.73)***	(-3.31)***	(-1.21)
Aid*Institut		-0.789	-0.565	-0.792	-0.661
		(-1.99)**	(-1.45)	(-2.39)**	(-1.20)
Capital		0.111	0.043		0.175
		(0.38)	(0.16)		(0.57)

	Baseline	Expanded	General	Reduced	With auth. FE
	(1)	(2)	(3)	(4)	(5)
FDI		0.237	0.284		-0.915
		(0.73)	(0.87)		(-2.58)**
GapModel		0.528	0.372		1.475
		(1.15)	(0.84)		(1.95)*
Theory		0.123	0.069		-0.329
		(0.42)	(0.24)		(-0.70)
LagUsed		0.311	0.448		0.781
		(0.94)	(1.35)		(1.56)
Inflation		-0.059	-0.181		0.415
		(-0.17)	(-0.55)		(1.00)
Instability		-0.463	-0.184		-0.191
		(-1.90)*	(-0.79)		(-0.60)
Fiscal		0.138	0.155		0.088
		(0.42)	(0.51)		(0.25)
GovSize		0.770	1.018	1.130	0.635
		(3.11)***	(4.16)***	(4.88)***	(1.53)
FinDev		0.270	0.303		0.341
		(1.15)	(1.13)		(1.49)
Ethno		0.027	-0.137		0.048
		(0.10)	(-0.58)		(0.19)
Region		-0.125	-0.148		-0.002
		(-0.65)	(-0.77)		(-0.01)
HumCap		0.034	0.150		0.180
		(0.12)	(0.53)		(0.71)
Open		0.352	0.274		0.299
		(1.44)	(1.23)		(1.69)*
PopSize		0.265	0.329	0.346	0.400
		(1.09)	(1.40)	(1.67)*	(1.31)
GDPLev		-0.134	-0.148	-0.486	-0.117
		(-0.44)	(-0.50)	(-2.25)**	(-0.27)
Policies		0.377	0.280		0.103
		(1.14)	(0.98)		(0.38)
OLS		-0.200	-0.217		-0.197
		(-0.97)	(-1.06)		(-0.77)
Growth&Aid		-0.184	-0.304		-0.357
		(-0.47)	(-0.84)		(-0.57)
Growth&Savs		-0.343	-0.291		0.257
		(-0.54)	(-0.53)		(0.69)
WorkPap			0.193		-0.735
			(0.80)		(-2.36)**
Cato			-0.515		-4.748
			(-0.77)		(-6.37)***
JDS			0.732	0.667	-0.629
			(1.77)*	(1.99)**	(-0.95)
JID			0.004		0.075
			(0.01)		(0.13)
EDCC			-1.747	-1.453	-4.138
			(-3.52)***	(-5.13)***	(-2.80)***
AER			0.297		4.537
			(0.53)		(2.21)**

	Baseline	Expanded	General	Reduced	With auth. FE
	(1)	(2)	(3)	(4)	(5)
AE			-0.235		-3.683
			(-0.42)		(-1.69)*
Female			-0.319		-1.109
			(-1.51)		(-1.57)
Danida			0.831	1.156	-3.534
			(1.62)	(2.72)***	(-3.18)***
WorldBank			-0.431		-3.736
			(-0.95)		(-1.63)
Influence			-0.048		1.899
			(-0.19)		(2.74)***
Constant	0.007	0.011	0.002	-0.006	0.036
	(0.60)	(0.68)	(0.15)	(-0.63)	(1.56)
Joint test-age	3.001	3.225	4.727	4.251	3.148
	[0.053]	[0.043]	[0.010]	[0.016]	[0.046]
Joint test-tenure	2.755	3.821	4.660	4.270	8.076
	[0.067]	[0.024]	[0.011]	[0.016]	[0.000]
N	1290	1273	1273	1273	1273
Adjusted R2	0.062	0.218	0.249	0.234	0.445

Notes: The dependent variable is the partial correlation between aid and growth. Table reports results of estimating the publication selection bias model: $r_{ij} = \beta_0 + \beta_1 SE_{ij} + \delta_1 Age_{ij} \cdot SE_{ij} + \delta_2 Tenure_{ij} \cdot SE_{ij} + \delta_3 Age_{ij} \cdot Tenure_{ij} \cdot SE_{ij} + \sum \delta_k k_{ij} \cdot SE_{ij} + v_{ij}$. All estimations use unrestricted weighted least squares with inverse variance weights. Column (5) additionally includes 103 author or authors' group fixed effects which are not reported. Figures in round brackets are *t*-statistics, using standard errors adjusted for clustering of estimates within studies. Figures in square brackets are *p*-values of the underlying joint tests. *, **, *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Table A13

