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Fifty shades of QE: comparing findings of central bankers and academics

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Abstract

We compare the findings of central bank researchers and academic economists regarding the macroeconomic effects of quantitative easing (QE). We find that central bank papers find QE to be more effective than academic papers do. Central bank papers report larger effects of QE on output and inflation. They also report QE effects on output that are more significant, both statistically and economically, and they use more positive language in the abstract. Central bank researchers who report larger QE effects on output experience more favorable career outcomes. A survey of central banks reveals substantial involvement of bank management in research production.

Keywords: economic research, quantitative easing, QE, central bank, career concerns

JEL: A11, E52, E58, G28

1. Introduction

Since the 2008 financial crisis, central banks around the world have deployed unconventional monetary policy tools such as quantitative easing, forward guidance, and long-term refinancing operations. The popularity of these tools has grown since the outbreak of the COVID-19 pandemic. For example, the Federal Reserve, the European Central Bank, and the Bank of England all announced new large-scale asset purchases in March 2020.

The effectiveness of unconventional monetary policy ("QE") has been a subject of intense debate in both academic and policy circles. A significant part of the research on QE originates in central banks (Martin and Milas (2012)). This research, which is widely cited in the media, often finds QE to be effective.[1] However, it has an aspect of self-assessment: when central banks evaluate QE, they are judging their own policy. Whether this aspect has any bearing on research output is an empirical question that we address in this paper.

We compare the findings of central bank researchers ("central bankers") and academic economists ("academics") regarding the effectiveness of QE. We construct a dataset comprising 54 studies that analyze the effects of QE on output or inflation in the U.S., UK, and the euro area. For each study, we record its baseline estimates of the effects of QE on the level of GDP and the price level, along with their significance. We also collect a variety of other study-specific information, such as publication status and methodology used, as well as detailed biographical information of the 116 different authors. We then compare the findings of studies written by central bankers with those written by academics.

We find that central bank papers report larger effects of QE on both output and inflation. Central bank papers are also more likely to report QE effects on output that are significant, both statistically and economically. For example, while *all* of the central bank papers report a statistically significant QE effect on output, only *half* of the academic papers do. In addition, central bank papers use more favorable language—more positive adjectives and, to a lesser extent, fewer negative adjectives—in their abstracts. Overall, central bank papers find QE to be more effective than academic papers do.

[1] For example: "The good news is that, by most accounts, QE appears to have succeeded at boosting growth and lifting inflation. Martin Weale, a member of the BoE's interest-rate setting Monetary Policy Committee, found asset purchases worth 1% of national income boosted UK gross domestic product by about 0.18% and inflation by 0.3%. A study by John Williams, president of the San Francisco Federal Reserve, concluded that asset purchases had reduced the US unemployment rate by 1.5 percentage points by late 2012 and helped the economy avoid deflation." The Financial Times (2015).

We also uncover differences in methodological choices. For example, central bank papers are more likely to use dynamic stochastic general equilibrium (DSGE) models rather than vector autoregression (VAR) models. Yet our main result—that central bankers are more optimistic than academics in their assessments of QE—continues to hold even when we control for model choice. Differences in research quality are also unlikely to explain our results because the gap between central bankers and academics is very similar when we condition on published papers only, as well as when we weight each paper by its citations. Our results are robust to the inclusion of various controls, and they are not driven by central bankers from any single country, nor by QE programs in any single country.

To explore one possible mechanism, we relate central bankers' research findings to their subsequent career outcomes. We collect employment histories for all central bank authors and convert their job titles to numerical ranks on a six-point scale. For each author-paper pair, we measure the author's subsequent career outcome by the first change in the author's rank following the paper's first public release. We find that authors whose papers report larger effects of QE on output experience more favorable career outcomes. A one standard deviation increase in the estimated effect is associated with a career improvement of about half a rank, such as moving halfway from *Economist* to *Senior Economist*. This evidence suggests a potential role for career concerns in explaining our results.

These concerns appear to be stronger for senior central bankers because for them, we find a stronger relation between the estimated QE effects and subsequent career outcomes. Motivated by this finding, we look whether the gap between the findings of central bankers and academics is larger for papers whose authors are more senior. We find that it is, though only marginally so. Our results are consistent with the idea that senior central bankers report larger effects of QE because they have a stronger incentive to do so.

Not all central bankers face the same incentives. Top management of the German Bundesbank has taken a critical view of QE, especially in the context of the European Central Bank (ECB). Former Bundesbank officials Axel Weber and Jürgen Stark reportedly quit their ECB positions in protest over QE, and the current Bundesbank president, Jens Weidmann, has also publicly opposed it. Mindful of their bosses' views, Bundesbank researchers could potentially face career concerns very different from those of their colleagues at other central banks. Indeed, we show that studies co-authored by Bundesbank employees find QE to be *less* effective at raising output compared to academic studies. While this evidence is weak statistically, it is suggestive of managerial influence on research outcomes.

To shed more light on this influence, we survey heads of research at the world's leading central banks. We have received responses from 24 central banks employing over 750 research economists in total. These responses reveal substantial involvement of bank management in research production. In most banks, management participates in the selection of research topics, typically by negotiating with the researcher. Direct topic assignments occur "sometimes" ("often") in 50% (21%) of the responding banks. In most banks, research papers are reviewed by management prior to public distribution; such reviews happen "always" ("often") in 38% (21%) of the responding banks. Management also approves papers for public distribution: typically by the head of research ("always" in 67% of the banks), but sometimes also by the bank board (at least "sometimes" in 33% of the banks). Unlike central bankers, academics face little if any managerial interference in their research on QE.

As we note earlier, one possible mechanism behind our results is that central bankers face career concerns. A central bank economist may worry that the nature of her findings could threaten her employment status or rank. Such a concern could affect research outcomes even if it is completely unfounded as long as the economist perceives a nonzero probability of such a threat. This channel could operate at multiple levels because not only researchers but also their superiors want to get promoted. For example, a head of research may be reluctant to defend a subordinate's inconvenient findings in front of the bank's board.

Besides career concerns, a central bank economist may worry that bank management could block the release of studies that find the bank's policy to be ineffective, or to have undesirable side effects. A recent example, from a different public institution, is the controversial release of Andersen et al. (2020). That study finds that World Bank payouts of foreign aid are followed by jumps in the recipient countries' deposits in financial havens, suggesting leaks to the pockets of the countries' elites. According to The Economist (2020), after the study passed an internal peer review at the World Bank, it was "blocked by higher officials." After a substantial delay, the study was eventually released in February 2020.[2]

A central bank economist may also care about the bank's reputation, favoring conclusions that validate the bank's actions. The economist may even care about her own reputation

[2]In their evaluation of World Bank research, Banerjee et al. (2006) argue: "Internal research that was favorable to Bank positions was given great prominence, and unfavorable research ignored... there was a serious failure of the checks and balances that should separate advocacy and research." Similarly, in their independent review of the Bank of International Settlements' research, Allen et al. (2016) note "a tendency for analysis and research to be slanted to support the 'house view', especially in regard to monetary policy."

if she is senior enough to have participated in the formation of the bank's policy. For example, Bernanke (2020) offers a strong endorsement of QE. Given his unique experience, Ben Bernanke is exceptionally qualified to assess the effectiveness of QE. At the same time, QE is an important part of his legacy as it was adopted while he was Fed Chair.

A more benign explanation for our results, one that does not involve incentives, relies on differences in prior beliefs combined with selection. Researchers who believe in the power of policy interventions could self-select into policy institutions such as central banks, whereas policy skeptics could end up in academia. Researchers could then favor evidence supporting their priors. Moreover, their priors could be reinforced during the research process, either through the confirmation bias (Nickerson (1998)) or through the feedback received from colleagues, whose priors may be similar. We have no direct evidence on the validity of this mechanism, or the mechanisms described in the previous two paragraphs.

A by-product of our work is a meta-analysis of the macroeconomic effects of QE. Averaging across all 54 studies and standardizing QE program size to 1% of the country's GDP, QE increases the output level (price level) by 0.24% (0.19%) at the peak. The average cumulative effect on output (prices) is 58% (63%) of the peak effect. About 88% (84%) of studies estimate statistically significant effects on output (prices). Across the three regions studied, QE is the most effective in the U.S., in terms of raising both output and prices.

Our study is related to the literature inspecting the credibility of scientific research (e.g., Ioannidis (2005); Fanelli (2009)). It is well known that industry-sponsored scientists may act in the interests of their sponsors. This problem has been extensively documented in biomedical research. Many studies find that research sponsored by the pharmaceutical industry tends to draw pro-industry conclusions (e.g., Bekelman et al. (2003)). A similar bias could potentially affect central bankers; in fact, while academic medical researchers are merely *sponsored* by industry, central bank economists are directly *employed* by central banks. Central banks evaluating their own policies is not unlike pharmaceutical firms evaluating their own drugs. Both have skin in the game. The problem is particularly acute for central banks that view their research as part of their own policy, because research supportive of a policy could potentially enhance the policy's effectiveness. On the other hand, alleviating this problem is the strong desire of central banks to protect their reputation.

Academic economists who judge central bank policies may not have skin in the game, but they have their own incentive to find strong results because they face the pressure to publish. Academics' career concerns are commonly summarized as "publish or perish." These concerns seem weaker for central bankers, who can often substitute policy work for journal publications. The need to publish creates a pressure for academics to find significant results because of the well-known publication bias: journals are more likely to publish positive results than negative ones (e.g., Fanelli (2010a)). This bias is particularly strong in economics (e.g., De Long and Lang (1992); Fanelli (2010b)). Some authors do not submit null findings (Franco, Malhotra and Simonovits (2014)); others inflate the values of just-rejected tests by choosing "significant" specifications (Brodeur et al. (2016)). Ioannidis et al. (2017) argue that many results in the economic literature are exaggerated.

The publication bias is not the only thorn in the side of academic research in economics. Academics do not always disclose their private financial affiliations (Carrick-Hagenbarth and Epstein (2012)). Zingales (2013) discusses how academic research could be corrupted by economists' outside employment opportunities or their desire to gain access to proprietary data. Reported estimates of policy-relevant parameters, such as fiscal multipliers, reflect the authors' national backgrounds and political orientation (Asatryan et al. (2020); Jelveh et al. (2018)). Other problems include scientific misconduct (List et al. (2001)) and the inability to replicate economic findings (Christensen and Miguel (2018)).

Our study is also related to the literature on career concerns. This large literature finds evidence of such concerns not only for private-sector workers such as analysts and executives, but also for public-sector workers such as banking regulators (Lucca et al. (2014)) and federal government employees (Blanes i Vidal et al. (2012)). In contrast, there is little work on the incentives of central bankers. That work focuses mostly on the voting members of a central bank's monetary policy committee (e.g., Sibert (2003); Hansen et al. (2018)). We are not aware of any prior work on the incentives or biases of central bank research economists.

2. Data

We construct a dataset comprising studies of the effects of unconventional monetary policy on output and inflation. We aim to cover all studies, published and unpublished, that analyze the policy effects for at least one of three economies: the United States (US), the United Kingdom (UK), and the euro area (EA). For ease of exposition, we refer to these economies, including EA, as "countries." We include papers studying the EA as a whole, but not papers studying individual European countries. We focus on papers containing a quantitative analysis, either model-based or empirical, of the effects on output, inflation, or both. We restrict our attention to output and inflation because these macroeconomic variables are of primary interest to central banks. We do not consider studies of the effects of policy on asset prices unless they also analyze the effects on output or inflation.

To identify the papers, we began by manually searching for 40 keywords in the Google Scholar and RePEc IDEAS databases. The keywords are listed in the Appendix, which is available on the authors' websites. These keywords cover not only quantitative easing but also other unconventional monetary policy tools that operate through central bank balance sheets, such as long-term refinancing operations. Since about 80% of the papers in our sample study quantitative easing, we refer to all papers as "QE" studies, for brevity.

We conducted the search in July and August of 2019. To allow for a lag between a paper's public release and its indexing in the databases, we included only papers released prior to July 2018. For each of the 40 keywords, we selected all papers on the first 10 pages of search results in both portals, with each page containing about 10 papers. All of these papers were independently evaluated for inclusion by two economists. Both of them read each paper's title, abstract, and introduction to assess whether the paper contains the kind of analysis described earlier. This analysis produced the first tier of papers in our sample.

To construct the second tier, we proceeded in three steps. First, we selected all papers cited in the references of all first-tier papers. Second, we selected all papers that cite any of the first-tier papers, using the Google Scholar functionality to query for all documents citing a specified paper. Third, for each paper selected in the first two steps, we read its title, abstract, and introduction to determine its eligibility. Those papers deemed eligible constitute the second tier of papers in our sample. We repeated this procedure one more time, creating a third tier. While it is possible for our procedure to have missed a relevant paper, such a paper would have to escape our deep, 40-keyword, two-portal search, not cite any of our sample papers, and not be cited by any of our sample papers.

We include only papers that contain original quantitative estimates, thus excluding review papers. We exclude papers not written in English, as well as master's and bachelor's theses. We include all other types of papers: journal publications, working papers, book chapters, and policy papers. Our final sample consists of 54 papers written by 137 authors, 116 of whom are unique. All 54 papers are listed in the Appendix.

For each paper, we collect information on the year of first public distribution, year of journal publication (if any), publication outlet, authors' names, and the methodology used (e.g., a DSGE or VAR model). We obtain impact factors and article influence scores from

Clarivate Analytics Web of Science for the year of the paper's publication.

We record the effects of QE on the level of GDP and the price level as implied by the authors' baseline model. The baseline model is the specification that is typically discussed in the abstract, introduction, or conclusion as the main result, or is used for comparison with other studies. If multiple models are presented without any prioritization, we average across these models. We distinguish four estimated effects: (i) the *peak* effect of the QE program studied (*Total Peak Effect*); (ii) the *cumulative* effect of QE, defined as the effect at the end of the time period studied by the authors (*Total Cumulative Effect*); (iii) the *peak* effect after standardizing QE program size to 1% of GDP (*Standardized Peak Effect*); and (iv) the *cumulative* effect after the same standardization (*Standardized Cumulative Effect*). The construction of all four variables is described in detail in Section 2.2. We code all variables based on the published version of the paper if such a version is available at the time of our search. If the paper is unpublished at the time of our search, then we code all variables based on the paper's most recent version that we can find online.

We also record the authors' assessments of the statistical and economic significance of their estimated effects of QE. Whenever available, we use the authors' own verbal assessment of statistical significance. If unavailable, we infer statistical significance from confidence intervals reported in the corresponding figure or table, using the peak effect. We also gather the confidence level used by authors to assess significance (e.g., 95%, 90%, or 68%). When statistical significance is not discussed and no standard errors or p-values are reported, we set the variable to missing. For economic significance, we always use the authors' own verbal assessment. For example, if a study states the effect of QE is "negligible", we code economic significance as zero; if the effect is "sizable", we code it as one. For ambiguous cases, we code economic significance as 0.5. Examples include studies stating that the effect of QE is positive upon impact but disappears quickly, or that it is positive but sensitive to model specification. When economic significance is not discussed, we set it to missing.

Finally, we manually collect information on the employment history, job titles, and educational background for the 116 authors by using online searches and information from public LinkedIn pages. To determine author affiliation, we use the author's main employer at the time of the paper's first public distribution, as determined by our search in the summer of 2019. We categorize all authors whose primary affiliation is a central bank as central bankers. We classify authors from the Bank of International Settlements (BIS) as 0.5 central bankers due to the close ties between the BIS and the central banking community.[3] We refer to all other authors as academics.

To maximize the quality of our dataset, two teams of two economists independently went through all 54 studies and constructed the key quantities of interest, including the estimated effects of QE and their significance. The teams then compared notes and discussed all controversial cases before reaching convergence. Furthermore, to facilitate replication by other researchers, we disclose our full paper-level dataset in the Appendix. The Appendix also discusses the external feedback we have received on our dataset.

2.1. Summary Statistics

In this section, we briefly summarize selected features of our data. In the Appendix, we provide a more detailed data description in the form of tables and bar charts.

The papers in our sample appear in each year between 2010 and 2018, with three to ten papers per year. They do not have to contain estimates for both output and inflation, but about 90% of them do. More than 57% of the papers are published in peer-reviewed journals. The average impact factor of those journals at the time of the paper's publication is 1.42. 35% of the papers use DSGE models. The average paper is written by 2.54 authors and it studies the effects of QE in 1.26 countries. The euro area receives the most attention, but each of the three countries is studied by at least 13 papers.

As for the authors, 60% of them are primarily affiliated with a central bank. Central banks employing the most authors are the Bank of England (21), EA national central banks (20), the ECB (17), and the Federal Reserve (16). Academics are employed mostly at universities in Europe (18), UK (10), and the U.S. (9). 17% of the authors are female and 89% hold a PhD degree. Most authors have earned their PhD's at prestigious universities in the U.S. and UK such as Princeton (8) and Cambridge (6). The average author experience (i.e., the number of years since earning the highest educational degree) is 11 years.

2.2. The Effects of QE on Output and Inflation

For each paper and country studied, we record the estimated effects of QE on output (i.e., real GDP or industrial production) and inflation (i.e., CPI) based on the authors'

[3] In the Appendix, we show that our main results are robust to classifying BIS authors as full central bankers. They are also robust to classifying researchers at the International Monetary Fund and the World Bank as 0.5 central bankers, although such an alternative classification seems harder to justify.

baseline specification. As a rule, we record the effects on the *level*—the level of output and the price level. Letting Y denote the actual level of the outcome variable (i.e., with QE) and $\hat{Y}$ denote its counterfactual level (i.e., without QE), we are interested in the percentage difference, $(Y - \hat{Y})/\hat{Y}$. If the paper reports the effect of QE on the level of output or prices, we record the peak and cumulative effects as displayed in Figure 1. If the paper reports only the effects on the growth rate, we sum up the individual growth estimates to determine the impact on the level. We describe the details of this conversion, and list the estimated effects for each paper-country pair in our sample, in the Appendix.

We focus on the effect most prominently advertised in the paper, ignoring estimates from robustness checks, alternative specifications, and extensions. We standardize the effects to a QE program size equal to 1% of the respective country's GDP at the time QE was first introduced. For the U.S. and UK, we use 1% of the annualized 2009 Q1 GDP, consistent with Weale and Wieladek (2016). For the EA, whose asset purchase programs started in 2015 Q1, we use 1% of the annualized 2015 Q1 GDP. We obtain GDP estimates from the FRED database. Performing the standardization also requires the size of aggregate asset purchases for each QE program. We report our estimates of these sizes in the Appendix. Following Weale and Wieladek (2016), we include Treasury purchases for the U.S. programs, and all securities purchased under the Asset Purchasing Facility for the UK programs. For the EA, program size includes all securities purchased under the Asset Purchase Program, because asset-backed securities are a small fraction of the overall program size.

We show the means, medians, and standard deviations of the estimated QE effects in the Appendix. The average (median) paper in our sample estimates that QE increases output by 1.57% (1.25%) at the peak. Standardized to a QE program size equivalent to 1% of GDP, the average (median) peak effect on output is 0.24% (0.16%). As for inflation, the average (median) study finds that QE raises the price level by 1.42% (0.93%) at the peak. Standardizing to 1% of GDP, the average (median) effect on the price level is 0.19% (0.11%). For both output and inflation, the average standardized cumulative effect is equal to about 60% of the average standardized peak effect, indicating that about 40% of the peak effect vanishes by the end of the period studied.

There is substantial heterogeneity in the effectiveness of QE across the three countries. Focusing on standardized effects, which are easier to compare across countries due to differences in QE program sizes, QE is most effective at raising output in the U.S., followed by the EA and UK. For inflation, QE is again the most effective in the U.S.

Most studies conclude that the estimated effects of QE on output and prices are positive and statistically significant, consistent with prior reviews of this literature (e.g., Dell'Ariccia et al. (2018)). However, there is also substantial heterogeneity in point estimates. Understanding whether some of this heterogeneity is related to the institutional environment in which authors operate is the goal of the following sections.

3. Research Outcomes and Central Bank Affiliation

This section conducts a systematic comparison of the research findings of central bankers and academics regarding the effectiveness of QE. These findings include the estimated effects of QE on output and inflation, the statistical and economic significance of these effects, and the tone of the language used to summarize the paper's results.

3.1. The Effect of QE on Output

Figure 2 reports histograms for the estimated effects of QE on the output level, separately for studies with at least one central bank author ("CB") and those with no such authors ("Not CB"). The four panels correspond to the four measures introduced previously. For all of them, the distributions of central bank papers are shifted visibly to the right, indicating that such papers find systematically larger effects of QE on output.

The same result follows from Panel A of Table 1, which compares the means and medians of the estimated effects of QE on output across papers with and without at least one central bank author. Both types of papers find QE to be successful at raising output, on average, but central bank papers find substantially larger effects. This is true based on both means and medians, indicating that the gap is not driven by outliers. Moreover, the outliers in Figure 2 do not seem to be low-quality papers, judging by their publication success. Among the five papers finding the largest effects on output, the publication rate is 100%.

Table 2 confirms the result based on regression evidence. We regress the estimated output effect on the share of central bank authors, *CB Affiliation*, defined as the share of authors who are affiliated with a central bank at the time of the paper's first public distribution. In the strictest specifications, shown in columns (3) and (6), we also include country fixed effects and controls for the number of authors and average author experience:

$$y_{ij} = \alpha_j + \beta\,[\text{CB Affiliation}]_i + \gamma' X_i + \epsilon_{ij} \ , \qquad (1)$$

where y_{ij} is the effect of QE on output estimated by study i for country j's QE, α_j is a fixed effect for the country in which QE takes place, and X_i are the two controls. The latter control is log(3+average author experience). We add three to ensure the logarithm is always well defined, given that the minimum value of author experience in our sample is -2, for an author who wrote their paper two years prior to earning a Ph.D.

Columns (3) and (6) show that changing the share of central bank authors from zero to 100% is associated with a 0.723 percentage points larger peak effect and a 0.512 percentage points larger cumulative effect on output (Panel A). These are sizable magnitudes relative to the unconditional means of 1.57% and 0.87%, respectively. The results based on standardized effects, reported in Panel B, are also economically large. Going from zero to 100% central bank authors corresponds to a 0.152 percentage points larger standardized peak effect: an increase by two thirds of the unconditional mean. For the standardized cumulative effect, the difference is 0.122 percentage points, equivalent to 87% of the unconditional mean. These results show that the differences in research findings observed in Panel A are not due to central bankers studying larger QE programs.

To assess statistical significance, we report t-statistics based on standard errors clustered at the paper level. By clustering in this way, we allow the residuals ϵ_{ij} in equation (1) to be correlated within papers that analyze multiple QE programs. Such papers make various choices, methodological and expositional, that can affect their assessments of all QE programs. Therefore, we model ϵ_{ij} as having a group structure: $\epsilon_{ij} = \upsilon_i + \eta_{ij}$, where υ_i is a random component specific to paper i and η_{ij} are mean-zero and uncorrelated.

A potential concern about inference based on cluster-robust standard errors is that the variance estimator converges to the true value as the number of clusters goes to infinity, whereas we have at most 54 clusters. To address this concern, we implement a wild cluster bootstrap procedure (Cameron et al. (2008)). To compute the p-values, we use the post-estimation command *boottest* developed by Roodman et al. (2019), assuming the null hypothesis and using Webb weights and 10,000 replications. We report these p-values in square brackets. We generally use these p-values, which tend to be more conservative than t-statistics, to assess statistical significance. In Panel A of Table 2, the coefficient on *CB Affiliation* is significant at either the 5% level or the 10% level for the peak effect, but it is insignificant for the cumulative effect. In Panel B, the coefficient is significant at the 5% level in all columns except for column (3), where it is significant at the 10% level.

3.2. The Effect of QE on Inflation

Figure 3 reports histograms for the estimated effects of QE on the price level, analogous to the histograms for output plotted in Figure 2. Just like for output, the distributions of central bank papers are shifted to the right relative to academic papers, indicating that central bank papers tend to find QE to be more effective at raising prices. The same conclusion follows from Panel B of Table 1, which compares the means and medians of the estimated effects of QE on inflation across papers with and without central bank authors.

In Table 3 we repeat the regression analysis from Table 2, but with a different dependent variable: y_{ij} in equation (1) is now the estimated effect on inflation rather than output. According to Panel A, columns (3) and (6), changing the share of central bank authors from zero to 100% corresponds to a 1.279 percentage points larger peak effect and a 1.394 percentage points larger cumulative effect on prices. These effects are large relative to the unconditional means of 1.42% and 0.89%, respectively. In Panel B, the coefficients on *CB Affiliation* are even larger than the corresponding unconditional means: 0.201 percentage points for the peak effect and 0.190 percentage points for the cumulative effect. All of the coefficients in Table 3 are statistically significant at the 5% level.

3.3. Significance

Next, we examine the statistical and economic significance of the effects of QE on output and inflation. Our main interest is in whether studies by central bankers and academics differ in their assessments of this significance. One advantage of looking at significance is that it is directly comparable across studies with no need for any standardization or conversion in the construction of the peak and cumulative effects of QE.

We first compute the shares of studies that find a statistically significant effect of QE on output, separately for central bankers and academics. The difference is striking: while *half* of the academic papers find a significant effect, *all* of the central bank papers do. The difference in the assessments of economic significance is almost equally large. For inflation, the differences are smaller but still notable; for example, while 75% of the academic papers find a statistically significant effect, about 90% of the central bank papers do.

Table 4 shows the extent to which these differences are statistically significant and robust to the inclusion of control variables. We estimate the regression specification in equation (1), with y_{ij} redefined to denote either statistical or economic significance, for the effects of QE on either output or inflation. For output (Panel A), the coefficient on *CB Affiliation* is always positive and significant at the 5% level, whether the dependent variable is statistical or economic significance. The magnitude of the effect is also large: the estimate in Panel A, column (3), implies that increasing the share of central bank authors from zero to 100% corresponds to a 36.6 percentage points higher likelihood of the study finding a statistically significant effect of QE on output. The magnitude is even larger, 39.9 percentage points, for economic significance of the QE effect on output. For inflation (Panel B), we also find economically large effects, but they are not statistically significant.

3.4. Alternative Specifications

We consider various modifications of our baseline regression (1), as analyzed in Sections 3.1 through 3.3. We summarize the results here and show the tables in the Appendix.

Recall that the main independent variable in regression (1), *CB Affiliation*, is the fraction of the paper's authors who are affiliated with a central bank. Our results in Tables 2 through 4 hold also when we replace this granular measure by an indicator we call *Discrete*, which is equal to one if at least one of the authors is affiliated with a central bank or the BIS, and zero otherwise. In addition, we replace *CB Affiliation* by two zero/one indicators: *Mixed*, which is equal to one if the share of central-bank-affiliated authors is strictly between zero and one, and *Pure CB*, which equals one if all of the authors are central bankers. We find positive point estimates of the coefficients on both indicators in all 36 specifications considered in Tables 2 through 4. Moreover, the estimated slope on *Pure CB* exceeds that on *Mixed* in 33 of the 36 specifications, suggesting that central bankers tend to find larger effects of QE when they have no academic coauthors.

Different central banks may have different research-vetting policies. Motivated by this possibility, we separate central bank authors by the country of the bank they work for. We replace *CB Affiliation* in equation (1) by four zero/one indicators: *EA CB* is equal to one if at least one of the authors is affiliated with the ECB or a national central bank in the euro area, *UK CB* equals one if at least one author is affiliated with the Bank of England, *US CB* equals one if at least one author is at the Federal Reserve, and *Other CB* equals one if at least one author is at another central bank or the BIS. The omitted group is academics. We find positive point estimates of the slopes on all four indicators, suggesting that our results in Tables 2 to 4 are not driven by authors from any single country. Fed researchers tend to find the largest effects of QE on output, whereas Bank of England researchers tend to find the largest effects on inflation. Euro area central bankers find relatively weak QE effects, largely due to the weaker effects reported by Bundesbank researchers (Section 4.3). However, the differences across central banks are not statistically significant.

Taking a different country-by-country perspective, we focus on the country in which QE takes place. We observe that the point estimates of β in equation (1) are generally positive for all three countries, though their statistical significance is mixed. Looking at the effects of QE on output, the β estimate is the largest, and significant, for QE conducted in the U.S. In other words, the gap between the output effects reported by central bankers and academics is largest when they analyze U.S. QE. For the effects of QE on inflation, the β estimates are large, and typically significant, in both the U.S. and UK.

Motivated by the strong results we find for the U.S., we dig deeper into them by considering the three main QE programs in the U.S. separately. The point estimates of β are positive and large for all three programs, but they are often insignificant because of small sample sizes: we have 12 studies of the output effects of QE1, 12 studies for QE2, and only 4 studies for QE3. The estimates are similar across the three programs, indicating that our results are not driven by any individual U.S. program.

We do not control for the specific QE program in our baseline regressions because the choice of which program to study is made by the authors. For example, if QE1 is perceived to have been more effective than QE2 or QE3, an author aiming to report stronger QE effects can choose to analyze the first round of QE rather than its later rounds. Nevertheless, we also report results when controlling for QE program dummies, thus comparing central bankers and academics analyzing the same QE program. For papers studying more than one program, more than one dummy is switched on at the same time. Adding QE program dummies tends to reduce the statistical significance of the results: the estimate of β is significant in 17 (22) specifications at the 5% (10%) level, out of all 36 specifications considered in Tables 2 through 4, whereas in those tables, β is significant in 25 (28) specifications at the 5% (10%) level. The decline in statistical significance is unsurprising because we can only consider QE programs studied by at least two papers. Nevertheless, even with QE program dummies, the point estimates have the same signs as their counterparts in Tables 2 through 4 in all specifications, and their magnitudes are economically significant.

We further explore whether central bankers are more optimistic when they study QE launched by their own central bank. We add to equation (1) a variable capturing the share of authors who are affiliated with the central bank of the QE program studied. We also include paper fixed effects, thus comparing the effects of QE in different countries as estimated by the same paper. We do not find support for the hypothesis. Naturally, with paper fixed effects, statistical power is limited because few papers study multiple QE programs. Recall that the average (median) paper in our sample studies QE in only 1.26 (1) countries.

As noted earlier, our sample contains papers studying not only quantitative easing but also other unconventional monetary policy programs, such as long-term refinancing operations. When we exclude those other programs from the analysis, keeping only QE narrowly defined, we find results similar to those in Tables 2 through 4. We also find similar effects when we control for the time gap between the QE program studied and the year of the paper's first release. This alleviates the concern that the reported differences could be driven by differences in the timing of studies by academics and central bankers.

3.5. Tone

We now compare the tone of the language that central bankers and academics use when they assess QE. We focus on the paper's abstract, which summarizes the paper's main findings in a non-technical manner. As we are unaware of any lexical sentiment model trained on the economic research literature, we create our own lexicon, which we show in the Appendix. We consider adjectives such as "significant," "sizable," and "large" as positive, conveying the message that QE is effective, and adjectives such as "small," "negligible," and "weak" as negative. We compute the shares of positive and negative adjectives out of all adjectives in the abstract. The abstract's "sentiment score" is the share of positive adjectives minus the share of negative adjectives. We estimate the model

$$y_i = \delta_i^{US} + \delta_i^{UK} + \delta_i^{EA} + \beta\,[\text{CB Affiliation}]_i + \gamma' X_i + \epsilon_i \ , \tag{2}$$

where y_i is the sentiment score for the abstract of study i; δ_i^{US}, δ_i^{UK}, and δ_i^{EA} are indicators equal to one if the study analyzes QE in the U.S., UK, or EA, respectively, and zero otherwise; and X_i are the same controls as in equation (1). If a paper studies QE in multiple countries, then multiple indicators are switched on.

Panel A of Table 5 shows that central bankers use more positive language than academics when describing their results. Column (3) shows that a 100 percentage point increase in the share of central bank authors is associated with an increase in the sentiment score of 0.056, which is equal to 85% of one standard deviation of the sentiment score. The result is significant at the 5% level. In Panels B and C, we decompose the sentiment score into the shares of positive and negative adjectives, and we run the analysis separately for both shares. We find that central bank studies use both more positive adjectives and fewer negative adjectives. The finding based on positive adjectives is economically larger and, unlike the one based on negative adjectives, it is statistically significant.

That central bankers use more favorable language is not surprising given our results in Sections 3.1 through 3.3. Nonetheless, we find it reassuring that our main result is robust to using a different type of measurement, one based on text rather than numbers. Moreover, the estimates of β in equation (2) remain similar when we add controls for the magnitudes of the reported effects on output and inflation. Thus, central bankers use more favorable language than academics even when describing effects that are equally large. However, this result is weaker compared to Table 5. Recall that the β estimate in column (3) of Panel A of Table 5 is easily significant at the 5% level. The estimate remains significant at the 5% level when we add controls for output effects, standardized or not, but the p-value rises to about 0.1 when we control for inflation effects. See the Appendix for details.

We also analyze the text of the papers' conclusions. The results are similar to those based on the abstract—the point estimates of β are positive when the left-hand side variable is either the sentiment score or the fraction of positive adjectives, and they are negative for the fraction of negative adjectives—but the results are not statistically significant, as we show in the Appendix. Compared to the abstract, the conclusions usually contain more discussion unrelated to the paper's core contribution, such as directions for future work.

The Appendix also shows results from the analysis that computes the abstract's sentiment score based on two alternative dictionaries: the Harvard IV4 semantic dictionary and the Loughran and McDonald (2011) financial dictionary. We do not find significant differences between central bankers and academics based on those dictionaries. However, we find the results based on our simple dictionary far more credible because we designed it specifically for economic research. In contrast, the Harvard IV4 dictionary is designed for use in a variety of contexts outside economics, and the Loughran-McDonald dictionary is designed for the analysis of 10-K reports of publicly-traded companies. The positive and negative labels assigned to words in these dictionaries do not reflect the meaning of these words in the economics literature. As a result, these dictionaries do not contain key adjectives that clearly indicate positive language in our context, such as "significant," "large," and "considerable." Moreover, they do contain many words that are irrelevant and potentially even misleading in our context. For example, the words classified as negative in the Loughran and McDonald (2011) lexicon under "A" include "abnormal," "absence," "against," "aftermath," "antitrust," "anomaly," and even "argue" and "argument," thereby casting the whole economic literature in a rather negative light (incorrectly, we believe).

3.6. Methodological Choices

Researchers analyzing the same phenomenon by using different methodologies can arrive at different conclusions. We examine two methodological choices that authors make: which model to use and how to report statistical significance. We find differences between central bankers and academics in both dimensions. We summarize the results here and show the tables in the Appendix.

First, we explore differences in model choice. The most commonly used models in our sample, by far, are DSGE and VAR models. We redefine y_i to be an indicator equal to one if the study uses a DSGE model and zero if it uses a VAR model. We then regress y_i on the share of central bank authors, again using a linear probability model following equation (2). We find that central bankers are more likely to use DSGE models. With country dummies and controls, papers with 100% central bank authors are 31.9 percentage points more likely to use a DSGE model than papers with no central bank authors. This result is highly economically significant, though it is statistically significant only at the 10% level.

In our baseline regression (1), we do not control for the model chosen by the authors because model choice could be strategic. Both DSGE and VAR models give their users some flexibility: DSGE models require a variety of structural choices, whereas VAR models rely on a specific econometric specification. Either way, a user aiming for a particular outcome can pull on multiple levers to get closer to that outcome. Nonetheless, we rerun our baseline regressions after adding controls for model fixed effects (DSGE, VAR, or other). We find that the estimated β coefficients remain positive in all 36 specifications considered in Tables 2 through 4, and they are statistically significant at the 5% (10%) level in 23 (29) specifications. The magnitudes of these coefficients become larger in 27 specifications and smaller only in 9 specifications. Our main results are thus robust to controlling for model choice.

Second, we test whether central bankers and academics are equally likely to disclose the confidence level (or, alternatively, the standard error) used to assess statistical significance. When this level is not disclosed, it is more difficult to corroborate the author's verbal assessment of statistical significance. We estimate a linear probability model that regresses an indicator equal to one if the paper does not disclose the confidence level, and zero if it does, on the share of central-bank-affiliated authors. This matches the regression specification in equation (2), with y_i denoting an indicator for nondisclosure. We restrict the sample to studies that comment on the statistical significance of either output or inflation.

We find that central bankers are somewhat less likely to disclose the confidence level. With country dummies and controls, papers with 100% central bank authors are 15.8 percentage points less likely to report the width of the confidence interval than papers with no central bank authors. However, this relation is not statistically significant.

Finally, we ask which studies assess significance by using more conservative confidence intervals—ones constructed at the 95% confidence level, rather than lower levels, such as 90% or 68%. A study using a 95% confidence interval is less likely to find significance. We redefine y_i in equation (2) to be an indicator equal to one if the study uses a 95% confidence interval, and zero otherwise. With country dummies and controls, papers with 100% central bank authors are 20.2 percentage points less likely to use a 95% confidence interval than papers with no central bank authors. This result is economically sizable, but it is statistically significant only at the 10% level. The magnitudes are similar if we add a control for a dummy variable indicating whether the study uses Bayesian or frequentist inference.

4. Potential Mechanisms

This section explores potential reasons why central bankers are more optimistic than academics in their assessments of QE. One possible mechanism is career concerns. In principle, bank management could make promotion decisions in a way that encourages bank employees to assess the bank's policies favorably. We test this hypothesis in Section 4.1. Bank management can also directly influence research outcomes at various stages of the research production process, from topic assignment, through internal review, to the approval for public distribution, as we show in Section 4.2. If bank management is skeptical of QE, the bank's research tends to be skeptical as well, as we show in the context of the German Bundesbank in Section 4.3. The evidence in Sections 4.1 through 4.3 is consistent with managerial influence on central bank research outcomes. In Section 4.4, we discuss other potential mechanisms, such as differences in prior beliefs and differences in research quality.

4.1. Career Concerns

To examine the potential for career concerns influencing central bank research, we relate the research findings of central bankers to the bankers' subsequent career outcomes. After manually collecting employment histories for the central bank authors in our sample, we convert their job titles to numerical ranks. We create these ranks on a six-point scale for both central bankers and academics, as described in the Appendix. We restrict the analysis to authors who remain affiliated with a central bank and experience at least one career update within five years following the paper's first public distribution. We impose the first filter because it is unclear whether transitions to academia or the private sector should be treated as promotions or demotions. The purpose of the second filter is to reduce the noise induced by stale CV information, since authors may not regularly update their job titles.[4] These filters result in a sample of 33 central bankers (27 of whom are unique) and 23 papers. We then compute a new variable, career outcome, defined as the difference between the author's rank after her first career update following the paper's first distribution, and her rank at the time of that first distribution. Out of these 33 authors, 19 experience a promotion, 4 experience a demotion (3 of which are associated with a move to a different central bank), and 10 experience no change in rank.

Are central bank researchers more likely to get promoted if they find QE to be more effective? To address this question, we regress the authors' career outcomes on the reported effects on output, country fixed effects, and controls:

$$y_{aij} = \alpha_j + \beta \, \text{Effect}_{ij} + \gamma' X_{ai} + \epsilon_{aij} \ , \tag{3}$$

where y_{aij} is the difference between author a's rank after her first career update following the first release of study i examining QE in country j, and her rank at the time of the first release. Note that y_{aij} does not vary across j for given values of a and i. In addition, Effect_{ij} is the effect of QE on output estimated by study i for country j's QE, α_j is a fixed effect for the country in which QE takes place, and X_{ai} are controls. These controls

[4] In the Appendix, we report results obtained when we include authors with no career updates, and when we treat departures to academia and the private sector as demotions. Treating departures as demotions leads to similar conclusions. Including authors with no career update within five years of the paper's distribution leads to insignificant results. This is expected, because the absence of a career update may be due to either stale CV information or fixed review periods at central banks and, as a result, the signal-to-noise ratio for these types of career outcomes is likely to be low.

include author experience and the number of authors, as before. In addition, we control for the number of years since the author's most recent career update and for dummy variables indicating the author's rank at the time of the paper's first release, because these variables are important determinants of subsequent career outcomes. The dummy variables are six indicators δ_{ai}^r, where $\delta_{ai}^r = 1$ if author a has rank r at the time of paper i's first release, and $\delta_{ai}^r = 0$ otherwise, for $r \in \{1, 2, \ldots, 6\}$. Compared to including just one control for the author's rank, including these six controls allows for non-linearities in the relationship between author rank and promotion outcomes.

In Panel A of Table 6, we show that reporting larger effects on output, peak or cumulative, is associated with more favorable career outcomes. The point estimate in column (3) implies that a one standard deviation increase in the peak effect is associated with a subsequent career improvement by 0.59 ranks ($= 0.485 \times 1.21$). In column (6), a one standard deviation increase in the cumulative effect on output corresponds to a subsequent career improvement by 0.57 ranks ($= 0.460 \times 1.23$). Both estimates are significant at the 5% level. For comparison, a one-unit change in rank is equivalent to moving, for example, from *Economist* to *Senior Economist*, or from *Deputy Director* to *Director*.

Panel B of Table 6 shows that the positive relation between career outcomes and estimated output effects holds also for standardized effects, with statistical significance at the 5% level in column (6) and the 10% level in column (3). A one standard deviation rise in the standardized peak effect corresponds to a 0.75 rank improvement ($= 2.661 \times 0.28$).

Of course, a positive association does not establish a causal link. Career outcomes and research output could be correlated for other reasons. For example, papers reporting larger effects could be easier to publish. Publications, in turn, could lead to promotions. To address this concern, we control for an indicator equal to one if the paper came out in a peer-reviewed journal and zero otherwise. The results are similar to those in Table 6 (see the Appendix). For another example, employees who care so much about their employer that they are willing to distort their research findings could show their affection also in other ways, such as by working hard, and they could earn a promotion that way. This channel seems harder to control for. Whether central bank research is biased by career concerns is an important but messy question for which clean identification seems difficult to come by.

Among the outcome variables analyzed in Section 3, career outcomes are most closely related to estimated effects on output. For economic significance of output, we find an economically strong relation once all control variables are included, but the relation is not statistically significant. We do not relate career outcomes to statistical significance of estimated effects because there is no variation in the subset of central bank papers (recall that they all find statistical significance). There is no significant relation between career outcomes and estimated effects on inflation, as we show in the Appendix.

4.1.1. Seniority

Are career concerns stronger for senior or junior central bankers? It is not obvious for whom we should expect to see a stronger relation between research findings and career outcomes. On the one hand, research output may be a more important criterion in the promotions of junior researchers, for whom research represents the bulk of their work. On the other hand, support from top management may matter more for the career advancement of senior researchers. There may also be more discretion in promotions at the senior level.

To address this question, we repeat the analysis from Table 6, but we interact $Effect_{ij}$ from equation (3) with the author's career rank, or *Seniority*. We find that the interaction between the effect on output and *Seniority* is positive and significant. A one standard deviation increase in *Seniority* raises the sensitivity of career outcomes to the estimated effect on output by about 50%. The interaction between the effect on inflation and *Seniority* is also positive, but it is significant only at the 10% level, and only for standardized effects. In contrast, for output, the interaction is positive for both standardized and non-standardized effects, as well as for both peak and cumulative effects, and it is significant at the 5% level in three of the four cases. The table is in the Appendix.

The above results are consistent with career concerns being stronger for senior central bank researchers. If that is the case, and if seniority does not play a similar role for academics (it is not clear why it should), we should expect to see larger differences in research findings between central bankers and academics when the authors are more senior.

To test this prediction, we repeat the analysis from Tables 2 through 4, except that we interact *CB Affiliation* with the rank of the most senior author on the team, *Max Seniority*. For each of the 12 outcome variables (three tables with four variables each), the estimated coefficient on the interaction between *CB Affiliation* and *Max Seniority* is positive. Thus, the findings of central bankers and academics are further apart if there is a more senior person on the team. The interaction coefficient is not always statistically significant (it is significant at the 5% level in one specification and at the 10% level in six additional specifications), but its magnitudes are large. For example, if the rank of the most senior author increases by one standard deviation, the difference in the estimated peak effects between a study with zero central bankers and 100% central bankers increases by more than 0.8 percentage points. This is true for both output and inflation. See the Appendix for details. Our results are consistent with the hypothesis that central bankers who are more senior report larger QE effects, relative to academics, because they face stronger career concerns.

4.2. Survey of Central Banks

Independent of the potential promotion channel, bank management can influence research outcomes in a number of ways. For example, management can assign a topic to a researcher, signaling the topic's importance to the bank. Superiors can suggest methodologies, data sources, and literature. If they are not convinced by the paper's results, superiors can return the paper with suggestions for improvement. They can provide helpful guidance and valuable resources. However, besides anecdotal evidence, the economics profession knows little about the extent of management involvement in central bank research.

To fill this gap, we conduct a survey of research practices at the world's leading central banks. We organized the survey in cooperation with the National Bank of Slovakia.[5] We reached out to 54 heads of research, covering the central banks in all OECD countries and all EU member states, including the ECB, the Federal Reserve Board, and 12 regional Feds. In return for participating, we promised to share aggregated results with the respondents. We assured them that no individual responses would be published, and that only anonymized responses could be pooled and used for research purposes. We sent out the initial invitation on July 3, 2020; a reminder went out ten days later.

The survey contains four main questions, each containing three to six multiple-choice subquestions, for a total of 18 questions. We also asked for the number of research-active economists in full-time equivalents employed by the bank, the bank's name, and an email address to which we can send summary results. We have received 24 responses, representing a response rate of 44.4%. The 24 central banks employ over 750 researchers in total.[6]

Figure 4 presents the aggregated responses to the four main questions. In response to the first question, *"How are research topics selected in your central bank?"*, 20 (15) cen-

[5] We thank Martin Šuster, the bank's head of research, for his generous help throughout the process.

[6] We originally received 25 responses but one respondent asked to withdraw from the survey after the first public circulation of our paper. The main conclusion from the survey—that management is substantially involved in research production—is unaffected by the exclusion of this respondent.

tral banks indicate that research topics are at least sometimes (often) mutually agreed by researchers and management, and 17 banks respond that topics are at least sometimes assigned by management. Responding to the second question, *"How are draft research papers reviewed/commented on in your institution, prior to their public distribution?"*, 21 (14) central banks indicate that papers are reviewed at least sometimes (often) by management. In 9 banks, this review happens for all papers. The third question is, *"How are your institution's draft research papers approved for public distribution?"*. Bank management and, most commonly, the head of research, is frequently involved in approving papers for publication: 20 (18) banks respond that the head of research approves papers at least sometimes (often). The bank board also gets involved in the approval process, at least sometimes, in eight banks. Finally, when asked *"What criteria can lead to the paper being rejected (i.e., not approved for public distribution)?"*, most central banks list *"substandard methodology, unreliable data, deficient modeling approach"*, followed by *"results not robust or not significant"*. The latter criteria are used by 18 (10) banks at least sometimes (often).

The survey evidence reveals substantial involvement by management in the research process at most central banks. This involvement creates an opportunity for bank management to influence research outcomes, offering a potential explanation for our findings in Section 3. However, such an interpretation is subject to numerous caveats.

First and foremost, the fact that management involvement exists does not imply that it affects research outcomes as measured in our study. Management involvement is necessary but not sufficient for research outcomes to be influenced by management; the survey evidence thus supports only the necessary condition. The involvement can take different forms, many of which help improve the quality of research output without introducing any bias. For example, many research directors view their role largely as helping their staff write better papers. The first two survey questions pool research directors and senior managers into a single "management" category, masking the different roles of these two types of managers, as well as their potentially different sensitivities to "undesirable" policy messages.

Second, given the survey's brevity, the responses cannot reveal the full range of practices across banks. For example, economists in many banks split their time between policy work and their own research. Management is likely to be more involved in the selection of topics for policy work than for individual research, yet the first survey question does not distinguish between the two types of work. In addition, whether a study of the effectiveness of QE counts as research or policy work may differ across banks.