Publication selection models: Replacing the average tenure with a dummy taking the value of 1 if all researchers are tenured

	Baseline	Expanded	General	Reduced	With auth. FE
	(1)	(2)	(3)	(4)	(5)
Standard error	0.698	0.939	1.085	1.105	3.299
	(2.39)**	(1.49)	(1.68)*	(2.79)***	(2.87)***
Post-PhD Age	-0.015	0.016	0.035	0.015	0.066
	(-0.45)	(0.87)	(1.80)*	(0.85)	(1.54)
Tenure	0.986	1.465	1.399	1.158	-0.589
	(2.49)**	(3.92)***	(3.52)***	(3.52)***	(-0.64)
Post-PhD Age*Tenure	-0.049	-0.088	-0.090	-0.082	-0.075
	(-1.30)	(-3.33)***	(-3.36)***	(-3.14)***	(-1.44)
Africa		-0.222	-0.110		-0.419
		(-0.72)	(-0.37)		(-0.80)
Asia		-0.383	-0.509	-0.468	0.067
		(-1.26)	(-1.67)*	(-1.93)*	(0.09)
Latin		0.070	0.253		0.149
		(0.25)	(0.83)		(0.29)
Y1970s		0.018	-0.162		0.618
		(0.04)	(-0.39)		(1.60)
Y1980s		-0.292	-0.304	-0.738	0.333
		(-0.78)	(-0.80)	(-2.43)**	(0.59)
Y1990s		0.386	-0.086		0.457
		(1.48)	(-0.28)		(1.53)
Y2000		-0.066	-0.114		0.240
		(-0.27)	(-0.46)		(0.80)
Panel		0.410	0.372	0.763	0.380
		(0.84)	(0.73)	(2.94)***	(0.85)
SingleCo		-0.399	-0.551		0.193
		(-0.54)	(-0.67)		(0.14)
LowIncome		0.309	0.330		0.023
		(1.19)	(1.30)		(0.08)
SubSample		-0.355	-0.441		0.021
		(-1.49)	(-1.88)*		(0.09)
EDA		0.206	0.283		-0.429
		(0.97)	(1.28)		(-2.19)**
Outliers		-0.185	-0.238		-0.352
		(-0.99)	(-1.37)		(-1.71)*
NrCountries		0.001	0.000		-0.004
		(0.40)	(0.04)		(-0.70)
NrYears		-0.027	-0.010		-0.028
		(-1.29)	(-0.47)		(-1.25)
Average		0.005	-0.013		-0.007
		(0.20)	(-0.47)		(-0.31)
Nonlinear		0.370	0.255	0.429	-0.150
		(1.84)*	(1.36)	(2.40)**	(-0.84)
Aid*Policy		-0.606	-0.605	-0.484	-0.313
		(-2.39)**	(-2.47)**	(-2.52)**	(-1.56)
Aid*Institut		-0.842	-0.555	-0.774	-0.704
		(-2.09)**	(-1.34)	(-1.99)**	(-1.31)
Capital		0.147	0.086		0.164
		(0.54)	(0.33)		(0.54)

	Baseline	Expanded	General	Reduced	With auth. FE
	(1)	(2)	(3)	(4)	(5)
FDI		0.267	0.313		-0.679
		(0.87)	(1.01)		(-1.80)*
GapModel		0.280	0.231		-1.119
		(0.67)	(0.56)		(-1.32)
Theory		0.116	0.053		0.490
		(0.40)	(0.19)		(1.34)
LagUsed		0.199	0.317		0.773
		(0.60)	(0.94)		(1.54)
Inflation		-0.208	-0.346	-0.466	0.172
		(-0.62)	(-1.04)	(-1.90)*	(0.43)
Instability		-0.611	-0.301	-0.446	0.114
		(-2.44)**	(-1.30)	(-2.16)**	(0.36)
Fiscal		-0.101	-0.052		0.272
		(-0.29)	(-0.16)		(0.81)
GovSize		0.827	1.073	0.826	0.553
		(3.21)***	(4.04)***	(3.16)***	(1.36)
FinDev		0.382	0.294		0.217
		(1.61)	(1.12)		(1.06)
Ethno		0.059	-0.144		-0.018
		(0.23)	(-0.64)		(-0.07)
Region		-0.109	-0.144		-0.027
		(-0.56)	(-0.74)		(-0.15)
HumCap		0.026	0.102		0.141
		(0.10)	(0.39)		(0.56)
Open		0.430	0.363	0.418	0.295
		(1.87)*	(1.72)*	(1.86)*	(1.56)
PopSize		0.330	0.401		0.765
		(1.47)	(1.78)*		(2.52)**
GDPLev		-0.083	-0.164		-0.111
		(-0.27)	(-0.56)		(-0.27)
Policies		0.334	0.187		-0.057
		(0.99)	(0.64)		(-0.23)
OLS		-0.217	-0.221		-0.184
		(-1.06)	(-1.10)		(-0.72)
Growth&Aid		-0.435	-0.633		-0.336
		(-1.20)	(-1.91)*		(-0.57)
Growth&Savs		-0.223	-0.178		0.233
		(-0.38)	(-0.34)		(0.77)
WorkPap			0.383		-0.842
			(1.73)*		(-2.63)***
Cato			-0.486		-3.918
			(-0.75)		(-5.30)***
JDS			0.812	0.507	-0.730
			(2.08)**	(1.72)*	(-1.49)
JID			-0.014		0.238
			(-0.04)		(0.46)
EDCC			-1.297	-1.109	-1.798
			(-2.93)***	(-4.51)***	(-1.32)
AER			0.209		4.840
			(0.42)		(4.33)***

	Baseline	Expanded	General	Reduced	With auth. FE
	(1)	(2)	(3)	(4)	(5)
AE			-0.178		1.107
			(-0.32)		(0.58)
Female			-0.201		-1.304
			(-1.01)		(-2.01)**
Danida			0.904	0.930	-2.730
			(1.68)*	(2.11)**	(-3.17)***
WorldBank			-0.204		-7.493
			(-0.44)		(-3.61)***
Influence			0.133		0.497
			(0.50)		(0.76)
Constant	0.005	0.013	0.006	0.001	0.024
	(0.51)	(0.89)	(0.42)	(0.12)	(1.00)
Joint test-age	5.775	6.469	5.684	6.847	1.294
	[0.003]	[0.002]	[0.004]	[0.001]	[0.278]
Joint test-tenure	5.775	7.783	6.712	6.495	10.842
	[0.004]	[0.001]	[0.002]	[0.002]	[0.000]
N	1290	1273	1273	1273	1273
Adjusted R2	0.050	0.221	0.249	0.226	0.453

Notes: The dependent variable is the partial correlation between aid and growth. Table reports results of estimating the publication selection bias model: $r_{ij} = \beta_0 + \beta_1 SE_{ij} + \delta_1 Age_{ij} \cdot SE_{ij} + \delta_2 Tenure_{ij} \cdot SE_{ij} + \delta_3 Age_{ij} \cdot Tenure_{ij} \cdot SE_{ij} + \sum \delta_k k_{ij} \cdot SE_{ij} + v_{ij}$. All estimations use unrestricted weighted least squares with inverse variance weights. . Column (5) additionally includes 103 author or authors' group fixed effects which are not reported. Figures in round brackets are *t*-statistics, using standard errors adjusted for clustering of estimates within studies. Figures in square brackets are *p*-values of the underlying joint tests. *, **, *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Conditional meta-averages

Table 2 in the article presents unconditional meta-averages, which confirm that development aid has a small positive but practically insignificant correlation with economic growth. Table A14 below presents several conditional meta-averages. These are constructed based on heterogeneity model, Eq. (5) including variables reflecting genuine heterogeneity (see Table A1: *Region and time, Data, Specification*). In Table A14, Column (1) lists the included moderators and the meta-averages are reported in Column (2). In all cases, similarly to the unconditional case, there is no evidence of a statistically significant correlation between aid and growth.