Finally, the set of central banks in our survey sample differs from the set of banks whose economists are in our pool of authors who have analyzed QE. While the two sets overlap, the overlap is modest. We do not know how similar the research processes in the two sets of banks are. If they are substantially different, then our survey sheds little light on the involvement of bank management in the production of studies on QE.

4.3. The Bundesbank

If central bankers' findings regarding QE are colored by the views of bank management, we should see weaker QE effects reported by researchers at central banks whose management has taken a critical stance towards QE. A prominent example is the German Bundesbank, whose top management has publicly criticized the ECB for its bond-buying program. According to media outlets, former Bundesbank president Axel Weber and vice president Jürgen Stark resigned from their ECB positions, allegedly in protest over QE, and the current Bundesbank president, Jens Weidmann, has also publicly opposed QE. Could these skeptical views of the bank's top brass be reflected in the writings of the bank's researchers?

We test this hypothesis by repeating the analysis in Tables 2 through 4, replacing *CB Affiliation* in regression (1) with three indicators: *German CB* is equal to one if at least one of the authors is employed by the Bundesbank, *Other EA CB* is equal to one if at least one author works at the ECB or a euro area national central bank other than the Bundesbank, and *Non-EA CB* is equal to one if at least one author is from a central bank outside the euro area or the BIS. The omitted group are academics. If a paper has authors from both the Bundesbank and another central bank, multiple indicators are switched on.

We find that Bundesbank authors find strikingly different results regarding the effectiveness of QE in raising output. Bundesbank papers report *smaller* effects of QE on output compared to academics, on average, whereas other central banks, both inside and outside the euro area, find *larger* effects. This pattern holds for all four measures of output, as we show in the Appendix. For example, the average estimated peak effect on output for Bundesbank papers is 0.88 percentage points smaller than the average peak effect for academics. In contrast, other central banks in the euro area find effects that are 0.44 percentage points larger, and banks outside the euro area find effects that are 0.69 percentage points larger, on average, compared to academics. The difference in the point estimates for *German CB* and *Other EA CB* is mostly statistically significant based on cluster-robust standard errors but not based on bootstrapped p-values, in part because there are only four Bundesbank papers in our sample, and only two of them study the effect of QE on output. Nevertheless, the different signs and large magnitudes of the coefficients support the managerial influence interpretation of our main results.

As for the QE effect on inflation, the differences between Bundesbank authors and other central bankers are much smaller. Moreover, the Bundesbank estimates exceed those of academics. These results are not surprising. German opposition to ECB's QE has been based largely on concerns about redistribution within the euro area, not about QE being ineffective at raising inflation. On the contrary, a popular view in Germany is that QE could be too effective in that regard. The view that printing money causes inflation is traditionally strong in Germany, whose collective memory is still scarred by the hyperinflation that took place in the Weimar Republic in the early 1920s.

4.4. Alternative Mechanisms

While our evidence in Sections 4.1 through 4.3 is consistent with managerial influence on central bank research outcomes, the evidence is not causal, and it is therefore inconclusive. In this section, we discuss other mechanisms that could potentially contribute to the observed differences between the findings of central bankers and academics. In principle, some of these mechanisms could be more important than career concerns in explaining our results.

One such mechanism is reputation concerns. These could involve concerns about the bank's reputation and, for very senior researchers, concerns about their own reputation. Like career concerns, reputation concerns reflect researchers' incentives because in both cases, a researcher derives a private benefit from reaching a particular research outcome. We have no evidence on the potential contribution of reputation concerns to our results.

Another potential mechanism is differences in prior beliefs combined with selection. Researchers with different priors about the effectiveness of policy interventions may self-select into different institutions. For example, if researchers optimistic about QE select into central banks, or the pessimists select into academia, this selection could explain the differences in research outcomes between central bankers and academics. Furthermore, any differences in priors can be reinforced during the research process, both by the researcher herself (confirmation bias) and by the feedback she receives from like-minded colleagues. This mechanism does not involve any distorted incentives. We have no evidence in favor of, or against, differences in priors, but we do have evidence on three other potential explanations.

One of them is that papers on QE written by central bankers and academics are of different quality. For example, if central bank papers were of higher quality and the effects of QE were truly strong, then we would expect central bank papers to find stronger QE effects. Given the management involvement documented earlier, it is indeed possible that central banks have a more rigorous vetting process for new working papers compared to universities, allowing central banks to discard lower-quality papers. Moreover, central bankers may simply know more about QE than academics, given the nature of the subject.

However, higher research quality at central banks seems unlikely to explain our results, for five reasons. First, papers written by central bankers and academics are of comparable quality, based on three measures of quality: publication status, journal impact factor, and the article influence score. We show this, as well as the following two results, in the Appendix. Second, the gaps in research findings between central bankers and academics remain largely unchanged once we condition on published papers only. Third, we find very similar results when we replace OLS regressions with weighted least squares, weighting each paper by its Google Scholar citations as of September 2019.[7] Fourth, central bank papers are somewhat less likely to report standard errors around their estimates (see Section 3.6). Finally, to explain the opposite results regarding output for Bundesbank authors, a story based on differential research quality would have to assume that Bundesbank research is of different quality compared to other central banks.

Another possible explanation for our results is differences in methodology. Recall from Section 3.6 that central bankers use DSGE models more often than academics do. This choice need not be strategic; it may be guided by the popularity of DSGE models in central bank policy work. If DSGE models generate stronger effects of QE compared to VAR models, this difference could potentially explain our results. However, when we add controls for model choice to regression (1), our results continue to hold (see Section 3.6).

Finally, as conveyed to us by a central banker, it is possible that academics seek sensational results—such as that vast amounts of spending by central banks were ineffective in improving macroeconomic outcomes—to boost their reputations. Two facts cast doubt on this explanation. First, academic reputation is generally judged by the publication record. Finding a null result makes a paper harder, not easier, to publish. Consistent with this view, finding larger effects of QE on output increases the odds of publication in a peer-reviewed

[7]Specifically, we weight each paper by the logarithm of one plus the number of citations for the paper, divided by the logarithm of one plus the average number of citations across all papers released in the same year. The scaling addresses the fact that older papers tend to have more citations.

journal (see the Appendix). Second, if the results were driven by academics' career concerns, then we should see stronger results among junior authors, who strive to earn tenure. In contrast, recall from Section 4.1.1 that differences between the findings of central bankers and academics are more pronounced among senior authors.

5. Conclusion

Central bank economists are more optimistic than academics in their assessments of the macroeconomic effects of QE. Based on a sample of 54 studies, studies written by central bankers report stronger effects of QE on both output and inflation. Central bank studies are also more likely to report significant QE effects on output, and their abstracts use more favorable language, compared to those written by academics.

Whose findings are closer to the truth remains unclear. Our evidence does not imply that central bank research is biased; perhaps academic research is biased toward insignificance, despite the publication bias in academic journals. While the gap between the findings of central bankers and academics could have various sources, our evidence suggests some role for career concerns at central banks. We find that central bankers whose papers report larger effects of QE on output have better career outcomes. The somewhat weaker effects found by Bundesbank researchers are also consistent with career concerns. Finally, our survey reveals that in most central banks, management influences research topics, reviews papers, and approves them for public distribution. The involvement of bank management in the production of bank research extends far beyond that of university management in academic research. Some involvement of bank management seems necessary, given the broader mission of a central bank. The extent to which this involvement affects research outcomes remains unclear, creating opportunities for future research.

Importantly, we do not argue that central bank research should be discounted. In many ways, central banks are in an excellent position to provide accurate assessments of their own policies. Like pharmaceutical firms studying their own drugs, central banks have superior information about their own products, exceptionally strong expertise in the subject matter, and an intense concern for their reputation. In addition, central banks are public institutions of the highest integrity. They understand that the effectiveness of their policy is predicated on their own credibility. We are not questioning that credibility. We simply offer novel evidence on a previously unexplored aspect of central bank research.

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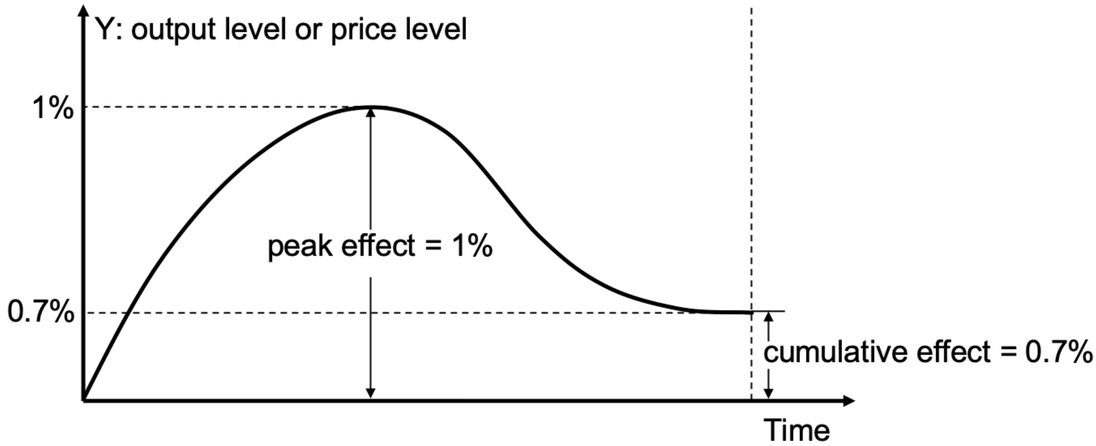
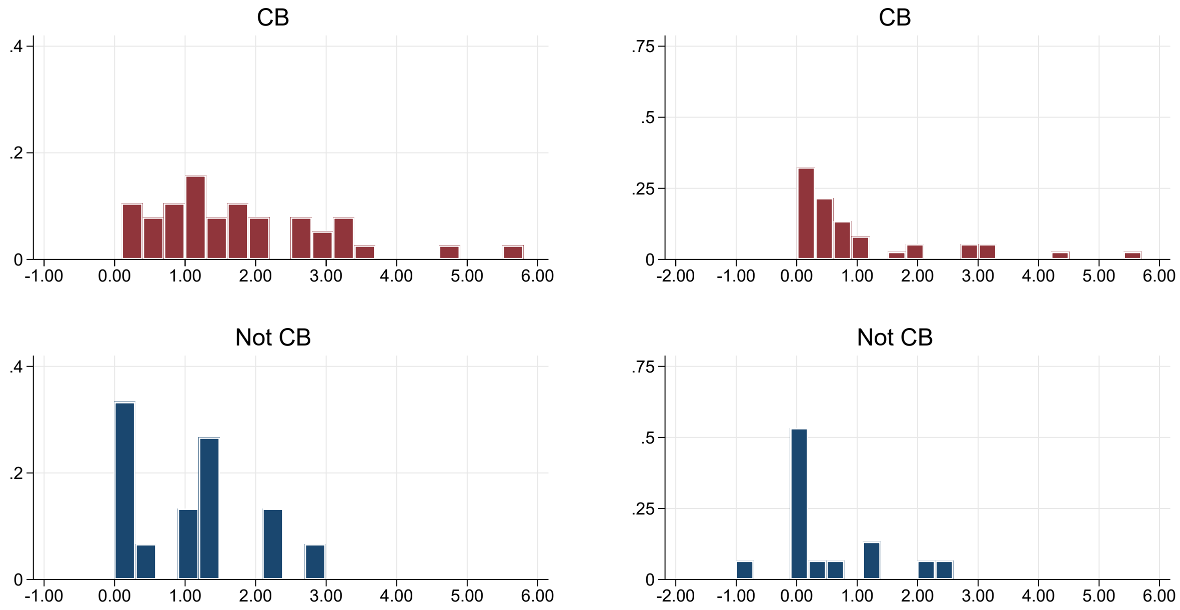
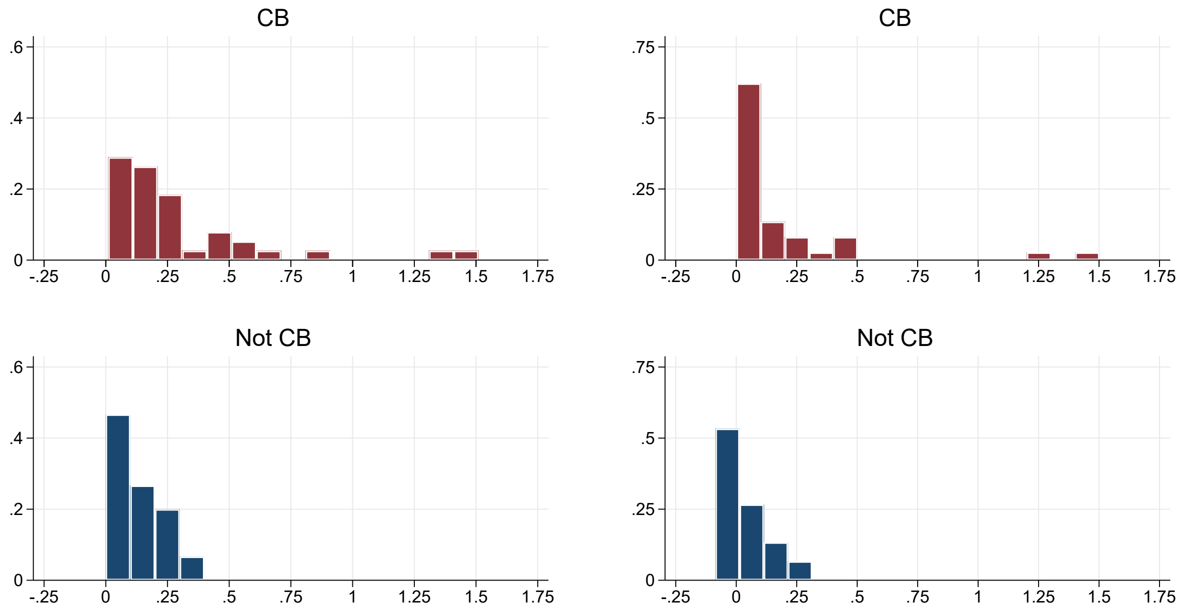


Figure 1: **Visualization of the Peak and Cumulative Effects.** The figure illustrates how we compute the peak and cumulative effects of QE on the level of the outcome variable for the most common case, in which the authors plot the effect of QE on the level of the outcome variable.



(a) Total Peak Effect

(b) Total Cumulative Effect



(c) Standardized Peak Effect

(d) Standardized Cumulative Effect

Figure 2: **Effects of QE on Output by Central Bank Affiliation.** The figure plots histograms for the estimated effects on output, separately for papers with and without CB-affiliated authors. Studies with 0.5 central bankers, but no "full" central banker, are excluded. Panels A and B show the total estimated peak and cumulative effects of the QE program studied on the level of output. Panels C and D show the estimated peak and cumulative effects of the QE program studied on the level of output, after standardizing the QE program size to 1% of GDP.

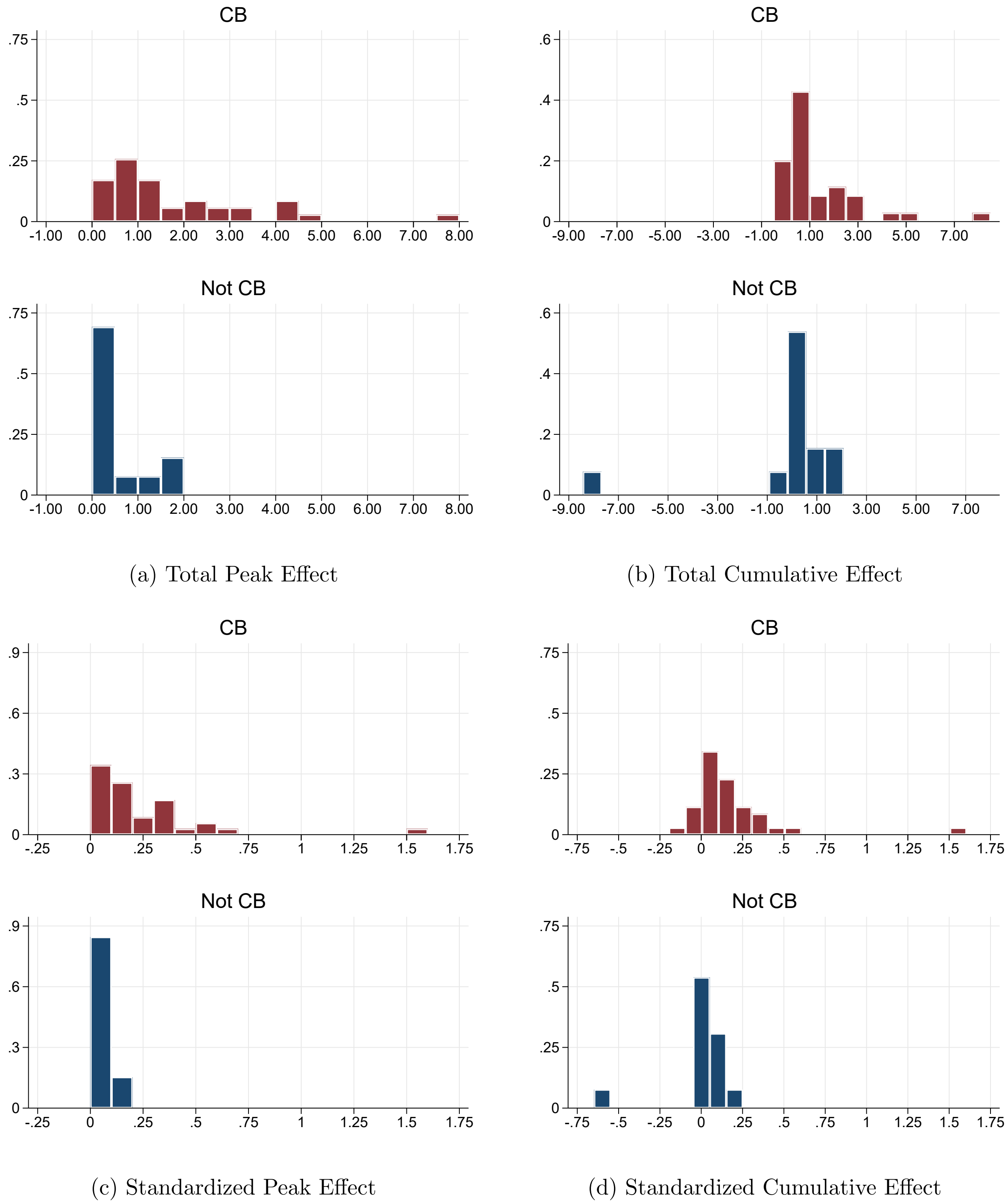
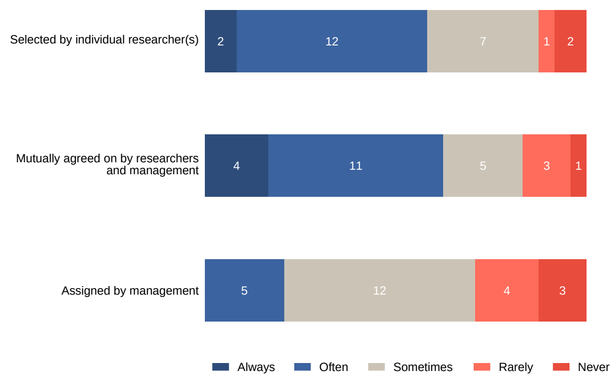
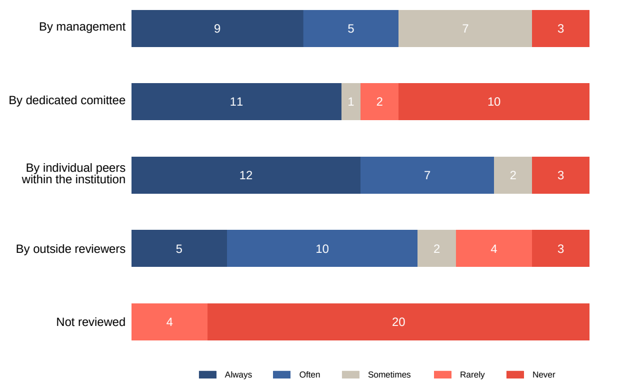


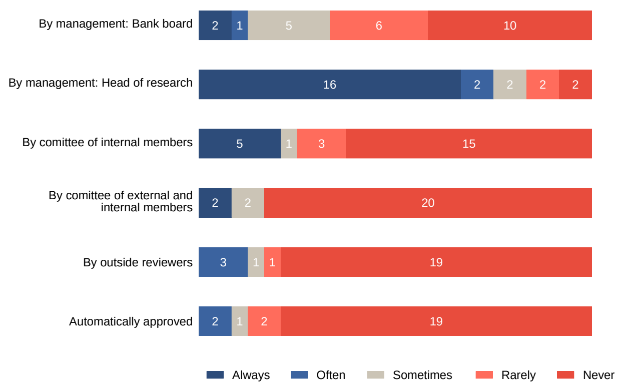
Figure 3: **Effects of QE on Inflation by Central Bank Affiliation.** The figure plots histograms for the estimated effects on inflation, separately for papers with and without CB-affiliated authors. Studies with 0.5 central bankers, but no "full" central banker, are excluded. Panels A and B show the total estimated peak and cumulative effects of the QE program studied on the price level. Panels C and D show the estimated peak and cumulative effects of the QE program studied on the price level, after standardizing the QE program size to 1% of GDP.



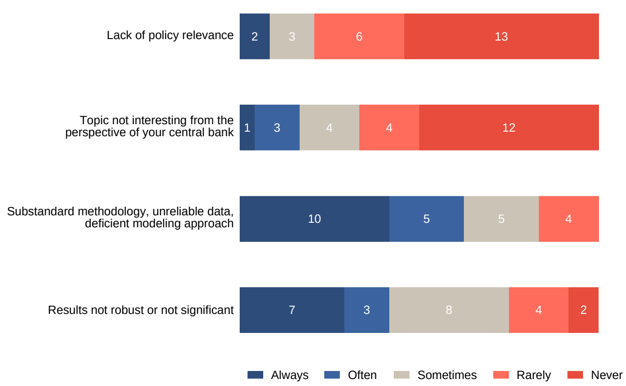
(A) How are research topics selected in your central bank?



(B) How are draft research papers reviewed / commented on in your institution, prior to their public distribution?



(C) How are your institution's draft research papers approved for public distribution?



(D) What criteria can lead to the paper being rejected (i.e., not approved for public distribution)?

Figure 4: **Survey of Central Banks.** The figure reports survey responses of 24 central banks.

Table 1: **Effects of QE on Output and Inflation by Central Bank Affiliation**

This table reports the means and medians (in parentheses) for the estimated effects of QE on output and inflation, as well as for indicators of statistical significance, separately for papers with and without CB-affiliated authors. Studies with 0.5 central bankers, but no "full" central banker, are excluded. We always report the effect on the output level or price level, in percent. Standardized effects refer to the effect of a QE program size equivalent to 1% of GDP. The unit of observation is the paper-country.

	All	CB	Not CB
Panel A: Effect on Output			
Peak effect on output	1.57	1.75	1.00
	(1.25)	(1.53)	(1.00)
Standardized peak effect on output	0.24	0.28	0.11
	(0.16)	(0.18)	(0.10)
Cumulative effect on output	0.87	1.06	0.48
	(0.40)	(0.42)	(0.05)
Standardized cumulative effect on output	0.14	0.18	0.04
	(0.04)	(0.06)	(0.01)
Panel B: Effect on Inflation			
Peak effect on inflation	1.42	1.79	0.54
	(0.93)	(1.17)	(0.40)
Standardized peak effect on inflation	0.19	0.24	0.05
	(0.11)	(0.15)	(0.04)
Cumulative effect on inflation	0.89	1.35	-0.21
	(0.75)	(0.82)	(0.14)
Standardized cumulative effect on inflation	0.12	0.18	-0.01
	(0.08)	(0.11)	(0.01)
Panel C: Significance			
Statistical significance: output	0.88	1.00	0.50
	(1.00)	(1.00)	(0.50)
Statistical significance: inflation	0.84	0.89	0.75
	(1.00)	(1.00)	(1.00)

Table 2: **Effects of QE on Output**

This table regresses the estimated effects of QE on output on the share of authors with central bank affiliation. In Panel A, we use the total estimated effect of the QE program studied on the level of output. Panel B uses the estimated effect on the level of output, after standardizing the QE program size to 1% of GDP. Controls include the number of authors and the logarithm of three plus the average author experience. t-statistics, reported in parentheses, are based on standard errors clustered at the paper level. p-values obtained using the wild cluster bootstrap procedure (10,000 repetitions) are reported in square brackets. The unit of observation is the paper-country.