Table A14

Conditional meta-averages

Moderators included (1)	Conditional meta-average (2)
Baseline model: *Data*: Panel, including data from Asia, and Latin America and from all decades. *Specification*: conditioning on policies, capital, FDI, inflation, instability, fiscal, size of government, financial development, ethnic fractionalization, regional dummies, human capital, openness, population and per capita income. *Sample means of:* number of countries, no years in sample, and number of years of data averaging.	*r* = 0.075 [0.240] (-0.051; 0.202)
Same as baseline but with outliers removed	*r* = 0.067 [0.298] (-0.060; 0.194)
Same as baseline but data for single country	*r* = -0.056 [0.699] (-0.339; 0.228)
Same as baseline but allowing for non-linear aid effects	*r* = 0.103 [0.119] (-0.027; 0.233)
Same as baseline but allowing for interactions with policy	*r* = 0.035 [0.553] (-0.081; 0.150)
Same as baseline but allowing for interactions with institutions	*r* = 0.011 [0.874] (-0.127; 0.149)
Best case: baseline model, for low income countries only, using EDA data.	*r* = 0.110 [0.137] (-0.035; 0.254)

Notes: Figures in square brackets are *p*-values. Figures in round brackets are 95% confidence intervals.

Journal differences

If non-tenured researchers are motivated to publish in order to secure tenure, then perhaps this goal is assisted by publishing in the best economics journals? To explore this dimension, we consider differences in published results between journals. We use the same classification of journals as Heckman and Moktan (2020). For this analysis, we look at the simple, unweighted average, of all results published in the various categories, by tenure and age. Table A15, Column (1), reports the unweighted averages published across all publication outlets (all journals, working papers and book chapters). Column (2) reports the unweighted average partial correlation reported in the Top 5 economics journals.[1] Column (3) reports the same for but the Top 5 plus the non-top 5 general interest journals. Finally, in Column (4) we present average correlations for studies published in Field A and B journals. Cells for each row report first the simple, unweighted average partial correlation, followed by the average research inflation (in square brackets), and then the number of estimates.

Column (1) confirms the previous findings. Older tenured researchers report smallest correlations and the least inflated results; research inflation is on average 31% among older all tenured research teams compared to 85% among older all non-tenured research teams. The number of observations for top 5 journals is very small. They do show, however, that compared to the average partial correlation in top 5 journals (r = 0.07), studies where all authors are non-tenured are larger (r = 0.12), and those from older non-tenured are very large (r = 0.48). Research inflation is extreme for this group, where the average estimate is inflated by 1,268%! Column (3), corroborates this finding. The comparison between estimates reported by all authors vs. all non-tenured and older non-tenured authors shows larger positive correlations (r = 0.07 and r = 0.16) as compared to tenured authors (r = -0.02).

[1] Column (1) includes estimates from *American Economic Review* and *Journal of Political Economy*. Column (3) adds estimates from the *Review of Economics and Statistics*, *Economic Journal*, and the *European Economic Review*. In Column (4) we use results from *Public Choice*, *World Development*, *Economic Development and Cultural Change*, and the *Journal of Development Economics*.

Column (4) confirms the divergence in results between tenured and non-tenured researchers. Non-tenured researchers report, on average, larger positive correlation (r = 0.41) that exaggerates, given how low the correlation really is. Conversely, tenured researchers report only small positive correlations (r = 0.07). Also, it is interesting that the top journals—Columns (2) and (3) —are more likely to publish smaller or even adverse growth effects compared to the second tier journals, on average (Field A & B).

These results are consistent with non-tenured researchers inflating aid effectiveness with the view of getting published. Publishing is of course a process of matching authors to journals. Table A15 merely reports differences between tenured and non-tenured as revealed in actual published studies. As Frey (2003) highlights, referees are very influential in driving what is ultimately published in journals. Nevertheless, the differences between tenured and non-tenured authors cannot be explained by referee pressures alone; the pattern is more consistent with researcher motivations.

Table A15

Reported aid effectiveness by journal

	All journals	Top 5 journals	General interest journals	Field A & B journals
	(1)	(2)	(3)	(4)
All authors	0.063	0.070	-0.020	0.101
	[0.81]	[1.00]	[-1.57]	[1.90]
	1,290	30	169	107
All tenured	0.067	-	0.58	0.065
	[0.93]		[15.65]	[0.87]
	265		1	57
All non-tenured	0.073	0.115	0.069	0.405
	[1.09]	[2.29]	[0.98]	[10.63]
	414	16	22	11
Younger tenured	0.089	-	-	0.052
	[1.55]			[0.482]
	53			39
Younger non-tenured	0.053	-	-	0.018
	[0.52]			[-0.47]
	233			2
Older tenured	0.046	-	-	-
	[0.31]			
	162			
Older non-tenured	0.064	0.476	0.158	-
	[0.85]	[12.68]	[3.55]	
	107	4	10	

Notes: Column (1) presents the average correlations in all outlets. Column (2) presents average correlations reported in Top 5 economics journals. Column (3) in the top 5 plus the non-top 5 general interest economics journals. Column (4) is for field A and field B journals. Figure in square brackets is average research inflation. The third number in each block is the number of estimates within each subgroup. Younger researchers are those whose post PhD age is not larger than 6, while older are those whose academic age is at least 15

Table A16

Bayesian model averaging (BMA) estimation results

	Coefficient	Std. err.	t-ratio	Posterior inclusion prob.
Standard error	1.047	0.223	4.69	1
Constant	0.058	0.045	1.3	1
Africa	-0.024	0.019	-1.25	1
Asia	-0.038	0.020	-1.95	1
Latin	0.012	0.018	0.65	1
Y1970s	0.032	0.015	2.14	1
Y1980s	-0.018	0.018	-0.97	1
Y1990s	0.020	0.013	1.58	1
Y2000	0.007	0.009	0.75	1
Auxiliary variables				
Panel	0.005	0.020	0.28	0.1
SingleCo	-0.146	0.085	-1.73	0.82
LowIncome	0.002	0.007	0.23	0.09
SubSample	-0.026	0.010	-2.71	0.96
EDA	0.001	0.005	0.27	0.1
Outliers	0.000	0.003	-0.15	0.04
NrCountries	0.000	0.000	-0.3	0.11
NrYears	-0.001	0.001	-1.24	0.68
Average	-0.004	0.001	-2.8	0.94
Nonlinear	0.019	0.014	1.31	0.7
Aid*Policy	-0.041	0.011	-3.72	0.99
Aid*Institut	-0.056	0.021	-2.69	0.95
Capital	0.000	0.002	-0.01	0.03
FDI	0.002	0.008	0.26	0.09
GapModel	0.031	0.033	0.95	0.54
Theory	0.001	0.004	0.21	0.07
LagUsed	0.010	0.011	0.88	0.5
Inflation	0.004	0.009	0.46	0.22
Instability	-0.008	0.012	-0.7	0.39
Fiscal	0.010	0.014	0.76	0.42
GovSize	0.037	0.010	3.74	0.99
FinDev	0.001	0.004	0.2	0.07
Ethno	-0.001	0.004	-0.2	0.07
Region	0.000	0.002	-0.1	0.04
HumCap	0.000	0.003	0.14	0.04
PopSize	0.000	0.002	-0.1	0.04
Open	0.001	0.004	0.23	0.08
GDPLev	-0.007	0.012	-0.63	0.33
Policies	0.000	0.003	-0.01	0.04
OLS	-0.001	0.004	-0.25	0.09
Growth&Aid	-0.004	0.012	-0.37	0.15
Growth&Savs	0.000	0.005	-0.05	0.03

Notes: BMA results are based on 4.3 billion alternative heterogeneity models, the 8 highlighted auxiliary variables were selected together with all regional and temporal dummies to the heterogeneity model of Table 4, Column (3) and Table 7, Column (2).

Table A17

Publication selection bias and aid links (full set of interactions)

	Publication selection bias (1)	Publication selection bias and heterogeneity (2)
Standard error	1.079	1.399
	(1.60)	(1.38)
Post-PhD Age	0.070	0.066
	(1.42)	(1.41)
Tenure	0.878	0.555
	(2.29)**	(1.46)
Aid Link	-0.630	-0.958
	(-1.43)	(-2.35)**
Post-PhD Age*Tenure	-0.087	-0.070
	(-1.49)	(-1.25)
Post-PhD Age*Aid Link	-0.008	-0.001
	(-0.15)	(-0.02)
Tenure*Aid Link	2.219	2.993
	(2.84)***	(4.00)***
Post-PhD Age*Tenure*AidLink	-0.126	-0.186
	(-1.57)	(-2.41)**
Africa	-0.089	-0.175
	(-0.29)	(-0.29)
Asia	-0.491	-0.223
	(-1.37)	(-0.50)
Latin	0.327	-0.326
	(1.04)	(-0.57)
Y1970s	-0.134	-0.883
	(-0.36)	(-1.54)
Y1980s	-0.424	-0.308
	(-1.09)	(-0.51)
Y1990s	0.040	-0.176
	(0.14)	(-0.38)
Y2000	-0.146	-0.876
	(-0.66)	(-1.68)*
Panel	0.358	0.393
	(0.70)	(0.55)
SingleCo	-0.255	0.170
	(-0.30)	(0.08)
LowIncome	0.362	0.356
	(1.41)	(1.36)
SubSample	-0.419	-0.589
	(-1.75)*	(-1.77)*
EDA	0.185	0.180
	(0.81)	(0.80)
Outliers	-0.216	-0.221
	(-1.22)	(-1.21)
NrCountries	0.003	0.006
	(0.60)	(1.27)
NrYears	-0.010	-0.008
	(-0.54)	(-0.24)
Average	-0.007	0.021
	(-0.26)	(0.26)
Nonlinear	0.230	0.788
	(1.16)	(1.12)
Aid*Policy	-0.673	-0.188
	(-2.79)***	(-0.43)