Panel A: Total Program Effect

	Peak Effect			Cumulative Effect		
	(1)	(2)	(3)	(4)	(5)	(6)
CB Affiliation	0.789	0.770	0.723	0.620	0.526	0.512
	(2.16)	(2.17)	(1.83)	(1.60)	(1.51)	(1.36)
	[0.041]	[0.038]	[0.085]	[0.115]	[0.134]	[0.167]
Country FE		X	X		X	X
Controls			X			X
Observations	58	58	58	57	57	57
R^2	0.072	0.103	0.112	0.043	0.091	0.096

Panel B: Standardized Effect

	Peak Effect			Cumulative Effect		
	(1)	(2)	(3)	(4)	(5)	(6)
CB Affiliation	0.164	0.163	0.152	0.140	0.127	0.122
	(2.38)	(2.48)	(2.11)	(2.17)	(2.17)	(1.90)
	[0.021]	[0.018]	[0.052]	[0.021]	[0.020]	[0.049]
Country FE		X	X		X	X
Controls			X			X
Observations	58	58	58	57	57	57
R^2	0.060	0.170	0.206	0.048	0.078	0.106

Table 3: **Effects of QE on Inflation**

This table regresses the estimated effects of QE on inflation on the share of authors with central bank affiliation. In Panel A, we use the total estimated effect of the QE program studied on the price level. Panel B uses the estimated effect on the price level, after standardizing the QE program size to 1% of GDP. Controls include the number of authors and the logarithm of three plus the average author experience. t-statistics, reported in parentheses, are based on standard errors clustered at the paper level. p-values obtained using the wild cluster bootstrap procedure (10,000 repetitions) are reported in square brackets. The unit of observation is at the paper-country level.

Panel A: Total Program Effect

	Peak Effect			Cumulative Effect		
	(1)	(2)	(3)	(4)	(5)	(6)
CB Affiliation	1.409	1.493	1.279	1.700	1.687	1.394
	(3.42)	(3.33)	(2.79)	(2.24)	(2.20)	(2.04)
	[0.002]	[0.002]	[0.011]	[0.011]	[0.013]	[0.044]
Country FE		X	X		X	X
Controls			X			X
Observations	53	53	53	53	53	53
R^2	0.142	0.239	0.298	0.126	0.126	0.195

Panel B: Standardized Effect

	Peak Effect			Cumulative Effect		
	(1)	(2)	(3)	(4)	(5)	(6)
CB Affiliation	0.197	0.227	0.201	0.205	0.220	0.190
	(2.61)	(2.73)	(2.73)	(2.31)	(2.31)	(2.41)
	[0.007]	[0.005]	[0.004]	[0.004]	[0.004]	[0.007]
Country FE		X	X		X	X
Controls			X			X
Observations	53	53	53	53	53	53
R^2	0.110	0.248	0.296	0.106	0.186	0.226

Table 4: **Significance**

This table regresses the statistical and economic significance of the estimated effects of QE on output and inflation on the share of central bank affiliated authors. In Panel A (B), the dependent variable is the reported statistical and economic significance of the effect on output (inflation). Controls include the number of authors and the logarithm of three plus the average author experience. t-statistics, reported in parentheses, are based on standard errors clustered at the paper level. p-values obtained using the wild cluster bootstrap procedure (10,000 repetitions) are reported in square brackets. The unit of observation is the paper-country.

Panel A: Effect on Output

	Statistical Significance			Economic Significance		
	(1)	(2)	(3)	(4)	(5)	(6)
CB Affiliation	0.412	0.388	0.366	0.335	0.344	0.399
	(2.42)	(2.41)	(2.20)	(2.78)	(2.78)	(3.42)
	[0.041]	[0.035]	[0.043]	[0.019]	[0.019]	[0.005]
Country FE		X	X		X	X
Controls			X			X
Observations	41	41	41	66	66	66
R^2	0.233	0.280	0.298	0.139	0.145	0.250

Panel B: Effect on Inflation

	Statistical Significance			Economic Significance		
	(1)	(2)	(3)	(4)	(5)	(6)
CB Affiliation	0.202	0.202	0.164	0.196	0.207	0.248
	(1.18)	(1.25)	(1.11)	(1.29)	(1.36)	(1.86)
	[0.339]	[0.283]	[0.372]	[0.222]	[0.197]	[0.093]
Country FE		X	X		X	X
Controls			X			X
Observations	38	38	38	60	60	60
R^2	0.044	0.118	0.208	0.041	0.043	0.137

Table 5: **Tone of the Abstract**

This table regresses measures of the tone of the paper's abstract on the share of central bank affiliated authors. In Panel A, the dependent variable is the sentiment score, computed as the difference in the percentage of positive and negative adjectives in the abstract. In Panel B (C), the dependent variable is the percentage of positive (negative) adjectives in the abstract. Controls include the number of authors and the logarithm of three plus the average author experience. t-statistics, reported in parentheses, are based on robust standard errors. p-values obtained using the wild cluster bootstrap procedure (10,000 repetitions) are reported in square brackets. The unit of observation is the paper.

Panel A: Sentiment Score

	(1)	(2)	(3)
CB Affiliation	0.046	0.053	0.056
	(2.05)	(2.59)	(2.60)
	[0.049]	[0.014]	[0.013]
Country Dummies		X	X
Controls			X
Observations	54	54	54
R^2	0.081	0.129	0.133

Panel B: Percentage of Positive Adjectives

	(1)	(2)	(3)
CB Affiliation	0.033	0.040	0.043
	(1.61)	(2.15)	(2.22)
	[0.125]	[0.043]	[0.030]
Country Dummies		X	X
Controls			X
Observations	54	54	54
R^2	0.052	0.128	0.136

Panel C: Percentage of Negative Adjectives

	(1)	(2)	(3)
CB Affiliation	-0.013	-0.013	-0.013
	(-1.35)	(-1.22)	(-1.16)
	[0.197]	[0.252]	[0.272]
Country Dummies		X	X
Controls			X
Observations	54	54	54
R^2	0.040	0.048	0.052

Table 6: **Career Outcomes and Effects of QE on Output**

This table regresses career outcomes on the author's estimated effects of QE on output. The dependent variable is the difference between the author's rank after her first career update following the paper's first circulation, and her rank at the time of first circulation. In Panel A, we use the total estimated effect of the QE program studied on the level of output. In Panel B, the QE program size is standardized to 1% of GDP. Controls include the number of authors, the logarithm of three plus the researcher's experience, the number of years since the author's last career update, as well as dummy variables indicating the author's rank at the time of the paper's first circulation. We restrict the sample to authors who remain affiliated with a central bank and experience at least one career update after the paper's first circulation. t-statistics, reported in parentheses, are based on standard errors clustered at the author level. p-values obtained using the wild cluster bootstrap procedure (10,000 repetitions) are reported in square brackets. The unit of observation is the author-paper-country.

Panel A: Total Program Effect

	Peak Effect			Cumulative Effect		
	(1)	(2)	(3)	(4)	(5)	(6)
Effect on output	0.264	0.219	0.485	0.204	0.204	0.460
	(2.32)	(1.85)	(2.65)	(1.78)	(1.25)	(2.12)
	[0.027]	[0.037]	[0.018]	[0.079]	[0.234]	[0.019]
Country FE		X	X		X	X
Controls			X			X
Observations	34	34	31	32	32	30
R^2	0.030	0.066	0.553	0.027	0.076	0.550

Panel B: Standardized Effect

	Peak Effect			Cumulative Effect		
	(1)	(2)	(3)	(4)	(5)	(6)
Effect on output	1.407	1.009	2.661	2.311	1.838	4.095
	(1.41)	(1.15)	(1.86)	(2.00)	(1.45)	(2.15)
	[0.231]	[0.356]	[0.082]	[0.041]	[0.134]	[0.022]
Country FE		X	X		X	X
Controls			X			X
Observations	34	34	31	32	32	30
R^2	0.044	0.062	0.553	0.051	0.081	0.569

Appendix to

"Fifty Shades of QE:
Comparing Findings of Central Bankers and Academics"

This appendix presents additional results to accompany the paper "Fifty Shades of QE: Comparing Findings of Central Bankers and Academics." The contents are as follows:

Appendix A describes the construction of our main dataset and variables. It also contains the complete dataset used for our main analyses.

Appendix B presents descriptive statistics.

Appendix C presents alternative specifications to accompany our main results on differences in research findings between central bankers and academics.

- Appendix C.1 reports alternative specifications, including replacing our continuous measure of *CB Affiliation* with a discrete measure, treating BIS authors as central bankers, restricting the sample to QE papers only, and controlling for the time gap between the launch of the QE program studied and the year of the paper's first release.
- Appendix C.2 replaces our continuous measure of *CB Affiliation* by two zero/one indicators.
- Appendix C.3 shows our main results using non-clustered standard errors.
- Appendix C.4 restricts the sample to papers published in peer-reviewed journals.
- Appendix C.5 adds controls for the QE program studied.
- Appendix C.6 adds controls for the model chosen (DSGE vs. VAR).

Appendix D adds the share of authors who are affiliated with the central bank of the specific QE program studied.

Appendix E presents our main results by type of central bank.

Appendix F presents our main results separately for each country studied.

Appendix G presents our main results separately for each of the three U.S. QE programs studied.

Appendix H presents additional analyses to accompany our results on the differences in tone between central bankers and academics.

Appendix I presents additional analyses to accompany our results on methodological choice.

Appendix J presents additional analyses to accompany our results on career outcomes.

- Appendix J.1 reports the relationship between career outcomes and other research outcomes (inflation and economic significance).
- Appendix J.2 adds a control for paper publication.
- Appendix J.3 includes authors with no career updates in the five years following the paper's first release.
- Appendix J.4 treats departures to academia and the private sector as demotions.

Appendix K presents results after adding interactions with author seniority.

Appendix L regresses publication quality on research outcomes.

Appendix M explains our treatment of external feedback we have received on our dataset.

Appendix A. Dataset and Variable Construction

This section provides additional information on our sample selection procedure and variable definitions.

Appendix A.1. Dataset

Table A.1 contains the 40 keywords that we used to manually search the Google Scholar and RePEc IDEAS databases. The complete reference to all 54 papers included in our final sample is listed in Table A.3.

We manually collect information on the employment history, job titles, and educational background for the 116 authors by using online searches and information from public LinkedIn pages. To determine author affiliation, we use the author's main employer at the time of the paper's first public distribution, as determined by our search in the summer of 2019. We categorize all authors whose primary affiliation is a central bank as central bankers. We classify authors from the Bank of International Settlements (BIS) as 0.5 central bankers due to the close ties between the BIS and the central banking community. We refer to all other authors as academics.[i] We convert job titles into numerical ranks using the dictionary presented in Table A.2.

Table A.3 reports key variables at the paper level for our sample. The only data we do not share are author-level data, which represent personal information.

Appendix A.2. The Effect of QE on Output and Inflation

For each paper and country studied, we obtain the effect of QE on the level of GDP and on the level of prices as implied by the authors' baseline model. We distinguish four effects: the estimated *peak* effect of the QE program studied (*Total Peak Effect*); the estimated *cumulative* effect of the QE program studied, defined as the effect at the end of the time period studied by the authors (*Total Cumulative Effect*); the estimated *peak* effect of the QE program studied, after standardizing QE program size to 1% of GDP (*Standardized Peak Effect*); the estimated *cumulative* effect of the QE program studied, defined as the effect at the end of the time period studied by the authors and after standardizing QE program size to 1% of GDP (*Standardized Cumulative Effect*). We always look for the main effects advertised in the paper for each country covered, typically presented in the abstract and in the main graphs or tables of the paper. We discard all the robustness checks, alternative modifications or extensions and only look at the estimate most prominently communicated by the authors.

[i]The only exception is Bhattarai et al. (2015), which we treat as having 50% central bankers despite all authors being academics, because the paper came out as a Dallas Fed working paper.

As a rule, we always record the effect of QE on the *level* of output (i.e., real GDP or industrial production) or on the price *level* (i.e., CPI). Let Y denote the actual level of the outcome variable (with QE) and $\hat{Y}$ denote its counterfactual (without QE). We are interested in the percentage difference in the level of the outcome variable with and without QE, i.e., we want to compute $(Y - \hat{Y})/\hat{Y}$. Below we explain in more detail how we obtain these estimates.

Case 1: Levels on y-axis

In the most straightforward case, when the paper reports the effect of QE on the output and price *level*, we record the peak and the cumulative effect as displayed in Figure A.1 below.

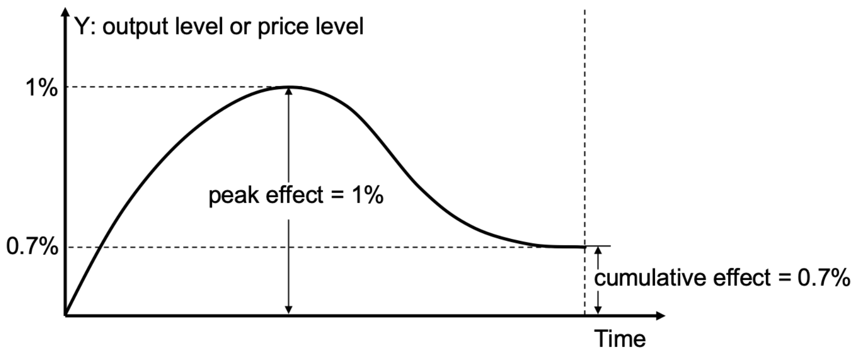


Figure A.1: Visualization of case 1 (levels on y-axis)

Case 2: Growth rates on y-axis

If a paper reports only growth estimates, we sum up the individual effects on the growth rate, denoted as y_t, to determine the impact on the level of the outcome variable (see Figure A.2 below). The peak effect is computed as the sum of the y_t's that are consecutively positive, i.e., $y_1 + y_2 + y_3 + y_4 = \sum_{t=1}^{T} y_t \cdot 1\{y_1, .., y_t > 0\}$. The cumulative effect equals the sum of all the y_t's that are plotted, i.e., $y_1 + y_2 + \cdots + y_7 + y_8 = \sum_{t=1}^{T} y_t$. If the figure plots annualized growth rates on the y-axis but uses a higher frequency (e.g., week, month, or quarter) on the x-axis, then we first de-annualize the growth rates assuming that the authors of the paper annualized growth rates using the formula $y_{t,annual} = (1 + y_t)^n - 1$. We then compute the peak effect and cumulative effect as above.

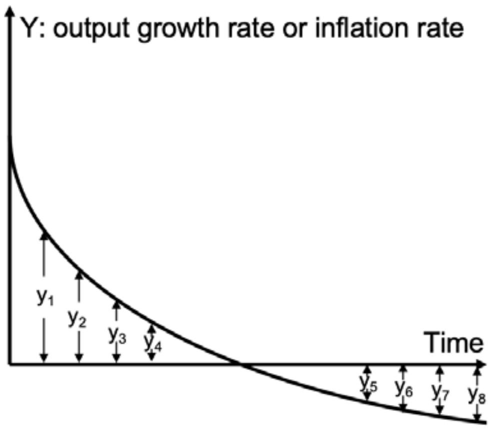


Figure A.2: Visualization of case 2 (growth rates on y-axis)

Case 3: Log-levels on y-axis

If the paper reports the effect of QE on the *log* level of the outcome variable, we convert the log-level effect to a level effect as follows using the formula $(Y - \hat{Y})/\hat{Y} = e^{\log Y - \log \hat{Y}} - 1$. Figure A.3 below illustrates an example. For the peak effect, the figure implies $\log Y - \log \hat{Y} = 20\%$. Hence, $(Y - \hat{Y})/\hat{Y} = 22.14\%$. For the cumulative effect, $\log Y - \log \hat{Y} = 10\%$, which means $(Y - \hat{Y})/\hat{Y} = 10.52\%$.

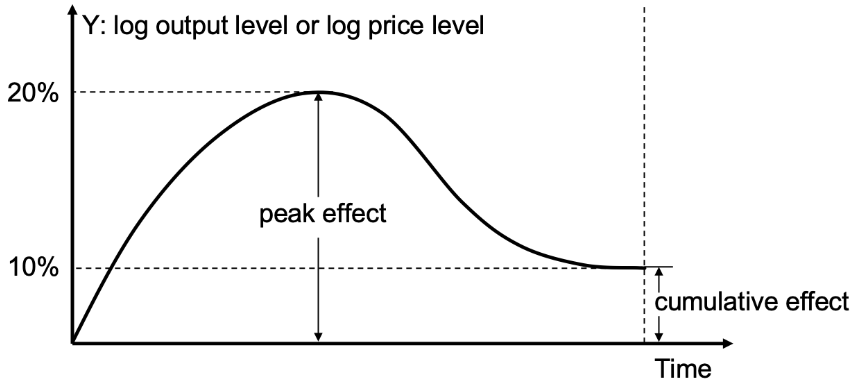


Figure A.3: Visualization of case 3 (log-level on y-axis)

Special cases

In the following, we discuss how we treat special cases.

- **Standardized effects.** If a paper reports the effect of a particular QE program after adjusting QE program size to x% of GDP, we multiply the reported effects by the size of the respective QE program to get the total program effect. For example, if the authors report the effect for a QE shock equivalent to 1% of the country's GDP prior to QE, and the size of the actual QE program studied was 7% of pre-QE GDP, then we multiply the reported effects by a factor of seven. See below for more information on how we determine QE program size.

- **Multiple QE programs.** If a paper studies and reports results separately for multiple QE programs in the same country, then we use the estimates for the QE program most prominently discussed by the authors in the abstract, introduction and conclusion. If the authors do not emphasize one program in particular, then we choose the program that shows the largest effect on output. If a paper studies multiple QE programs in the same country but does not report the results separately, and the paper adjusts the QE shock size to be x% of GDP prior to QE, then we assume that (i) the QE effect reported in the paper is the average effect across all QE programs studied, and (ii) the QE program with the largest size has the largest effect on output.

- **Multiple sample periods.** If a paper shows both full-sample and sub-sample results, we always use the full-sample results.

- **Multiple models.** If a paper reports results from multiple models, then we use the estimates for the model most prominently discussed by the authors in the abstract, introduction and conclusion. If there is ambiguity, we compute the average across all models shown.

- **Multiple policy experiments.** If a paper reports the effect of QE and also the effect of QE combined with other policies, we use the former effect.

- **Data frequency.** We assume that authors show quarter-on-quarter growth rates, unless the authors explicitly state that they use annualized rates.

- **Unknown shock size.** For papers where the shock size used to report the main results does not allow for a proper mapping to the size of the QE program studied, we set the effects on output and inflation to missing and only collect information on economic and statistical significance as well as tone. Examples include studies that model the QE shock as a one-standard deviation increase in the propensity to QE or as a hypothetical decrease in the sovereign yield of a certain number of basis points.

Table A.4 lists the estimated effects for each paper-country pair in our sample.

Standardization

In order to standardize the effects to a common shock size, we proceed as follows. We use 1% of the respective country's GDP around the time QE was first introduced as the standardized shock size. For the U.S. and the UK, we therefore use 1% of the annualized

2009 Q1 GDP, consistent with Weale and Wieladek (2016). For the euro area, which started asset purchase programs in 2015, we use 1% of the annualized 2015 Q1 GDP. Performing the standardization requires an estimate of the size of the aggregate asset purchases for each QE program, as well as GDP. GDP estimates are obtained from the FRED database. We report our estimate of the size of the asset purchases for each QE program in Table A.5. Following Weale and Wieladek (2016), we include Treasury purchases for the U.S. programs, and all securities purchased under the Asset Purchasing Facility for the UK programs. For the euro area, program size includes all securities purchased under the Asset Purchasing Program, because asset-backed securities are a small fraction of the overall program size.[ii] The variable *shock size* in Table A.4 contains the factor by which we divide the total program effect to obtain the standardized effect.

Appendix A.3. Textual Analysis

To analyze the tone of the paper, we first separate the abstract and conclusion from the rest of the paper, and identify adjectives using the Natural Language Toolkit in Python. We then use the world list presented in Table A.6 to classify adjectives as indicating a stronger or weaker relationship in our context. If a word from Table A.6 is immediately preceded by either "no" or "not", we assign the opposite sentiment to it (e.g., "not large" is classified as negative). The sentiment score, defined as the share of positive adjectives minus the share of negative adjectives, for each paper abstract is reported in Table A.3. For robustness, we have also constructed a version of the sentiment score that uses a three-word distance rather than a one-word distance for negation (following Loughran and McDonald (2011)). The correlation between our baseline measure and this alternative measure is 96%, and the results reported in Table 5 in the main paper are virtually unchanged if we use this alternative measure.

Appendix A.4. Variable Definitions

Table A.7 provides definitions for all variables used in the analysis.

[ii] See `https://www.ecb.europa.eu/mopo/implement/omt/html/index.en.html`.

Table A.1: **List of Search Words in Google Scholar and RePEc IDEAS**

1. Quantitative easing	21. LSAP
2. Quantitative easing UK	22. Large-scale asset purchases
3. Quantitative easing US	23. APP
4. Quantitative easing EA	24. Asset purchase programme
5. Quantitative easing Inflation	25. SMP
6. Quantitative easing CPI	26. Securities markets programme
7. Quantitative easing Output	27. LTRO
8. Quantitative easing GDP	28. Long-term refinancing operation
9. QE	29. Operation twist (# since 2009)
10. QE UK	30. APF
11. QE US	31. Asset purchase facility
12. QE EA	32. Funding for lending
13. QE Inflation	33. Balance sheet policies GDP
14. QE CPI	34. Balance sheet policies Inflation
15. QE Output	35. Balance sheet policies macroeconomic impact
16. QE GDP	36. Balance sheet policies macroeconomic effects
17. Quantitative easing macroeconomic impact	37. Unconventional monetary policy GDP
18. QE macroeconomic impact	38. Unconventional monetary policy Inflation
19. Quantitative easing macroeconomic effects	39. Unconventional monetary policy macroeconomic impact
20. QE macroeconomic effects	40. Unconventional monetary policy macroeconomic effects

Table A.2: **Dictionary of Job Titles to Numerical Ranks**

The table presents the dictionary used to convert job titles into numerical ranks.

Rank	Job title
Central Bankers	
1	Researcher, economist, PhD economist, research associate/economist, expert
2	Senior researcher, analyst, research economist or economist
3	Principal/lead researcher or economist
4	(Senior) Adviser
5	Deputy Director/Head of Section/Team head/Manager
6	(Senior) Director, Head, Chief economist, (Vice) President, Senior manager, Deputy Governor
Academics	
1	PhD student, pre-PhD
2	Post-doc, lecturer
3	Assistant professor
4	Associate professor
5	Full professor
6	Senior full professor, distinguished professor, chair, or anyone in a managerial position

Table A.3: **List of Included Papers and Key Paper-Level Variables**

The table presents the key variables for each paper in our sample. All variables are defined in Table A.7.