	Publication selection bias	Publication selection bias and heterogeneity
	(1)	(2)
Aid*Institut	-0.591	-1.145
	(-1.49)	(-1.67)*
Capital	0.062	0.194
	(0.23)	(0.74)
FDI	0.344	0.271
	(0.98)	(0.79)
GapModel	0.223	0.216
	(0.49)	(0.50)
Theory	-0.107	-0.202
	(-0.42)	(-0.75)
LagUsed	0.457	0.490
	(1.38)	(1.47)
Inflation	-0.154	-0.089
	(-0.47)	(-0.28)
Instability	-0.471	-0.473
	(-2.06)**	(-2.16)**
Fiscal	0.159	0.126
	(0.52)	(0.40)
GovSize	0.957	2.410
	(3.51)***	(4.90)***
FinDev	0.301	0.359
	(1.21)	(1.46)
Ethno	-0.049	-0.127
	(-0.22)	(-0.60)
Region	-0.202	-0.146
	(-1.09)	(-0.84)
HumCap	-0.031	-0.234
	(-0.12)	(-1.06)
Open	0.201	0.255
	(0.92)	(1.26)
PopSize	0.236	0.365
	(0.99)	(1.57)
GDPLev	-0.079	0.106
	(-0.27)	(0.34)
Policies	0.386	0.327
	(1.20)	(1.07)
OLS	-0.246	-0.283
	(-1.26)	(-1.50)
Growth&Aid	-0.371	-0.248
	(-0.95)	(-0.62)
Growth&Savs	-0.022	-0.018
	(-0.04)	(-0.04)
WorkPap	0.238	0.148
	(1.09)	(0.72)
Cato	-0.744	-0.854
	(-1.21)	(-1.83)*
JDS	0.878	0.993
	(2.52)**	(2.79)***
JID	-0.283	-0.555
	(-0.73)	(-1.41)
EDCC	-1.821	-1.730
	(-2.90)***	(-2.74)***
AER	0.434	0.664
	(0.84)	(1.33)
AE	-0.381	-0.546
	(-0.71)	(-0.94)

	Publication selection bias	Publication selection bias and heterogeneity
	(1)	(2)
Female	-0.135	-0.066
	(-0.66)	(-0.32)
Influence	0.331	0.455
	(1.12)	(1.62)
Heterogeneity variables:		
Africa		-0.022
		(-0.28)
Asia		-0.036
		(-0.61)
Latin		0.057
		(0.64)
Y1970s		0.077
		(1.86)*
Y1980s		-0.006
		(-0.13)
Y1990s		0.005
		(0.21)
Y2000		0.046
		(2.04)**
SingleCo		-0.052
		(-0.13)
SubSample		0.015
		(0.85)
NrYears		-0.001
		(-0.45)
Average		-0.002
		(-0.27)
Nonlinear		-0.030
		(-0.67)
Aid*Policy		-0.026
		(-0.86)
Aid*Institut		0.041
		(0.85)
GovSize		-0.112
		(-3.53)***
Constant	0.005	-0.002
	(0.34)	(-0.02)
Joint test-age	4.520	6.921
	[0.002]	[0.000]
Joint test-tenure	5.367	7.030
	[0.000]	[0.000]
Joint test-aid	2.881	5.924
	[0.025]	[0.000]
N	1273	1273
Adjusted R2	0.261	0.287

Notes: The dependent variable is the partial correlation between aid and growth. Column (1) include the full set of publication selection variables (as Table 3, Column (4)). In the Column (2) we also add 15 variables that reflect heterogeneity (same as we added in Table 4, Column (3)). Figures in round brackets are *t*-statistics, using standard errors adjusted for clustering of estimates within studies. *, **, *** denote statistical significance at the 10%, 5%, and 1% levels, respectively. Figures in square brackets are *p*-values of the underlying joint tests.

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