Reference	CB Affil.	Author Exp.	Authors	Sentiment	Max Senior	German CB	Other EA CB	Non EA CB	Unreported CI	95% CI	DSGE
Andrade et al. (2016)	1.000	10.000	5	0.077	6	0	1	0	1	0	1
Balatti et al. (2017)	0.000	10.000	4	-0.080	5	0	0	0	0	0	0
Balfoussia and Gibson (2016)	1.000	18.000	2	0.067	6	0	1	0	1	0	0
Baumeister and Benati (2013)	1.000	4.500	2	0.125	3	0	1	1	0	0	0
Bhattarai et al. (2015)	0.500	4.667	3	0.167	3	0	0	0	0	0	0
Bluwstein and Canova (2016)	0.000	12.500	2	0.045	5	0	0	0	0	0	0
Boeckx et al. (2017)	0.667	8.667	3	0.077	6	0	1	0	0	0	0
Bridges and Thomas (2012)	1.000	11.000	2	-0.050	2	0	0	1	1	0	0
Burlon et al. (2019)	1.000	9.000	3	0.083	5	0	1	0	1	0	1
Cahn et al. (2017)	1.000	9.000	3	0.091	5	0	1	0	0	0	1
Carlstrom et al. (2017)	0.667	19.333	3	0.059	5	0	0	1	1	0	1
Chen et al. (2012)	0.667	2.333	3	-0.083	1	0	0	1	0	0	1
Chen et al. (2017)	0.250	6.500	4	0.048	1	0	0	1	1	0	0
Chung et al. (2012)	1.000	12.750	4	0.077	6	0	0	1	1	0	0
Churm et al. (2015)	0.750	12.000	4	0.056	6	0	0	1	0	0	0
Cloyne et al. (2015)	0.750	8.000	4	0.000	2	0	0	1	1	0	N/A
Cova et al. (2019)	0.667	13.000	3	0.000	1	0	1	0	1	0	1
Dahlhaus et al. (2018)	1.000	1.333	3	0.000	3	0	0	1	0	0	0
Darracq-Pariès and De Santis (2015)	1.000	5.000	2	0.063	4	0	1	0	0	0	0
Darracq-Pariès and Kühl (2017)	1.000	2.000	2	0.045	4	1	1	0	0	0	1
De Graeve and Theodoridis (2016)	0.500	9.000	2	0.000	5	0	0	1	1	0	1
Del Negro et al. (2017)	0.750	12.750	4	0.067	5	0	0	1	1	0	1
Engen et al. (2015)	1.000	25.000	3	0.029	5	0	0	1	1	0	1
Falagiarda (2014)	0.000	-2.000	1	0.150	1	0	0	0	1	0	1
Filardo and Nakajima (2018)	0.500	15.500	2	0.024	N/A	0	0	1	0	0	0
Fuhrer and Olivei (2011)	1.000	19.500	2	0.133	6	0	0	1	1	0	0
Gambacorta et al. (2014)	0.333	10.667	3	-0.048	5	0	0	1	0	0	0
Gambetti and Musso (2017)	0.500	11.500	2	0.067	4	0	1	0	0	0	0
Gerke et al. (2018)	1.000	4.000	3	0.067	2	1	0	0	0	0	1
Gertler and Karadi (2013)	0.500	18.000	2	0.000	5	0	1	0	1	0	1
Giannone et al. (2012)	0.250	14.000	4	0.000	5	0	1	0	0	0	0
Goodhart and Ashworth (2012)	0.000	25.000	2	0.000	6	0	0	0	1	0	0

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Table A.3 – continued

Reference	CB Affil.	Author Exp.	Authors	Sentiment	Max Senior	German CB	Other EA CB	Non EA CB	Unreported CI	95% CI	DSGE
Haldane et al. (2016)	0.750	14.500	4	0.125	6	0	0	1	0	0	0
Harrison (2011)	1.000	12.000	1	0.000	5	0	0	1	1	0	1
Hausken and Ncube (2013)	0.000	20.000	2	0.107	5	0	0	0	1	0	0
Hesse et al. (2018)	0.167	7.500	3	0.143	1	0	0	1	0	0	0
Hohberger et al. (2019)	0.333	5.000	3	0.000	2	0	0	1	1	0	1
Hutchinson and Smets (2017)	1.000	18.000	2	0.250	6	0	1	0	1	0	N/A
Joyce et al. (2011)	1.000	12.000	3	0.105	6	0	0	1	1	0	0
Kapetanios et al. (2012)	0.750	9.333	4	0.077	5	0	0	1	1	0	0
Kühl (2018)	1.000	6.000	1	0.000	2	1	0	0	0	0	1
Lenza et al. (2010)	0.667	14.000	3	0.000	5	0	1	0	0	0	0
Lewis and Roth (2017)	0.500	9.000	2	0.000	3	1	0	0	1	0	0
Lyonnet and Werner (2012)	0.000	5.500	2	0.000	5	0	0	0	0	1	N/A
Meinusch and Tillmann (2016)	0.000	4.000	2	0.000	5	0	0	0	0	0	0
Mouabbi and Sahuc (2019)	1.000	7.000	2	0.048	6	0	1	0	0	0	1
Neuenkirch (2020)	0.000	7.000	1	0.000	4	0	0	0	0	1	N/A
Pascual and Wieladek (2016)	0.000	12.500	2	0.000	N/A	0	0	0	0	0	0
Peersman (2011)	0.000	10.000	1	-0.091	5	0	0	0	0	0	0
Pesaran and Smith (2016)	0.000	39.000	2	0.000	5	0	0	0	0	1	1
Popescu (2015)	0.000	7.000	1	0.118	N/A	0	0	0	0	0	0
Sahuc (2016)	1.000	12.000	1	0.071	6	0	1	0	1	0	1
Weale and Wieladek (2016)	1.000	7.000	2	0.083	6	0	0	1	0	0	0
Wu and Xia (2016)	0.000	0.500	2	0.000	3	0	0	0	1	0	0

Table A.4: **Estimated Effects of QE on Output and Inflation**

The table presents the total effects of the QE program studied on both output and inflation for each paper-country observation in our sample. We report the effects on the output level or price level, in percent. Standardized effects can be obtained by dividing the total program effects reported here by the number in the column "shock size."

Reference	Country	QE program	Shock size	Quantitative Estimates				Significance				Source
				Inflation		Output		Inflation		Output		
				Peak	Cumul.	Peak	Cumul.	Stat.	Econ.	Stat.	Econ.	
Andrade et al. (2016)	EA	APP	10.38	4.30	4.30	1.31	0.15	N/A	1.00	N/A	1.00	Fig 7
Balatti et al. (2017)	UK	QE 1	13.00	0.04	0.04	0.05	0.05	0.00	0.00	0.00	0.00	Fig 1, 2
Balatti et al. (2017)	US	LSAP 1 - 2	6.25	0.07	0.07	0.18	0.18	0.00	0.00	0.00	0.00	Fig 1, 2
Balfoussia and Gibson (2016)	EA	TLTROs	4.31	N/A	N/A	5.69	5.58	N/A	N/A	1.00	1.00	Fig 2
Baumeister and Benati (2013)	UK	QE 1	13.00	0.75	0.75	1.06	1.06	1.00	1.00	1.00	1.00	Fig 3, 5
Baumeister and Benati (2013)	US	LSAP 1	2.08	0.66	0.66	1.06	0.98	1.00	1.00	1.00	1.00	Fig 3, 5
Bhattarai et al. (2015)	US	LSAP 2	N/A	N/A	N/A	N/A	N/A	1.00	1.00	1.00	1.00	Fig 4
Bluwstein and Canova (2016)	EA	LTROs+SMP+CBPP	22.20	0.14	0.14	0.00	-0.07	1.00	1.00	0.00	0.00	Fig 2
Boeckx et al. (2017)	EA	3-year LTROs	9.80	1.07	1.07	1.16	0.42	1.00	1.00	1.00	1.00	Fig 8
Bridges and Thomas (2012)	UK	QE 1	13.00	4.84	4.84	2.04	0.26	N/A	1.00	N/A	1.00	Fig 16b
Burlon et al. (2019)	EA	APP	10.38	0.09	0.04	0.10	0.02	N/A	0.50	N/A	1.00	Fig 4
Cahn et al. (2017)	EA	3-year LTROs	9.80	0.86	0.86	3.17	3.17	1.00	0.00	1.00	1.00	Fig 5
Carlstrom et al. (2017)	US	LSAP 1	2.08	0.12	-0.41	2.97	2.97	N/A	N/A	N/A	1.00	Fig 2
Chen et al. (2012)	US	LSAP 2	4.17	0.09	0.09	0.10	0.07	1.00	0.00	1.00	0.00	Fig 3
Chen et al. (2017)	US	N/A	N/A	N/A	N/A	N/A	N/A	1.00	1.00	1.00	1.00	Fig IV.1
Chen et al. (2017)	EA	N/A	N/A	N/A	N/A	N/A	N/A	1.00	0.00	1.00	0.00	Fig IV.1
Chung et al. (2012)	US	LSAP 1	2.08	3.14	3.14	1.77	0.40	N/A	1.00	N/A	1.00	Fig 8
Churm et al. (2015)	UK	QE 2	11.50	0.74	0.74	0.66	0.66	1.00	1.00	1.00	1.00	Fig 14
Cloyne et al. (2015)	UK	QE 1 - 2	24.50	7.76	7.76	2.56	0.81	N/A	0.50	N/A	0.50	Fig 4
Cova et al. (2019)	EA	APP	10.38	1.09	0.85	1.51	0.22	N/A	1.00	N/A	1.00	Fig 2
Dahlhaus et al. (2018)	US	LSAP 1-3	11.74	1.76	1.76	2.80	2.80	1.00	N/A	1.00	1.00	Fig 2
Darracq-Pariès and De Santis (2015)	EA	APP	10.38	2.24	2.24	1.09	0.02	N/A	1.00	N/A	1.00	Fig 3
Darracq-Pariès and Kühl (2017)	EA	3-year LTROs	9.80	0.78	0.78	0.77	0.42	1.00	1.00	1.00	1.00	Fig 7
De Graeve and Theodoridis (2016)	US	Op. Twist 1	2.70	0.82	0.82	0.62	0.02	N/A	1.00	N/A	1.00	Fig 5
Del Negro et al. (2017)	US	LSAP 1-2	6.25	0.71	0.71	1.66	0.35	N/A	1.00	N/A	1.00	Fig 4, 6

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Table A.4 – continued

Reference	Country	QE program	Shock size	Quantitative Estimates				Significance				Source
				Inflation		Output		Inflation		Output		
				Peak	Cumul.	Peak	Cumul.	Stat.	Econ.	Stat.	Econ.	
Engen et al. (2015)	US	LSAP 1-3	11.74	3.03	3.03	2.58	0.90	N/A	1.00	N/A	1.00	Fig 9
Falagiarda (2014)	UK	QE 1	13.00	0.40	0.19	1.25	-0.02	N/A	1.00	N/A	1.00	Fig 6, T. 5
Falagiarda (2014)	US	LSAP 2	4.17	0.20	0.10	0.92	0.01	N/A	1.00	N/A	1.00	Fig 5, T. 4
Filardo and Nakajima (2018)	UK	N/A	N/A	N/A	N/A	N/A	N/A	0.00	1.00	1.00	1.00	N/A
Filardo and Nakajima (2018)	US	LSAP 1-3	11.74	N/A	N/A	N/A	N/A	1.00	1.00	1.00	1.00	N/A
Filardo and Nakajima (2018)	EA	APP	10.38	N/A	N/A	N/A	N/A	1.00	1.00	1.00	1.00	N/A
Fuhrer and Olivei (2011)	US	LSAP 2	4.17	N/A	N/A	0.78	0.78	N/A	N/A	N/A	N/A	T. 2
Gambacorta et al. (2014)	UK	QE 1	13.00	0.33	-0.29	3.77	0.19	0.00	0.50	1.00	0.50	Fig 8
Gambacorta et al. (2014)	US	LSAP 1	2.08	0.69	0.22	1.01	0.12	1.00	0.50	1.00	0.50	Fig 8
Gambacorta et al. (2014)	EA	LTROs <14 mths	7.57	0.93	0.47	1.25	-0.07	1.00	0.50	1.00	0.50	Fig 8
Gambetti and Musso (2017)	EA	APP	10.38	0.39	0.39	0.18	0.02	1.00	1.00	1.00	1.00	Fig 10, T. 3
Gerke et al. (2018)	EA	APP	10.38	0.94	0.82	N/A	N/A	1.00	0.50	N/A	N/A	Fig 3b
Gertler and Karadi (2013)	US	LSAP 1	2.08	1.17	1.17	0.97	0.01	N/A	1.00	N/A	1.00	Fig 1
Giannone et al. (2012)	EA	LTROs <14 mths	7.57	N/A	N/A	1.99	1.99	N/A	N/A	1.00	1.00	Fig 7
Goodhart and Ashworth (2012)	UK	QE 1	13.00	N/A	N/A	N/A	N/A	N/A	1.00	N/A	1.00	T. 2, 3
Haldane et al. (2016)	UK	QE 1	13.00	4.42	0.80	3.12	0.79	1.00	1.00	1.00	1.00	T. 4, Fig B1.6
Haldane et al. (2016)	US	LSAP 2	4.17	2.63	0.79	2.63	0.94	1.00	1.00	1.00	1.00	T. 4, Fig B1.7
Haldane et al. (2016)	EA	APP	10.38	2.04	0.04	1.56	0.09	0.00	0.00	1.00	0.00	T. 4, Fig B1.2
Harrison (2011)	UK	QE 1	13.00	1.34	-0.02	0.13	0.11	N/A	1.00	N/A	1.00	Fig 4
Hausken and Ncube (2013)	UK	QE 1	13.00	1.14	1.14	1.30	1.30	N/A	1.00	N/A	1.00	Fig 5.4
Hausken and Ncube (2013)	US	LSAP 1 - 3	11.74	1.55	1.55	-0.01	-1.01	N/A	1.00	N/A	0.00	Fig 5.2
Hausken and Ncube (2013)	EA	3-year LTROs	9.80	1.57	1.54	2.13	2.13	N/A	1.00	N/A	0.00	Fig 5.1
Hesse et al. (2018)	UK	QE 1	13.00	2.84	1.83	2.66	2.32	1.00	1.00	1.00	1.00	Fig 4
Hesse et al. (2018)	US	LSAP 2	4.17	0.89	0.50	0.80	0.54	1.00	1.00	1.00	1.00	Fig 4
Hohberger et al. (2019)	EA	APP	10.38	2.01	2.01	1.73	1.73	N/A	1.00	N/A	1.00	Fig 5
Hutchinson and Smets (2017)	EA	APP	10.38	1.85	1.85	2.01	2.01	1.00	1.00	1.00	1.00	Fig7
Joyce et al. (2011)	UK	QE 1	13.00	N/A	N/A	1.75	N/A	N/A	N/A	N/A	1.00	T. C
Kapetanios et al. (2012)	UK	QE 1	13.00	0.92	0.92	0.81	0.59	N/A	0.50	N/A	0.50	Fig 2, 3, 5
Kühl (2018)	EA	APP	10.38	0.43	0.23	0.44	0.08	1.00	1.00	1.00	1.00	Fig 1
Lenza et al. (2010)	EA	LTROs <14 mths	7.57	0.00	-0.50	3.12	3.12	N/A	1.00	N/A	1.00	Fig 10
Lewis and Roth (2017)	EA	N/A	N/A	N/A	N/A	N/A	N/A	0.00	0.00	1.00	1.00	Fig 2
Lyonnet and Werner (2012)	UK	QE 1	13.00	N/A	N/A	0.00	0.00	N/A	N/A	0.00	0.00	Text

Continued on next page

Table A.4 – continued

Reference	Country	QE program	Shock size	Quantitative Estimates				Significance				Source
				Inflation		Output		Inflation		Output		
				Peak	Cumul.	Peak	Cumul.	Stat.	Econ.	Stat.	Econ.	
Meinusch and Tillmann (2016)	US	N/A	N/A	N/A	N/A	N/A	N/A	1.00	1.00	1.00	1.00	Fig 3
Mouabbi and Sahuc (2019)	EA	APP	10.38	2.60	2.60	4.79	4.50	1.00	1.00	1.00	1.00	Fig 4
Neuenkirch (2020)	UK	QE 1	13.00	0.00	-8.43	2.81	2.39	1.00	0.00	1.00	1.00	Fig 2
Pascual and Wieladek (2016)	EA	APP	10.38	0.96	0.96	1.28	1.27	1.00	1.00	1.00	1.00	Fig 5
Peersman (2011)	EA	LTROs <14 mths	7.57	0.48	0.47	2.32	0.24	1.00	1.00	1.00	1.00	Fig 1A
Pesaran and Smith (2016)	UK	QE 1	13.00	N/A	N/A	1.00	0.00	N/A	N/A	0.00	0.50	Text
Popescu (2015)	US	LSAP 2	4.17	0.06	-0.15	0.52	0.04	1.00	0.00	1.00	1.00	Fig 6, 22
Sahuc (2016)	EA	APP	10.38	1.43	1.40	1.23	0.33	N/A	1.00	N/A	1.00	Fig 1
Weale and Wieladek (2016)	UK	QE 1	13.00	4.48	0.51	3.50	0.40	1.00	1.00	1.00	1.00	Fig 2
Weale and Wieladek (2016)	US	LSAP 1	2.08	1.24	0.33	1.16	0.34	1.00	1.00	1.00	1.00	Fig 2
Wu and Xia (2016)	US	LSAP 1-3	11.74	0.47	-0.36	1.21	0.76	N/A	0.00	N/A	1.00	Fig 6

Table A.5: **Unconventional Monetary Policy Programs: Size Estimates**

Program	Size (in bn)	Share of GDP[iii]	Description
Panel A: QE Programs			
UK QE 1[iv]	£200	13.06%	Purchases of government bonds announced in Nov-2009.
UK QE 2	£175	11.43%	Purchases of government bonds announced in Jul-2012.
US LSAP 1[v]	$300	2.08%	Purchases of long-term Treasury securities announced in Mar-2009. Following Weale and Wieladek (2016), we only consider purchases of Treasury securities and ignore purchases of mortgage-based securities and agency debt.
US LSAP 2	$600	4.17%	Purchases of long-term Treasury securities announced in Nov-2010.
US LSAP 3	$790	5.49%	Purchases of long-term Treasury securities announced in Sep-2012.
EA APP[vi]	€1,080	10.38%	We consider purchases as per the original announcement in Jan-2015, i.e., €60 bn per month for a period of 18 months. We exclude subsequent program extensions and enlargements.
Panel B: Non-QE Programs			
US Operation Twist 1[vii]	$400	2.78%	We consider the initial amount of $400 bn announced in Sep-2011.
EA LTROs < 14 months[viii]	€787	7.57%	Refers to 6-month LTROs dated Mar-2008 (€66 bn), 12-month LTROs dated May 2009 (€614 bn), 12-month LTROs dated Aug-2011 (€50 bn), and 13-month LTROs dated Oct-2011 (€57 bn).
EA 3 year LTROs[ix]	€1,019	9.80%	Includes the first operation sized €489 bn, which took place in Dec-2011, and the second operation sized €530 bn, which took place in Feb-2012.
EA TLTROs[x]	€448	4.31%	Approximate gross borrowing from the first TLTROs program announced in Jun-2014.

[iii] Following Weale and Wieladek (2016), we use the annualized GDP in the first quarter of the year in which the country initiated its QE program. For the UK and U.S., the reference year is 2009; for the Euro area, it is 2015. GDP data is retrieved from FRED, tables UKNGDP, GDP, and EUNNGDP.

[iv] Source for UK programs: `https://www.bankofengland.co.uk/monetary-policy/quantitative-easing`.

[v] Source for U.S. programs: `https://www.newyorkfed.org/markets/programs-archive/large-scale-asset-purchases`.

[vi] Source for EA program: `https://www.ecb.europa.eu/pub/pdf/other/eb201501_focus01.en.pdf`.

[vii] Source: `https://www.federalreserve.gov/newsevents/pressreleases/monetary20110921a.htm`

[viii] Source: Table 1 in Bluwstein and Canova (2016).

[ix] Source: `https://www.ecb.europa.eu/pub/pdf/other/mb201203_focus03.en.pdf`.

[x] Source: `https://www.ecb.europa.eu/pub/pdf/other/ebbox201703_05.en.pdf`, Chart A.

Table A.6: **Dictionary for Tone Analysis**

The table presents our dictionary of positive and negative adjectives used to classify the tone of the paper's abstract and conclusion. The positive adjectives are ordered by the number of times they occur in the abstracts and conclusions of the papers in the sample. The negative adjectives are paired up with their positive counterparts whenever possible.

Positive	Negative
significant	insignificant
large	small
effective	ineffective
important	unimportant
considerable	limited
major	minor
strong	weak
robust	modest
useful	useless
powerful	powerless
substantial	marginal
desirable	undesirable
certain	uncertain
successful	unsuccessful
meaningful	meaningless
sizable	little
desired	
extraordinary	
big	
huge	tiny
non-negligible	negligible
high	low
beneficial	

Table A.7: **Variable Descriptions**

Variable	**Description**
Dependent variables	
Peak effect on output	The maximum impact of the QE program shock on the level of output (i.e., real GDP or industrial production). The variable is expressed in percent.
Cumulative effect on output	The impact of the QE program shock on the level of output (i.e., real GDP or industrial production) at the end of the time period studied. The variable is expressed in percent.
Standardized peak effect on output	The maximum impact of the QE program on the level of output (i.e., real GDP or industrial production), using a QE program size equivalent to 1% of the country's GDP prior to QE. The variable is expressed in percent.
Standardized cumulative effect on output	The impact of the QE program on the level of output (i.e., real GDP or industrial production) at the end of the time period studied, using a QE program size equivalent to 1% of the country's GDP prior to QE. The variable is expressed in percent.
Peak effect on inflation	The maximum impact of the QE program on the level of prices (i.e., CPI). The variable is expressed in percent.
Cumulative effect on inflation	The impact of the QE program on the level of prices (i.e., CPI) at the end of the time period studied. The variable is expressed in percent.
Standardized peak effect on inflation	The maximum impact of the QE program on the level of prices (i.e., CPI), using a QE program size equivalent to 1% of the country's GDP prior to QE. The variable is expressed in percent.
Standardized cumulative effect on inflation	The impact of the QE program on the level of prices (i.e., CPI) at the end of the time period studied, using a QE program size equivalent to 1% of the country's GDP prior to QE. The variable is expressed in percent.
Statistical significance of output	Indicator equal to one if the authors state that the peak effect of the QE program on either the level of output or on output growth is positive and statistically significant, and zero otherwise. If the authors do not make explicit statements about statistical significance, we use the confidence intervals reported in the paper.
Economic significance of output	Variable equal to one if the authors state that the estimated effect of the QE program on either the level of output or on output growth is economically significant; zero if the effect is stated to be economically insignificant or small; and 0.5 if the effect is stated to be somewhat economically significant.
Statistical significance of inflation	Indicator equal to one if the authors state that the peak effect of the QE program on either the level of prices or on the inflation rate is positive and statistically significant, and zero otherwise. If the authors do not make explicit statements about statistical significance, we use the confidence intervals reported in the paper.
Economic significance of inflation	Variable equal to one if the authors state that the estimated effect of the QE program on either the level of prices or on the inflation rate is economically significant; zero if the effect is stated to be economically insignificant or small; and 0.5 if the effect is stated to be somewhat economically significant.

Continued on next page

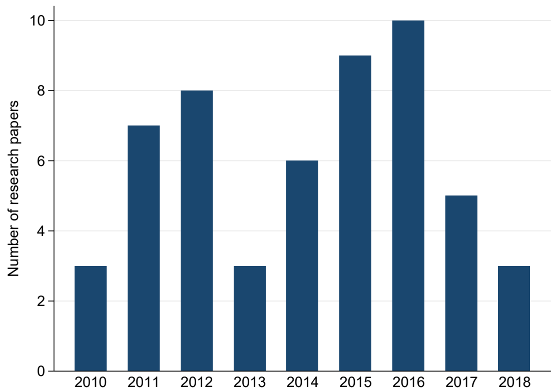
Table A.7 – continued

Variable	Description
Share of positive adjectives in abstract	Share of positive adjectives out of all adjectives in the paper's abstract, using the dictionary of positive adjectives from Table A.6.
Share of negative adjectives in abstract	Share of negative adjectives out of all adjectives in the paper's abstract, using the dictionary of negative adjectives from Table A.6.
Sentiment score in abstract	Share of positive adjectives out of all adjectives in the paper's abstract minus the share of negative adjectives out of all adjectives in the paper's abstract. We use the dictionary of positive and negative adjectives from Table A.6.
Unreported CI	Indicator equal to one if the paper does not report a confidence interval or does not specify the width of the confidence interval used to assess statistical significance, and zero otherwise.
95% CI	Indicator equal to one if the paper uses a 95% confidence interval, and zero otherwise.
Model	Indicator equal to one if the paper uses a DSGE model, and zero if it uses a VAR model.
Main independent variable	
CB affiliation	The share of authors who are affiliated with a central bank at the time of the paper's first public circulation, as determined by our search in the summer of 2019. Authors who are affiliated with the BIS are treated as 0.5 central bankers.
Max seniority	The numerical rank of the most senior author. We convert job titles into numerical ranks using the dictionary from Table A.2. Seniority is undefined for researchers who are neither central bankers nor academics, such as researchers working at the BIS, IMF, World Bank, or the private sector.
German CB	Indicator equal to one if at least one of the authors is employed at the Bundesbank, and zero otherwise.
Other EA CB	Indicator equal to one if at least one of the authors is employed at the ECB or at a euro area national central bank that is not the Bundesbank, and zero otherwise.
Non EA CB	Indicator equal to one if at least one of the authors is employed at a central bank outside of the euro area or at the BIS, and zero otherwise.
Control variables	
Author experience	The number of years since the author's highest obtained educational degree, averaged across all authors of the paper.
Number of authors	The number of authors of the paper.

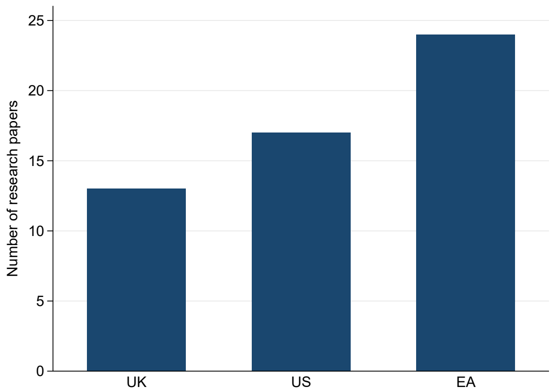
Appendix B. Descriptive Statistics

This section provides descriptive statistics of our sample. Figure B.4 plots selected summary statistics at the paper level, by year and country studied. Figure B.5 focuses on the authors. Panel A shows the number of authors by employer type and Panel B shows the number of authors by PhD institution, after restricting to employer types and PhD institutions with at least three affiliated authors in our sample. Figure B.6 reports the number of papers by QE program studied, separately for papers with and without at least one central bank author.

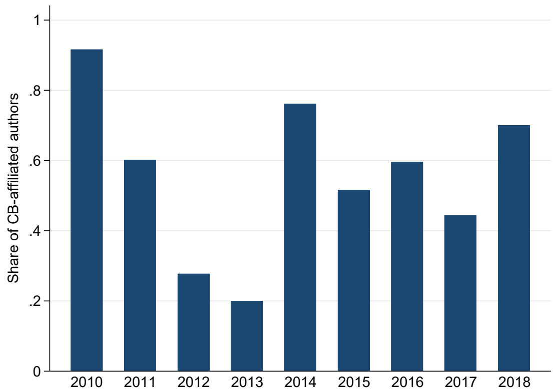
Table B.8 provides additional descriptive statistics at both the paper level (Panel A) and the author-paper level (Panel B). Table B.9 reports the means, medians, and standard deviations of the estimated effects of QE on the levels of output and prices, for the full sample as well as by country.



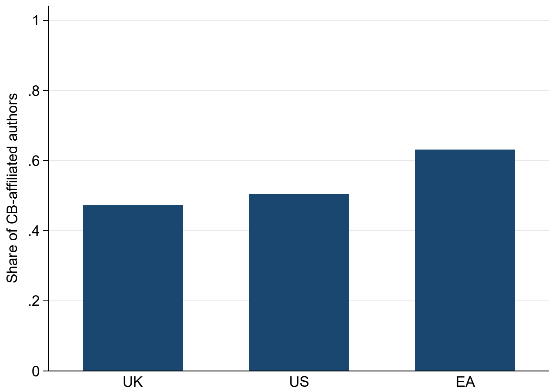
(a) Papers by Year



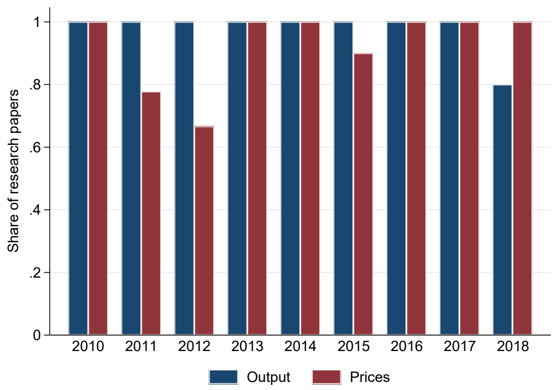
(b) Papers by Country Studied



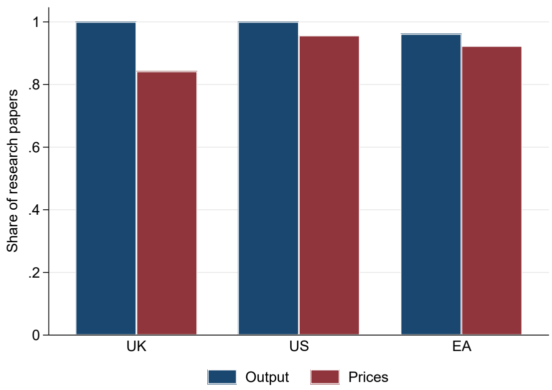
(c) CB Affiliation by Year



(d) CB Affiliation by Country Studied

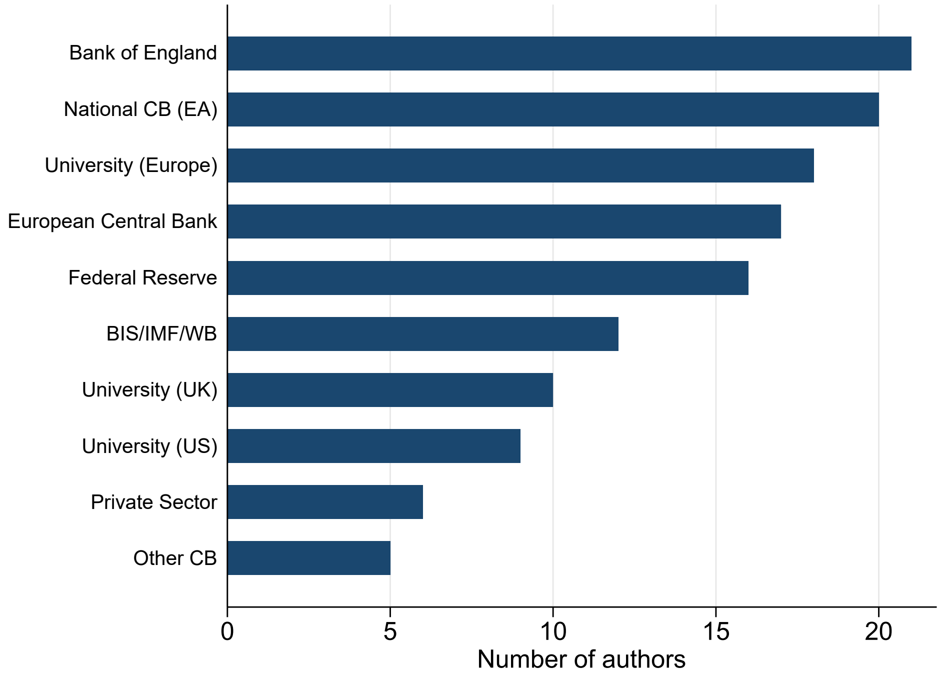


(e) Outcome Variables by Year

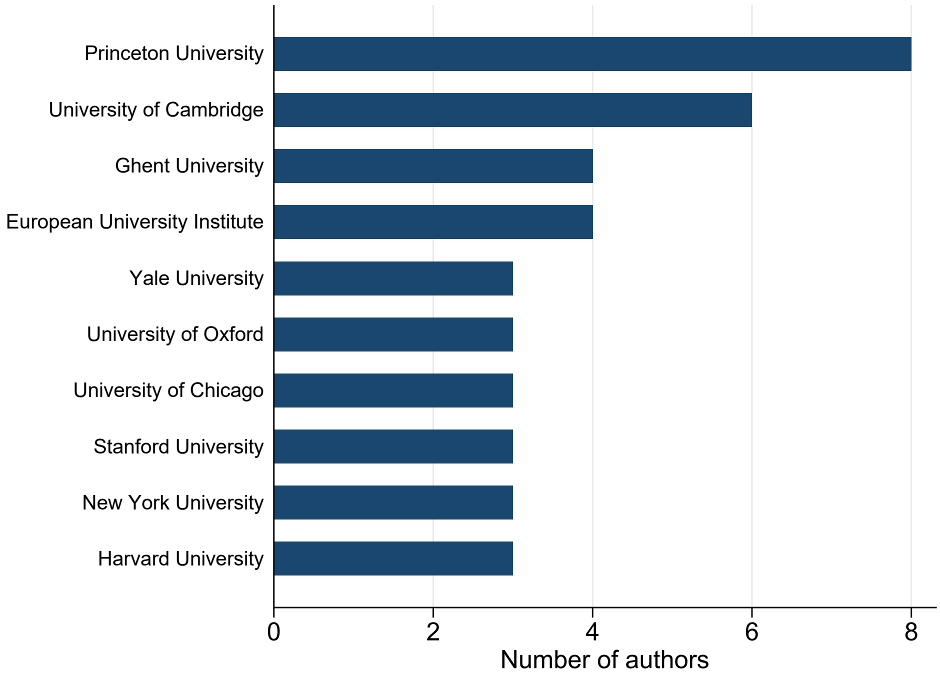


(f) Outcome Variables by Country Studied

Figure B.4: **Summary Statistics.** The figure plots summary statistics at the paper level. Panel A reports the number of research papers by calendar year of first circulation. Panel B reports the number of research papers by country studied. Panels C and D show the average share of central bank (CB)-affiliated authors by calendar year of first circulation and by country studied, respectively. Panels E and F show the average share of papers that study the effects of QE on output and prices by calendar year of first circulation and by country studied, respectively.



(a) Author Count by Employer



(b) Author Count by PhD Institution

Figure B.5: **Number of Authors by Employer and PhD Institution.** The figure plots the number of authors by employer type (Panel A) and by PhD institution (Panel B). We restrict the graphs to employer types and PhD institutions with at least three affiliated authors. The unit of observation is at the author-paper level in Panel A, and the author level in Panel B.

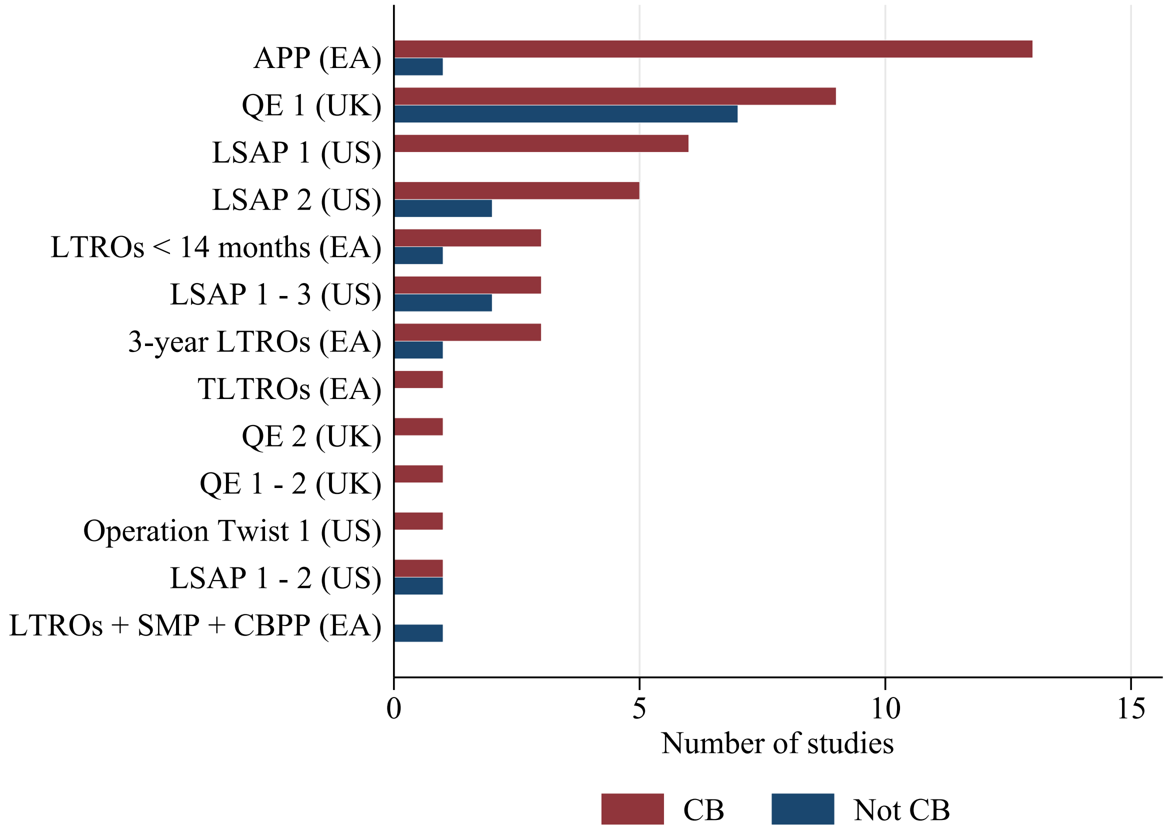


Figure B.6: **Number of Studies by QE Program.** The figure plots the number of studies by QE program studied, separately for papers with and without CB-affiliated authors. Here we pool central bankers and BIS authors.

Table B.8: **Summary Statistics**

This table reports summary statistics for our sample of 54 research papers (Panel A) and 137 authors (Panel B).

Variable	N	Mean	Median	SD
Panel A: Paper-Level Variables				
Number of authors	54	2.537	2.000	0.985
Number of countries studied	54	1.259	1.000	0.589
DSGE	54	0.352	0.000	0.482
Sentiment score in abstract	54	0.044	0.047	0.066
Published	54	0.574	1.000	0.499
Impact factor	29	1.423	1.268	0.873
Years to publication	31	1.806	2.000	1.558
Panel B: Author-Level Variables				
CB affiliation	137	0.602	1.000	0.478
Female	137	0.168	0.000	0.375
Author experience	127	10.992	9.000	9.861
PhD degree	137	0.891	1.000	0.313
Seniority	114	3.474	4.000	1.815
Years since last career update	125	3.936	3.000	4.083

Table B.9: **Effects of QE on Output and Inflation**

This table reports the mean, median (in square brackets), and standard deviation (in parentheses) for the estimated effects of QE on output and inflation, as well as for indicators of statistical significance. We always report the effect on the output level or price level, in percent. Standardized effects refer to the effect of a QE program size equivalent to 1% of GDP. The statistics are reported for the full sample (*All*) and for studies of QE in the U.S., UK, and EA. The unit of observation is the paper-country.

	All	US	UK	EA
Panel A: Effect on Output				
Peak effect on output	1.57	1.25	1.67	1.77
	[1.25]	[1.01]	[1.30]	[1.41]
	(1.21)	(0.92)	(1.22)	(1.41)
Standardized peak effect on output	0.24	0.36	0.12	0.22
	[0.16]	[0.23]	[0.10]	[0.15]
	(0.28)	(0.35)	(0.09)	(0.27)
Cumulative effect on output	0.87	0.59	0.68	1.24
	[0.40]	[0.35]	[0.49]	[0.37]
	(1.23)	(0.93)	(0.77)	(1.62)
Standardized cumulative effect on output	0.14	0.17	0.05	0.16
	[0.04]	[0.06]	[0.03]	[0.04]
	(0.26)	(0.33)	(0.06)	(0.29)
Panel B: Effect on Inflation				
Peak effect on inflation	1.42	1.07	2.14	1.25
	[0.93]	[0.77]	[1.03]	[0.96]
	(1.52)	(0.99)	(2.36)	(1.02)
Standardized peak effect on inflation	0.19	0.30	0.15	0.12
	[0.11]	[0.18]	[0.08]	[0.10]
	(0.24)	(0.36)	(0.14)	(0.10)
Cumulative effect on inflation	0.89	0.78	0.77	1.07
	[0.75]	[0.58]	[0.74]	[0.85]
	(1.94)	(1.03)	(3.44)	(1.08)
Standardized cumulative effect on inflation	0.12	0.21	0.04	0.11
	[0.08]	[0.13]	[0.06]	[0.08]
	(0.26)	(0.37)	(0.23)	(0.11)
Panel C: Significance				
Statistical significance: output	0.88	0.92	0.73	0.94
	[1.00]	[1.00]	[1.00]	[1.00]
	(0.33)	(0.28)	(0.47)	(0.24)
Statistical significance: inflation	0.84	0.92	0.67	0.88
	[1.00]	[1.00]	[1.00]	[1.00]
	(0.37)	(0.28)	(0.50)	(0.34)

Appendix C. Additional Analyses for Main Results

In this section, we consider various modifications of our baseline regression (1), as analyzed in Sections 3.1 through 3.3 in the main paper.

In Appendix C.1, we provide additional robustness tests for our main results. For example, we show that our main results are robust to classifying BIS authors as full central bankers. They are also robust to classifying researchers at the International Monetary Fund and the World Bank as 0.5 central bankers, although such an alternative classification seems harder to justify. Recall that the main independent variable in regression (1), *CB Affiliation*, is the fraction of the paper's authors who are affiliated with a central bank. In Appendix C.1, we show that our main results hold also when we replace this granular measure by an indicator we call *Discrete*, which is equal to one if at least one of the authors is affiliated with a central bank or the BIS, and zero otherwise.

As noted in the main paper, our sample contains papers studying not only QE but also other unconventional monetary policy programs, such as long-term refinancing operations. As we show in Appendix C.1, when we exclude those other programs from the analysis, keeping only QE narrowly defined, we find results similar to those in Tables 2 through 4 in the main paper. We also find similar effects when we control for the time gap between the QE program studied and the year of the paper's first release.

In Appendix C.2, we replace *CB Affiliation* by two zero/one indicators: *Mixed*, which is equal to one if the share of central-bank-affiliated authors is strictly between zero and one, and *Pure CB*, which equals one if all of the authors are central bankers. In Appendix C.3, we further show that our results are robust to using regular OLS standard errors instead of clustered standard errors. In Appendix C.4, we document that the difference in research findings between central bankers and academics remains largely unchanged once we condition on published papers only.

We report results after controlling for QE program dummies in Appendix C.5, thereby comparing central bankers and academics analyzing the same QE program. For papers studying more than one QE program, more than one dummy is switched on at the same time. Finally, in Appendix C.6 we show that our main results are robust to adding controls for model fixed effects (DSGE, VAR, or other).

Appendix C.1. Main Results: Additional Specifications

Table C.10: **Alternative Specifications for Effects on Output**

This table presents robustness tests for our results on the effects of QE on output using alternative definitions of central bank affiliation. All regressions use the same specification as in Table 2, column (3) and (6) in the main paper. For brevity, we only report coefficients of interest and suppress control variables. In Panel A (B), the dependent variable is the program's estimated peak (cumulative) effect on the output level, respectively. In Panel C (D), the dependent variable is the program's estimated peak (cumulative) effect on the output level, respectively, after standardizing QE program size to 1% of GDP. *Treat BIS as central bank* treats researchers who are affiliated with the Bank of International Settlements as affiliated with a central bank. *Treat BIS/IMF/WB as 0.5 central banks* treats researchers who are affiliated with the Bank of International Settlements, the International Monetary Fund, or the World Bank as 0.5 central bankers. *Discrete measure* uses an indicator equal to one if at least one of the authors is associated with a central bank, 0.5 if at least one of the authors is associated with the BIS, and zero otherwise. *QE papers only* restricts the sample to studies of large-scale asset purchases. *Control for time gap* includes a control for the time gap (in years) between the launch of the QE program studied and the year of the paper's first release. t-statistics are based on standard errors that are clustered at the paper level. p-values are obtained using the wild cluster bootstrap procedure (10,000 repetitions).

Panel A: Peak Effect on Output

	β	t-stat	p-value
Baseline	0.723	1.83	0.067
Treat BIS as central bank	0.812	2.02	0.044
Treat BIS/IMF/WB as 0.5 central banks	0.700	1.77	0.076
Discrete measure	0.670	1.82	0.069
QE papers only	0.710	1.74	0.082
Control for time gap	0.929	2.36	0.018

Panel B: Cumulative Effect on Output

	β	t-stat	p-value
Baseline	0.512	1.36	0.173
Treat BIS as central bank	0.474	1.27	0.203
Treat BIS/IMF/WB as 0.5 central banks	0.473	1.26	0.207
Discrete measure	0.504	1.67	0.095
QE papers only	0.345	0.99	0.321
Control for time gap	0.695	1.73	0.084

Panel C: Standardized Peak Effect on Output

	β	t-stat	p-value
Baseline	0.152	2.11	0.035
Treat BIS as central bank	0.166	2.28	0.023
Treat BIS/IMF/WB as 0.5 central banks	0.141	1.96	0.049
Discrete measure	0.158	2.43	0.015
QE papers only	0.142	2.12	0.034
Control for time gap	0.158	2.05	0.041

Panel D: Standardized Cumulative Effect on Output

	β	t-stat	p-value
Baseline	0.122	1.90	0.057
Treat BIS as central bank	0.116	1.81	0.070
Treat BIS/IMF/WB as 0.5 central banks	0.112	1.79	0.073
Discrete measure	0.126	2.12	0.034
QE papers only	0.088	1.87	0.062
Control for time gap	0.139	2.01	0.044

Table C.11: **Alternative Specifications for Effects on Inflation**

This table presents robustness tests for our results on the effects of QE on inflation using alternative definitions of central bank affiliation. All regressions use the same specification as in Table 3, column (3) and (6) in the main paper. For brevity, we only report coefficients of interest and suppress control variables. In Panel A (B), the dependent variable is the program's estimated peak (cumulative) effect on the price level, respectively. In Panel C (D), the dependent variable is the program's estimated peak (cumulative) effect on the price level, respectively, after standardizing the QE program size to 1% of GDP. *Treat BIS as central bank* treats researchers who are affiliated with the Bank of International Settlements as affiliated with a central bank. *Treat BIS/IMF/WB as 0.5 central banks* treats researchers who are affiliated with the Bank of International Settlements, the International Monetary Fund, or the World Bank as 0.5 central bankers. *Discrete measure* uses an indicator equal to one if at least one of the authors is associated with a central bank, 0.5 if at least one of the authors is associated with the BIS, and zero otherwise. *QE papers only* restricts the sample to studies of large-scale asset purchases. *Control for time gap* includes a control for the time gap (in years) between the launch of the QE program studied and the year of the paper's first release. t-statistics are based on standard errors that are clustered at the paper level. p-values are obtained using the wild cluster bootstrap procedure (10,000 repetitions).

Panel A: Peak Effect on Price

	β	t-stat	p-value
Baseline	1.279	2.79	0.005
Treat BIS as central bank	1.223	2.60	0.009
Treat BIS/IMF/WB as 0.5 central banks	1.275	2.70	0.007
Discrete measure	1.078	2.34	0.020
QE papers only	1.491	2.73	0.006
Control for time gap	1.539	2.97	0.003

Panel B: Cumulative Effect on Price

	β	t-stat	p-value
Baseline	1.394	2.04	0.041
Treat BIS as central bank	1.356	1.86	0.063
Treat BIS/IMF/WB as 0.5 central banks	1.416	1.95	0.051
Discrete measure	1.174	1.69	0.091
QE papers only	1.739	1.99	0.047
Control for time gap	1.272	1.85	0.065

Panel C: Standardized Peak Effect on Price

	β	t-stat	p-value
Baseline	0.201	2.73	0.006
Treat BIS as central bank	0.205	2.81	0.005
Treat BIS/IMF/WB as 0.5 central banks	0.191	2.59	0.010
Discrete measure	0.167	2.99	0.003
QE papers only	0.242	2.53	0.011
Control for time gap	0.195	2.83	0.005

Panel D: Standardized Cumulative Effect on Price

	β	t-stat	p-value
Baseline	0.190	2.41	0.016
Treat BIS as central bank	0.188	2.36	0.018
Treat BIS/IMF/WB as 0.5 central banks	0.183	2.28	0.023
Discrete measure	0.155	2.45	0.014
QE papers only	0.237	2.30	0.021
Control for time gap	0.143	2.35	0.019

Table C.12: **Alternative Specifications for Significance**

This table presents robustness tests for our results on the statistical and economic significance of the effect of QE using alternative definitions of central bank affiliation. All regressions use the same specification as in Table 4, column (3) and (6) in the main paper. For brevity, we only report coefficients of interest and suppress control variables. In Panel A (B), the dependent variable is the statistical (economic) significance of the effect of QE on output. In Panel C (D), the dependent variable is the statistical (economic) significance of the effect of QE on inflation. *Treat BIS as central bank* treats researchers who are affiliated with the Bank of International Settlements as affiliated with a central bank. *Treat BIS/IMF/WB as 0.5 central banks* treats researchers who are affiliated with the Bank of International Settlements, the International Monetary Fund, or the World Bank as 0.5 central bankers. *Discrete measure* uses an indicator equal to one if at least one of the authors is associated with a central bank, 0.5 if at least one of the authors is associated with the BIS, and zero otherwise. *QE papers only* restricts the sample to studies of large-scale asset purchases. *Control for time gap* includes a control for the time gap (in years) between the launch of the QE program studied and the year of the paper's first release. t-statistics are based on robust standard errors that are clustered at the paper level. p-values are obtained using the wild cluster bootstrap procedure (10,000 repetitions).

Panel A: Statistical Significance for Output

	β	t-stat	p-value
Baseline	0.366	2.20	0.028
Treat BIS as central bank	0.402	2.49	0.013
Treat BIS/IMF/WB as 0.5 central banks	0.374	2.23	0.026
Discrete measure	0.458	2.61	0.009
QE papers only	0.419	1.79	0.074
Control for time gap	0.353	1.91	0.056

Panel B: Economic Significance for Output

	β	t-stat	p-value
Baseline	0.399	3.42	0.001
Treat BIS as central bank	0.368	3.09	0.002
Treat BIS/IMF/WB as 0.5 central banks	0.389	3.24	0.001
Discrete measure	0.438	3.71	0.000
QE papers only	0.334	2.64	0.008
Control for time gap	0.414	3.17	0.002

Panel C: Statistical Significance for Price

	β	t-stat	p-value
Baseline	0.164	1.11	0.267
Treat BIS as central bank	0.090	0.54	0.589
Treat BIS/IMF/WB as 0.5 central banks	0.164	1.14	0.255
Discrete measure	0.158	0.88	0.381
QE papers only	0.322	1.49	0.136
Control for time gap	0.327	1.78	0.076

Panel D: Economic Significance for Price

	β	t-stat	p-value
Baseline	0.248	1.86	0.062
Treat BIS as central bank	0.218	1.59	0.113
Treat BIS/IMF/WB as 0.5 central banks	0.177	1.33	0.184
Discrete measure	0.240	1.71	0.087
QE papers only	0.327	1.97	0.049
Control for time gap	0.234	1.63	0.102

Appendix C.2. Indicator Variables for CB Affiliation

Table C.13: **Effects of QE on Output: Indicator Variables for CB Affiliation**

This table repeats Table 2 in the main paper, after replacing the share of central bank authors with two indicator variables: *Mixed CB/Academics* is an indicator equal to one if the share of CB-affiliated authors is greater than zero but smaller than one, and zero otherwise; *Pure CB* is an indicator equal to one if the share of CB-affiliated authors is equal to one, and zero otherwise. The omitted group is academics. Controls include the logarithm of the average author experience and the number of authors.

Panel A: Total Program Effect

	Peak Effect			Cumulative Effect		
	(1)	(2)	(3)	(4)	(5)	(6)
Mixed CB/Academics	0.678	0.698	0.633	0.330	0.292	0.230
	(2.23)	(2.26)	(1.55)	(1.13)	(1.02)	(0.64)
	[0.042]	[0.033]	[0.225]	[0.272]	[0.313]	[0.532]
Pure CB	0.872	0.860	0.831	0.731	0.624	0.599
	(2.25)	(2.28)	(2.02)	(1.78)	(1.70)	(1.60)
	[0.032]	[0.031]	[0.080]	[0.080]	[0.092]	[0.113]
Country FE		X	X		X	X
Controls			X			X
Observations	58	58	58	57	57	57
R^2	0.084	0.117	0.123	0.055	0.099	0.105

Panel B: Standardized Effect

	Peak Effect			Cumulative Effect		
	(1)	(2)	(3)	(4)	(5)	(6)
Mixed CB/Academics	0.170	0.157	0.158	0.102	0.090	0.089
	(2.56)	(2.43)	(1.95)	(1.48)	(1.35)	(1.10)
	[0.011]	[0.018]	[0.106]	[0.112]	[0.171]	[0.293]
Pure CB	0.178	0.174	0.170	0.146	0.129	0.125
	(2.49)	(2.58)	(2.38)	(2.16)	(2.17)	(1.99)
	[0.014]	[0.012]	[0.037]	[0.017]	[0.022]	[0.047]
Country FE		X	X		X	X
Controls			X			X
Observations	58	58	58	57	57	57
R^2	0.077	0.181	0.216	0.048	0.076	0.105

Table C.14: **Effects of QE on Inflation: Indicator Variables for CB Affiliation**

This table repeats Table 3 in the main paper, after replacing the share of central bank authors with two indicator variables: *Mixed CB/Academics* is an indicator equal to one if the share of CB-affiliated authors is greater than zero but smaller than one, and zero otherwise; *Pure CB* is an indicator equal to one if the share of CB-affiliated authors is equal to one, and zero otherwise. The omitted group is academics. Controls include the logarithm of three plus the average author experience and the number of authors.

Panel A: Total Program Effect

	Peak Effect			Cumulative Effect		
	(1)	(2)	(3)	(4)	(5)	(6)
Mixed CB/Academics	0.962	0.986	0.354	1.163	1.161	0.327
	(1.95)	(1.96)	(0.56)	(1.35)	(1.33)	(0.43)
	[0.072]	[0.069]	[0.786]	[0.204]	[0.205]	[0.682]
Pure CB	1.389	1.496	1.263	1.796	1.780	1.467
	(3.43)	(3.33)	(2.47)	(2.13)	(2.12)	(1.87)
	[0.003]	[0.003]	[0.030]	[0.012]	[0.012]	[0.089]
Country FE		X	X		X	X
Controls			X			X
Observations	53	53	53	53	53	53
R^2	0.126	0.225	0.305	0.127	0.127	0.216

Panel B: Standardized Effect

	Peak Effect			Cumulative Effect		
	(1)	(2)	(3)	(4)	(5)	(6)
Mixed CB/Academics	0.139	0.141	0.053	0.118	0.118	0.015
	(3.05)	(2.63)	(0.57)	(1.69)	(1.68)	(0.15)
	[0.005]	[0.012]	[0.618]	[0.075]	[0.095]	[0.885]
Pure CB	0.221	0.252	0.220	0.237	0.251	0.213
	(2.75)	(2.82)	(2.81)	(2.42)	(2.42)	(2.51)
	[0.004]	[0.002]	[0.006]	[0.003]	[0.003]	[0.005]
Country FE		X	X		X	X
Controls			X			X
Observations	53	53	53	53	53	53
R^2	0.125	0.263	0.333	0.130	0.209	0.283

Table C.15: **Significance of the Effects of QE: Indicator Variables for CB Affiliation**

This table repeats Table 4 in the main paper, after replacing the share of central bank authors with two indicator variables: *Mixed CB/Academics* is an indicator equal to one if the share of CB-affiliated authors is greater than zero but smaller than one, and zero otherwise; *Pure CB* is an indicator equal to one if the share of CB-affiliated authors is equal to one, and zero otherwise. The omitted group is academics. Controls include the logarithm of the average author experience and the number of authors.

Panel A: Effect on Output

	Statistical Significance			Economic Significance		
	(1)	(2)	(3)	(4)	(5)	(6)
Mixed CB/Academics	0.500	0.481	0.621	0.193	0.197	0.374
	(2.77)	(2.69)	(4.12)	(1.33)	(1.32)	(2.59)
	[0.039]	[0.033]	[0.029]	[0.230]	[0.244]	[0.073]
Pure CB	0.500	0.473	0.437	0.382	0.396	0.463
	(2.77)	(2.64)	(2.91)	(2.94)	(2.93)	(3.92)
	[0.030]	[0.031]	[0.020]	[0.018]	[0.017]	[0.003]
Country FE		X	X		X	X
Controls			X			X
Observations	41	41	41	66	66	66
R^2	0.431	0.460	0.592	0.162	0.170	0.296

Panel B: Effect on Inflation

	Statistical Significance			Economic Significance		
	(1)	(2)	(3)	(4)	(5)	(6)
Mixed CB/Academics	0.039	0.042	0.151	0.093	0.098	0.210
	(0.18)	(0.19)	(0.59)	(0.54)	(0.56)	(1.17)
	[0.950]	[0.943]	[0.876]	[0.608]	[0.594]	[0.372]
Pure CB	0.250	0.246	0.202	0.222	0.236	0.278
	(1.18)	(1.22)	(1.33)	(1.32)	(1.42)	(1.85)
	[0.447]	[0.387]	[0.371]	[0.222]	[0.187]	[0.103]
Country FE		X	X		X	X
Controls			X			X
Observations	38	38	38	60	60	60
R^2	0.078	0.148	0.218	0.048	0.051	0.147

Appendix C.3. Regular OLS Standard Errors

Table C.16: **Effect on Output with Regular OLS Standard Errors**

This table repeats Table 2 in the main paper without clustering standard errors. Controls include the logarithm of three plus the average author experience and the number of authors.

Panel A: Total Program Effect

	Peak Effect			Cumulative Effect		
	(1)	(2)	(3)	(4)	(5)	(6)
CB Affiliation	0.789	0.770	0.723	0.620	0.526	0.512
	(2.08)	(2.01)	(1.82)	(1.58)	(1.33)	(1.25)
	[0.042]	[0.040]	[0.075]	[0.129]	[0.152]	[0.190]
Country FE		X	X		X	X
Controls			X			X
Observations	58	58	58	57	57	57
R^2	0.072	0.103	0.112	0.043	0.091	0.096

Panel B: Standardized Effect

	Peak Effect			Cumulative Effect		
	(1)	(2)	(3)	(4)	(5)	(6)
CB Affiliation	0.164	0.163	0.152	0.140	0.127	0.122
	(1.89)	(1.94)	(1.78)	(1.66)	(1.48)	(1.39)
	[0.021]	[0.020]	[0.038]	[0.030]	[0.034]	[0.063]
Country FE		X	X		X	X
Controls			X			X
Observations	58	58	58	57	57	57
R^2	0.060	0.170	0.206	0.048	0.078	0.106

Table C.17: **Effect on Inflation with Regular OLS Standard Errors**

This table repeats Table 3 in the main paper without clustering standard errors. Controls include the logarithm of three plus the average author experience and the number of authors.

Panel A: Total Program Effect

	Peak Effect			Cumulative Effect		
	(1)	(2)	(3)	(4)	(5)	(6)
CB Affiliation	1.409	1.493	1.279	1.700	1.687	1.394
	(2.90)	(3.16)	(2.69)	(2.71)	(2.60)	(2.13)
	[0.001]	[0.001]	[0.005]	[0.004]	[0.004]	[0.013]
Country FE		X	X		X	X
Controls			X			X
Observations	53	53	53	53	53	53
R^2	0.142	0.239	0.298	0.126	0.126	0.195

Panel B: Standardized Effect

	Peak Effect			Cumulative Effect		
	(1)	(2)	(3)	(4)	(5)	(6)
CB Affiliation	0.197	0.227	0.201	0.205	0.220	0.190
	(2.51)	(3.04)	(2.65)	(2.46)	(2.67)	(2.26)
	[0.003]	[0.001]	[0.004]	[0.005]	[0.004]	[0.006]
Country FE		X	X		X	X
Controls			X			X
Observations	53	53	53	53	53	53
R^2	0.110	0.248	0.296	0.106	0.186	0.226

Table C.18: **Significance with Regular OLS Standard Errors**

This table repeats Table 4 in the main paper without clustering standard errors. Controls include the logarithm of three plus the average author experience and the number of authors.

Panel A: Effect on Output

	Statistical Significance			Economic Significance		
	(1)	(2)	(3)	(4)	(5)	(6)
CB Affiliation	0.412	0.388	0.366	0.335	0.344	0.399
	(3.45)	(3.22)	(2.91)	(3.21)	(3.21)	(3.84)
	[0.015]	[0.014]	[0.014]	[0.004]	[0.005]	[0.001]
Country FE		X	X		X	X
Controls			X			X
Observations	41	41	41	66	66	66
R^2	0.233	0.280	0.298	0.139	0.145	0.250

Panel B: Effect on Inflation

	Statistical Significance			Economic Significance		
	(1)	(2)	(3)	(4)	(5)	(6)
CB Affiliation	0.202	0.202	0.164	0.196	0.207	0.248
	(1.29)	(1.29)	(1.03)	(1.57)	(1.59)	(1.93)
	[0.171]	[0.148]	[0.224]	[0.147]	[0.115]	[0.044]
Country FE		X	X		X	X
Controls			X			X
Observations	38	38	38	60	60	60
R^2	0.044	0.118	0.208	0.041	0.043	0.137

Appendix C.4. Published Papers Only

Table C.19: **Effects of QE on Output: Published Papers Only**

This table repeats Table 2 in the main paper, after restricting the sample of papers to published papers only. Controls include the logarithm of three plus the average author experience and the number of authors.

Panel A: Total Program Effect

	Peak Effect			Cumulative Effect		
	(1)	(2)	(3)	(4)	(5)	(6)
CB Affiliation	1.058	1.105	1.023	1.241	1.006	0.951
	(2.07)	(2.19)	(1.89)	(2.20)	(1.99)	(1.75)
	[0.055]	[0.042]	[0.074]	[0.045]	[0.056]	[0.081]
Country FE		X	X		X	X
Controls			X			X
Observations	35	35	35	35	35	35
R^2	0.095	0.131	0.150	0.117	0.160	0.171

Panel B: Standardized Effect

	Peak Effect			Cumulative Effect		
	(1)	(2)	(3)	(4)	(5)	(6)
CB Affiliation	0.226	0.223	0.175	0.222	0.190	0.157
	(2.21)	(2.43)	(1.82)	(2.30)	(2.25)	(1.71)
	[0.032]	[0.021]	[0.086]	[0.024]	[0.024]	[0.087]
Country FE		X	X		X	X
Controls			X			X
Observations	35	35	35	35	35	35
R^2	0.072	0.204	0.310	0.071	0.110	0.163

Table C.20: **Effects of QE on Inflation: Published Papers Only**

This table repeats Table 3 in the main paper, after restricting the sample of papers to published papers only. Controls include the logarithm of the average author experience and the number of authors.

Panel A: Total Program Effect

	Peak Effect			Cumulative Effect		
	(1)	(2)	(3)	(4)	(5)	(6)
CB Affiliation	1.043	1.367	1.198	1.085	1.267	1.184
	(2.08)	(2.26)	(2.04)	(2.53)	(2.14)	(2.20)
	[0.084]	[0.047]	[0.066]	[0.030]	[0.044]	[0.014]
Country FE		X	X		X	X
Controls			X			X
Observations	31	31	31	31	31	31
R^2	0.060	0.275	0.312	0.070	0.158	0.242

Panel B: Standardized Effect

	Peak Effect			Cumulative Effect		
	(1)	(2)	(3)	(4)	(5)	(6)
CB Affiliation	0.193	0.267	0.204	0.193	0.243	0.204
	(1.53)	(1.83)	(1.58)	(1.59)	(1.62)	(1.51)
	[0.151]	[0.076]	[0.102]	[0.096]	[0.068]	[0.084]
Country FE		X	X		X	X
Controls			X			X
Observations	31	31	31	31	31	31
R^2	0.062	0.253	0.306	0.062	0.163	0.203

Table C.21: **Significance of the Effects of QE: Published Papers Only**

This table repeats Table 4 in the main paper, after restricting the sample of papers to published papers only. Controls include the logarithm of the average author experience and the number of authors.

Panel A: Effect on Output

	Statistical Significance			Economic Significance		
	(1)	(2)	(3)	(4)	(5)	(6)
CB Affiliation	0.463	0.437	0.527	0.270	0.240	0.267
	(2.24)	(2.29)	(2.26)	(1.85)	(1.46)	(1.66)
	[0.094]	[0.062]	[0.094]	[0.088]	[0.211]	[0.147]
Country FE		X	X		X	X
Controls			X			X
Observations	23	23	23	37	37	37
R^2	0.322	0.405	0.583	0.122	0.158	0.198

Panel B: Effect on Inflation

	Statistical Significance			Economic Significance		
	(1)	(2)	(3)	(4)	(5)	(6)
CB Affiliation	0.118	0.107	0.031	0.045	0.029	0.044
	(1.06)	(0.96)	(0.36)	(0.26)	(0.16)	(0.29)
	[0.437]	[0.494]	[0.743]	[0.812]	[0.870]	[0.776]
Country FE		X	X		X	X
Controls			X			X
Observations	19	19	19	31	31	31
R^2	0.041	0.241	0.289	0.003	0.007	0.216

Appendix C.5. Controlling for QE Program Studied

Table C.22: **Effects of QE on Output: Controls for QE Program Studied**

This table repeats Table 2 in the main paper, after replacing country fixed effects with indicator variables for the QE program studied. Controls include the logarithm of three plus the average author experience and the number of authors.

Panel A: Total Program Effect

	Peak Effect			Cumulative Effect		
	(1)	(2)	(3)	(4)	(5)	(6)
CB Affiliation	0.789	0.701	0.646	0.620	0.351	0.323
	(2.16)	(1.86)	(1.56)	(1.60)	(1.04)	(0.90)
	[0.041]	[0.065]	[0.127]	[0.116]	[0.279]	[0.341]
QE Program Dummies		X	X		X	X
Controls			X			X
Observations	58	58	58	57	57	57
R^2	0.072	0.360	0.367	0.043	0.354	0.356

Panel B: Standardized Effect

	Peak Effect			Cumulative Effect		
	(1)	(2)	(3)	(4)	(5)	(6)
CB Affiliation	0.164	0.088	0.076	0.140	0.061	0.054
	(2.38)	(1.89)	(1.54)	(2.17)	(1.36)	(1.11)
	[0.019]	[0.054]	[0.125]	[0.019]	[0.143]	[0.226]
QE Program Dummies		X	X		X	X
Controls			X			X
Observations	58	58	58	57	57	57
R^2	0.060	0.667	0.674	0.048	0.495	0.500

Table C.23: **Effects of QE on Inflation: Controls for QE Program Studied**

This table repeats Table 3 in the main paper, after replacing country fixed effects with indicator variables for the QE program studied. Controls include the logarithm of three plus the average author experience and the number of authors.

Panel A: Total Program Effect

	Peak Effect			Cumulative Effect		
	(1)	(2)	(3)	(4)	(5)	(6)
CB Affiliation	1.409	1.376	1.237	1.700	1.511	1.336
	(3.42)	(2.49)	(2.23)	(2.24)	(1.64)	(1.56)
	[0.002]	[0.016]	[0.029]	[0.010]	[0.050]	[0.091]
QE Program Dummies		X	X		X	X
Controls			X			X
Observations	53	53	53	53	53	53
R^2	0.142	0.415	0.448	0.126	0.296	0.320

Panel B: Standardized Effect

	Peak Effect			Cumulative Effect		
	(1)	(2)	(3)	(4)	(5)	(6)
CB Affiliation	0.197	0.176	0.148	0.205	0.169	0.141
	(2.61)	(2.23)	(2.08)	(2.31)	(1.81)	(1.66)
	[0.008]	[0.018]	[0.029]	[0.005]	[0.034]	[0.077]
QE Program Dummies		X	X		X	X
Controls			X			X
Observations	53	53	53	53	53	53
R^2	0.110	0.354	0.398	0.106	0.244	0.281

Table C.24: **Significance of the Effects of QE: Controls for QE Program Studied**

This table repeats Table 4 in the main paper, after replacing country fixed effects with indicator variables for the QE program studied. Controls include the logarithm of three plus the average author experience and the number of authors.

Panel A: Effect on Output

	Statistical Significance			Economic Significance		
	(1)	(2)	(3)	(4)	(5)	(6)
CB Affiliation	0.465	0.324	0.305	0.343	0.312	0.370
	(2.55)	(1.96)	(1.46)	(2.69)	(2.19)	(2.63)
	[0.040]	[0.049]	[0.183]	[0.027]	[0.073]	[0.029]
QE Program Dummies		X	X		X	X
Controls			X			X
Observations	36	36	36	61	61	61
R^2	0.284	0.617	0.627	0.154	0.277	0.351

Panel B: Effect on Inflation

	Statistical Significance			Economic Significance		
	(1)	(2)	(3)	(4)	(5)	(6)
CB Affiliation	0.237	0.183	0.236	0.198	0.189	0.234
	(1.21)	(1.06)	(1.24)	(1.22)	(1.03)	(1.37)
	[0.357]	[0.279]	[0.211]	[0.254]	[0.329]	[0.207]
QE Program Dummies		X	X		X	X
Controls			X			X
Observations	33	33	33	55	55	55
R^2	0.080	0.374	0.537	0.047	0.116	0.182

Appendix C.6. Controlling for Model Choice

Table C.25: **Effects of QE on Output: Controls for Model Choice**

This table repeats Table 2 in the main paper, after adding model fixed effects. The model can be either DSGE, VAR, or other. Controls include the logarithm of three plus the average author experience and the number of authors.

Panel A: Total Program Effect

	Peak Effect			Cumulative Effect		
	(1)	(2)	(3)	(4)	(5)	(6)
CB Affiliation	0.876	0.839	0.792	0.703	0.607	0.596
	(2.42)	(2.39)	(1.99)	(1.82)	(1.77)	(1.54)
	[0.020]	[0.019]	[0.062]	[0.073]	[0.071]	[0.120]
Model FE	X	X	X	X	X	X
Country FE		X	X		X	X
Controls			X			X
Observations	58	58	58	57	57	57
R^2	0.092	0.117	0.123	0.064	0.117	0.120

Panel B: Standardized Effect

	Peak Effect			Cumulative Effect		
	(1)	(2)	(3)	(4)	(5)	(6)
CB Affiliation	0.167	0.174	0.161	0.146	0.137	0.130
	(2.26)	(2.46)	(1.98)	(2.07)	(2.16)	(1.74)
	[0.024]	[0.010]	[0.065]	[0.020]	[0.014]	[0.071]
Model FE	X	X	X	X	X	X
Country FE		X	X		X	X
Controls			X			X
Observations	58	58	58	57	57	57
R^2	0.071	0.178	0.210	0.051	0.085	0.109

Table C.26: **Effects of QE on Inflation: Controls for Model Choice**

This table repeats Table 3 in the main paper, after adding model fixed effects. The model can be either DSGE, VAR, or other. Controls include the logarithm of three plus the average author experience and the number of authors.

Panel A: Total Program Effect

	Peak Effect			Cumulative Effect		
	(1)	(2)	(3)	(4)	(5)	(6)
CB Affiliation	1.590	1.600	1.318	1.759	1.747	1.381
	(3.22)	(3.15)	(2.41)	(2.19)	(2.12)	(1.81)
	[0.007]	[0.010]	[0.035]	[0.043]	[0.047]	[0.098]
Model FE	X	X	X	X	X	X
Country FE		X	X		X	X
Controls			X			X
Observations	53	53	53	53	53	53
R^2	0.249	0.300	0.356	0.132	0.132	0.197

Panel B: Standardized Effect

	Peak Effect			Cumulative Effect		
	(1)	(2)	(3)	(4)	(5)	(6)
CB Affiliation	0.236	0.265	0.234	0.224	0.243	0.208
	(2.44)	(2.60)	(2.43)	(2.11)	(2.13)	(2.05)
	[0.008]	[0.007]	[0.009]	[0.020]	[0.013]	[0.021]
Model FE	X	X	X	X	X	X
Country FE		X	X		X	X
Controls			X			X
Observations	53	53	53	53	53	53
R^2	0.151	0.292	0.318	0.143	0.213	0.242

Table C.27: **Significance of the Effects of QE: Controls for Model Choice**

This table repeats Table 4 in the main paper, after adding model fixed effects. The model can be either DSGE, VAR, or other. Controls include the logarithm of three plus the average author experience and the number of authors.

Panel A: Effect on Output

	Statistical Significance			Economic Significance		
	(1)	(2)	(3)	(4)	(5)	(6)
CB Affiliation	0.440	0.421	0.397	0.311	0.322	0.393
	(2.47)	(2.51)	(2.33)	(2.61)	(2.67)	(3.44)
	[0.038]	[0.028]	[0.023]	[0.023]	[0.022]	[0.005]
Model FE	X	X	X	X	X	X
Country FE		X	X		X	X
Controls			X			X
Observations	41	41	41	66	66	66
R^2	0.295	0.332	0.365	0.158	0.164	0.268

Panel B: Effect on Inflation

	Statistical Significance			Economic Significance		
	(1)	(2)	(3)	(4)	(5)	(6)
CB Affiliation	0.160	0.179	0.165	0.200	0.205	0.244
	(0.85)	(0.96)	(1.02)	(1.34)	(1.40)	(1.85)
	[0.544]	[0.445]	[0.450]	[0.211]	[0.187]	[0.108]
Model FE	X	X	X	X	X	X
Country FE		X	X		X	X
Controls			X			X
Observations	38	38	38	60	60	60
R^2	0.065	0.147	0.222	0.070	0.075	0.177

Appendix D. Affiliation with Central Bank of QE Program Studied

This section explores whether central bankers are more optimistic when they study QE launched by their own central bank. We add to equation (1) in the main paper the variable *Same-Country CB Affiliation*, which captures the share of authors who are affiliated with the central bank of the QE program studied. We also include paper fixed effects, thus comparing the effects of QE in different countries as estimated by the same paper.

Table D.28: **Affiliation with Central Bank of QE Program Studied**

This table repeats the analysis in Tables 2 to 4 in the main paper, after adding the share of authors who are affiliated with the central bank of the QE program studied (*Same-Country CB Affiliation*). Controls include the logarithm of three plus the average author experience and the number of authors. t-statistics, reported in parentheses, are based on standard errors clustered at the paper level. p-values obtained using the wild cluster bootstrap procedure (10,000 repetitions) are reported in square brackets.

Panel A: Effect on Output

	Total Program Effect				Standardized Effect			
	Peak		Cumulative		Peak		Cumulative	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Same-Country CB Affiliation	-0.697	0.956	-0.821	-0.291	-0.144	-0.155	-0.110	-0.054
	(-1.19)	(0.83)	(-1.40)	(-0.27)	(-1.21)	(-0.80)	(-0.90)	(-0.32)
	[0.25]	[0.38]	[0.18]	[0.46]	[0.25]	[0.10]	[0.42]	[0.53]
CB Affiliation	1.112		0.958		0.233		0.182	
	(1.89)		(1.63)		(2.07)		(1.65)	
	[0.06]		[0.12]		[0.03]		[0.12]	
Country FE	X	X	X	X	X	X	X	X
Paper FE		X		X		X		X
Observations	58	19	57	19	58	19	57	19
R^2	0.144	0.691	0.139	0.461	0.233	0.692	0.123	0.496

Panel B: Effect on Inflation

	Total Program Effect				Standardized Effect			
	Peak		Cumulative		Peak		Cumulative	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Same-Country CB Affiliation	0.836	2.892	0.943	0.296	0.029	-0.090	0.091	-0.013
	(1.58)	(4.33)	(1.71)	(0.53)	(0.26)	(-0.64)	(0.77)	(-0.14)
	[0.14]	[0.03]	[0.09]	[0.48]	[0.87]	[0.30]	[0.56]	[0.82]
CB Affiliation	0.854		0.915		0.186		0.144	
	(1.96)		(1.49)		(2.96)		(2.45)	
	[0.06]		[0.16]		[0.00]		[0.02]	
Country FE	X	X	X	X	X	X	X	X
Paper FE		X		X		X		X
Observations	53	19	53	19	53	19	53	19
R^2	0.328	0.927	0.218	0.735	0.297	0.831	0.238	0.674

Panel C: Significance

	Effect on Output		Effect on Inflation	
	Statistical	Economic	Statistical	Economic
	(1)	(2)	(3)	(4)
Same-Country CB Affiliation	0.052	0.040	0.319	0.154
	(0.59)	(0.36)	(2.09)	(1.06)
	[0.48]	[0.73]	[0.02]	[0.30]
CB Affiliation	0.348	0.366	0.050	0.181
	(2.09)	(2.63)	(0.34)	(1.07)
	[0.05]	[0.03]	[0.80]	[0.33]
Country FE	X	X	X	X
Paper FE				
Observations	41	60	38	53
R^2	0.300	0.225	0.270	0.138

In Panel C, we cannot include paper fixed effects, unlike in Panels A and B, due to zero variation in statistical significance within the set of central bank papers that study more than one country.

Appendix E. Results by Central Bank

In this section we repeat our main tests from Tables 2 through 4 in the main paper, after separating central bank authors by the country of the central bank they work for. Table E.29 reports our results after replacing *CB Affiliation* in equation (1) in the main paper by four zero/one indicators: *EA CB* is equal to one if at least one of the authors is affiliated with the ECB or a national central bank in the euro area, *UK CB* equals one if at least one author is affiliated with the Bank of England, *US CB* equals one if at least one author is affiliated with the Federal Reserve Board or a regional Fed, and *Other CB* equals one if at least one author is affiliated with another central bank or the BIS. The omitted group is academics.

In Table E.30, we repeat the same analysis after replacing *CB Affiliation* with three indicators: *German CB* is equal to one if at least one of the authors is employed by the Bundesbank, *Other EA CB* is equal to one if at least one author works at the ECB or a euro area national central bank other than the Bundesbank, and *Non-EA CB* is equal to one if at least one author is from a central bank outside the euro area or from the BIS. The omitted group is again academics. If a paper has authors from both the Bundesbank and the ECB or another euro area national central bank, then both the *German CB* indicator and the *Other EA CB* indicator are equal to one.

Table E.29: **The Effects of QE by Type of Central Bank**

This table repeats the analysis in Tables 2 to 4, after replacing the share of central bank authors by four indicators: *EA CB* is an indicator equal to one if at least one of the authors is affiliated with the ECB or a national central bank in the euro area; *UK CB* is an indicator equal to one if at least one of the authors is affiliated with the Bank of England; *US CB* is an indicator equal to one if at least one of the authors is affiliated with the Federal Reserve Board or a regional Fed; *Other CB* is an indicator equal to one if at least one of the authors is affiliated with another central bank or with the BIS. The omitted group is academics.

Panel A: Effect on Output

	Total Program Effect		Standardized Effect	
	Peak	Cumulative	Peak	Cumulative
	(1)	(2)	(3)	(4)
EA CB	0.324	0.520	0.135	0.134
	(0.72)	(1.20)	(2.05)	(1.92)
	[0.475]	[0.220]	[0.026]	[0.082]
UK CB	0.533	-0.094	0.123	0.031
	(1.14)	(-0.38)	(1.83)	(0.90)
	[0.322]	[0.686]	[0.142]	[0.317]
US CB	0.873	0.588	0.258	0.258
	(1.47)	(1.17)	(1.14)	(1.18)
	[0.198]	[0.264]	[0.320]	[0.266]
Other CB	0.686	0.495	0.115	0.094
	(1.74)	(0.99)	(2.23)	(1.70)
	[0.119]	[0.357]	[0.059]	[0.125]
Country FE + Controls	X	X	X	X
Observations	58	57	58	57
R^2	0.104	0.123	0.227	0.154

Panel B: Effect on Inflation

	Total Program Effect		Standardized Effect	
	Peak	Cumulative	Peak	Cumulative
	(1)	(2)	(3)	(4)
EA CB	0.331	0.745	0.102	0.140
	(0.97)	(1.40)	(2.15)	(2.22)
	[0.334]	[0.183]	[0.031]	[0.064]
UK CB	1.764	1.454	0.226	0.128
	(2.63)	(1.17)	(3.12)	(1.36)
	[0.016]	[0.274]	[0.028]	[0.205]
US CB	0.715	0.911	0.178	0.206
	(0.83)	(0.91)	(0.67)	(0.73)
	[0.464]	[0.397]	[0.651]	[0.584]
Other CB	0.281	0.512	0.067	0.061
	(0.57)	(0.75)	(1.37)	(1.06)
	[0.626]	[0.482]	[0.241]	[0.319]
Country FE + Controls	X	X	X	X
Observations	53	53	53	53
R^2	0.322	0.175	0.282	0.206

Panel C: Significance

	Effect on Output		Effect on Inflation	
	Statistical	Economic	Statistical	Economic
	(1)	(2)	(3)	(4)
EA CB	0.229	0.449	0.011	0.181
	(1.45)	(2.87)	(0.08)	(1.43)
	[0.120]	[0.004]	[0.932]	[0.164]
UK CB	0.564	0.268	0.337	0.213
	(3.01)	(1.93)	(1.38)	(1.25)
	[0.063]	[0.124]	[0.432]	[0.321]
US CB	0.328	0.228	0.054	0.173
	(1.72)	(0.79)	(0.32)	(0.56)
	[0.471]	[0.491]	[0.827]	[0.616]
Other CB	0.404	0.175	0.154	0.164
	(2.73)	(1.15)	(0.98)	(1.09)
	[0.054]	[0.321]	[0.629]	[0.339]
Country FE + Controls	X	X	X	X
Observations	41	66	38	60
R^2	0.481	0.274	0.252	0.129

Table E.30: **The Bundesbank**

This table repeats the analysis in Tables 2 to 4, after replacing the share of central bank authors by three indicators: *German CB* is an indicator equal to one if at least one of the authors is employed at the Bundesbank; *Other EA CB* is equal to one if at least one of the authors is employed at the ECB or at a euro area national central bank that is not the Bundesbank; *Non-EA CB* is equal to one if at least one of the authors is from a central bank outside of the euro area or from the BIS. The omitted group is academics. t-statistics, reported in parentheses, are based on standard errors clustered at the paper level. p-values obtained using the wild cluster bootstrap procedure (10,000 repetitions) are reported in square brackets. The unit of observation is the paper-country.

Panel A: Effect on Output

	Total Program Effect		Standardized Effect	
	Peak (1)	Cumulative (2)	Peak (3)	Cumulative (4)
German CB	-0.884	-1.171	-0.082	-0.116
	(-2.17)	(-2.61)	(-1.05)	(-1.52)
	[0.166]	[0.139]	[0.368]	[0.222]
Other EA CB	0.444	0.648	0.142	0.143
	(0.95)	(1.59)	(1.98)	(1.97)
	[0.349]	[0.096]	[0.021]	[0.084]
Non-EA CB	0.688	0.313	0.143	0.097
	(1.90)	(1.11)	(2.38)	(1.90)
	[0.140]	[0.259]	[0.048]	[0.052]
Country FE + Controls	X	X	X	X
Observations	58	57	58	57
R^2	0.127	0.140	0.222	0.129

Panel B: Effect on Inflation

	Total Program Effect		Standardized Effect	
	Peak	Cumulative	Peak	Cumulative
	(1)	(2)	(3)	(4)
German CB	0.461	0.640	0.094	0.101
	(0.96)	(1.34)	(1.82)	(1.88)
	[0.508]	[0.235]	[0.117]	[0.117]
Other EA CB	0.279	0.722	0.088	0.133
	(0.62)	(1.44)	(1.60)	(2.28)
	[0.603]	[0.144]	[0.108]	[0.037]
Non-EA CB	0.908	0.926	0.141	0.104
	(1.64)	(1.18)	(2.10)	(1.51)
	[0.224]	[0.311]	[0.088]	[0.178]
Country FE + Controls	X	X	X	X
Observations	53	53	53	53
R^2	0.244	0.161	0.250	0.195

Panel C: Significance

	Effect on Output		Effect on Inflation	
	Statistical	Economic	Statistical	Economic
	(1)	(2)	(3)	(4)
German CB	0.187	0.240	-0.339	-0.074
	(1.04)	(1.53)	(-1.07)	(-0.32)
	[0.369]	[0.214]	[0.464]	[0.810]
Other EA CB	0.228	0.419	0.085	0.254
	(1.39)	(2.80)	(0.81)	(2.16)
	[0.151]	[0.002]	[0.391]	[0.038]
Non-EA CB	0.440	0.206	0.167	0.188
	(2.81)	(1.46)	(0.97)	(1.26)
	[0.039]	[0.247]	[0.736]	[0.312]
Country FE + Controls	X	X	X	X
Observations	41	66	38	60
R^2	0.457	0.256	0.298	0.167

Appendix F. Results by Country Studied

In this section we repeat our main tests after partitioning the sample by the country in which QE takes place.

Table F.31: **Effects of QE on Output: By Country Results**

This table repeats the analysis in Table 2 in the main paper, separately for each of the three countries studied. Controls include the logarithm of three plus the average author experience and the number of authors.

Panel A: Peak Effect on Output

	UK		US		EA	
	(1)	(2)	(3)	(4)	(5)	(6)
CB Affiliation	0.419	0.397	1.244	1.115	0.668	1.088
	(0.64)	(0.52)	(3.29)	(2.56)	(0.89)	(1.23)
	[0.53]	[0.62]	[0.01]	[0.05]	[0.40]	[0.28]
Controls		X		X		X
Observations	17	17	19	19	22	22
R^2	0.023	0.026	0.309	0.372	0.035	0.151

Panel B: Cumulative Effect on Output

	UK		US		EA	
	(1)	(2)	(3)	(4)	(5)	(6)
CB Affiliation	-0.242	-0.250	1.072	1.102	0.691	1.211
	(-0.52)	(-0.51)	(2.56)	(2.63)	(0.85)	(1.26)
	[0.62]	[0.62]	[0.01]	[0.06]	[0.42]	[0.25]
Controls		X		X		X
Observations	16	16	19	19	22	22
R^2	0.019	0.026	0.222	0.279	0.029	0.164

Panel C: Standardized Peak Effect on Output

	UK		US		EA	
	(1)	(2)	(3)	(4)	(5)	(6)
CB Affiliation	0.025	0.026	0.352	0.290	0.120	0.220
	(0.51)	(0.45)	(2.92)	(2.10)	(0.85)	(1.08)
	[0.62]	[0.66]	[0.01]	[0.10]	[0.50]	[0.41]
Controls		X		X		X
Observations	17	17	19	19	22	22
R^2	0.015	0.016	0.174	0.208	0.030	0.203

Panel D: Standardized Cumulative Effect on Output

	UK		US		EA	
	(1)	(2)	(3)	(4)	(5)	(6)
CB Affiliation	-0.021	-0.021	0.254	0.224	0.138	0.248
	(-0.58)	(-0.55)	(3.13)	(2.66)	(0.96)	(1.21)
	[0.58]	[0.59]	[0.00]	[0.02]	[0.41]	[0.31]
Controls		X		X		X
Observations	16	16	19	19	22	22
R^2	0.024	0.035	0.100	0.110	0.036	0.225

Table F.32: **Effects of QE on Inflation: By Country Results**

This table repeats the analysis in Table 3 in the main paper, separately for each of the three countries studied. Controls include the logarithm of three plus the average author experience and the number of authors.

Panel A: Peak Effect on Inflation

	UK		US		EA	
	(1)	(2)	(3)	(4)	(5)	(6)
CB Affiliation	2.659	2.581	1.363	1.097	0.731	0.453
	(2.48)	(2.11)	(2.71)	(2.27)	(1.46)	(0.92)
	[0.03]	[0.05]	[0.02]	[0.04]	[0.18]	[0.38]
Controls		X		X		X
Observations	14	14	18	18	21	21
R^2	0.231	0.280	0.311	0.395	0.081	0.253

Panel B: Cumulative Effect on Inflation

	UK		US		EA	
	(1)	(2)	(3)	(4)	(5)	(6)
CB Affiliation	3.450	3.518	1.320	1.126	0.687	0.370
	(1.54)	(1.52)	(2.24)	(2.01)	(1.31)	(0.67)
	[0.13]	[0.17]	[0.05]	[0.08]	[0.22]	[0.52]
Controls		X		X		X
Observations	14	14	18	18	21	21
R^2	0.183	0.372	0.273	0.335	0.063	0.135

Panel C: Standardized Peak Effect on Inflation

	UK		US		EA	
	(1)	(2)	(3)	(4)	(5)	(6)
CB Affiliation	0.180	0.172	0.450	0.383	0.064	0.036
	(2.50)	(2.11)	(2.17)	(2.26)	(1.31)	(0.76)
	[0.04]	[0.07]	[0.02]	[0.04]	[0.22]	[0.46]
Controls		X		X		X
Observations	14	14	18	18	21	21
R^2	0.298	0.314	0.252	0.290	0.068	0.244

Panel D: Standardized Cumulative Effect on Inflation

	UK		US		EA	
	(1)	(2)	(3)	(4)	(5)	(6)
CB Affiliation	0.241	0.244	0.379	0.325	0.061	0.030
	(1.46)	(1.40)	(1.74)	(1.99)	(1.21)	(0.56)
	[0.16]	[0.21]	[0.04]	[0.02]	[0.25]	[0.58]
Controls		X		X		X
Observations	14	14	18	18	21	21
R^2	0.201	0.353	0.178	0.200	0.053	0.123

Table F.33: **Significance: By Country Results**

This table repeats the analysis in Table 4 in the main paper, separately for each of the three countries studied. Controls include the logarithm of three plus the average author experience and the number of authors.

Panel A: Statistical Significance for Output

	UK		US		EA	
	(1)	(2)	(3)	(4)	(5)	(6)
CB Affiliation	0.734	0.712	0.266	0.247	0.239	0.240
	(2.63)	(2.03)	(1.06)	(1.09)	(1.09)	(1.01)
	[0.06]	[0.17]	[0.47]	[0.42]	[0.47]	[0.46]
Controls		X		X		X
Observations	11	11	13	13	17	17
R^2	0.413	0.444	0.137	0.295	0.146	0.173

Panel B: Economic Significance for Output

	UK		US		EA	
	(1)	(2)	(3)	(4)	(5)	(6)
CB Affiliation	0.290	0.367	0.272	0.382	0.461	0.442
	(1.58)	(2.13)	(1.37)	(1.64)	(2.22)	(2.06)
	[0.15]	[0.06]	[0.24]	[0.21]	[0.07]	[0.08]
Controls		X		X		X
Observations	19	19	22	22	25	25
R^2	0.131	0.330	0.086	0.171	0.216	0.283

Panel C: Statistical Significance for Inflation

	UK		US		EA	
	(1)	(2)	(3)	(4)	(5)	(6)
CB Affiliation	0.527	0.463	0.266	0.247	-0.027	-0.081
	(1.40)	(1.05)	(1.06)	(1.09)	(-0.24)	(-0.47)
	[0.24]	[0.38]	[0.46]	[0.42]	[0.79]	[0.64]
Controls		X		X		X
Observations	9	9	13	13	16	16
R^2	0.176	0.361	0.137	0.295	0.001	0.124

Panel D: Economic Significance for Inflation

	UK		US		EA	
	(1)	(2)	(3)	(4)	(5)	(6)
CB Affiliation	0.316	0.349	0.420	0.406	-0.057	0.030
	(1.34)	(1.50)	(1.86)	(1.57)	(-0.32)	(0.16)
	[0.25]	[0.19]	[0.11]	[0.16]	[0.76]	[0.89]
Controls		X		X		X
Observations	16	16	20	20	24	24
R^2	0.133	0.222	0.152	0.175	0.003	0.190

Appendix G. Results by U.S. QE Program Studied

Motivated by the strong results we find for the U.S. in Appendix F, in this section we dig deeper into them by considering the three main QE programs in the U.S. separately.

Table G.34: **Effects of QE on Output: By U.S. QE Program Results**

This table repeats the analysis in Table 2 in the main paper, separately for each of the three U.S. QE programs studied. Controls include the logarithm of three plus the average author experience and the number of authors.

Panel A: Peak Effect on Output

	QE 1		QE 2		QE 3	
	(1)	(2)	(3)	(4)	(5)	(6)
CB Affiliation	1.475	1.431	1.472	1.490	2.092	2.170
	(3.09)	(2.66)	(2.78)	(2.47)	(3.40)	(4.36)
	[0.02]	[0.06]	[0.03]	[0.08]	[0.05]	[0.00]
Controls		X		X		X
Observations	12	12	12	12	4	4
R^2	0.432	0.465	0.427	0.481	0.852	0.952

Panel B: Cumulative Effect on Output

	QE 1		QE 2		QE 3	
	(1)	(2)	(3)	(4)	(5)	(6)
CB Affiliation	1.206	1.179	1.240	1.418	1.978	2.179
	(1.94)	(2.71)	(2.25)	(2.65)	(1.53)	(29.54)
	[0.07]	[0.05]	[0.02]	[0.10]	[0.03]	[0.00]
Controls		X		X		X
Observations	12	12	12	12	4	4
R^2	0.206	0.328	0.388	0.556	0.538	0.999

Panel C: Standardized Peak Effect on Output

	QE 1		QE 2		QE 3	
	(1)	(2)	(3)	(4)	(5)	(6)
CB Affiliation	0.408	0.403	0.167	0.147	0.178	0.185
	(2.57)	(2.13)	(2.06)	(1.75)	(3.40)	(4.36)
	[0.10]	[0.10]	[0.02]	[0.17]	[0.05]	[0.00]
Controls		X		X		X
Observations	12	12	12	12	4	4
R^2	0.188	0.252	0.203	0.249	0.852	0.952

Panel D: Standardized Cumulative Effect on Output

	QE 1		QE 2		QE 3	
	(1)	(2)	(3)	(4)	(5)	(6)
CB Affiliation	0.267	0.267	0.146	0.145	0.169	0.186
	(2.48)	(2.04)	(3.07)	(2.79)	(1.53)	(29.54)
	[0.04]	[0.04]	[0.01]	[0.10]	[0.04]	[0.00]
Controls		X		X		X
Observations	12	12	12	12	4	4
R^2	0.078	0.087	0.444	0.491	0.538	0.999

Table G.35: **Effects of QE on Inflation: By U.S. QE Program Results**

This table repeats the analysis in Table 3 in the main paper, separately for each of the three U.S. QE programs studied. Controls include the logarithm of three plus the average author experience and the number of authors.

Panel A: Peak Effect on Inflation

	QE 1		QE 2		QE 3	
	(1)	(2)	(3)	(4)	(5)	(6)
CB Affiliation	1.222	1.203	1.577	1.644	1.383	1.254
	(1.94)	(1.99)	(2.65)	(4.26)	(1.66)	(12.58)
	[0.10]	[0.07]	[0.05]	[0.11]	[0.04]	[0.00]
Controls		X		X		X
Observations	12	12	11	11	4	4
R^2	0.263	0.324	0.420	0.599	0.578	0.997

Panel B: Cumulative Effect on Inflation

	QE 1		QE 2		QE 3	
	(1)	(2)	(3)	(4)	(5)	(6)
CB Affiliation	1.340	1.285	1.518	1.776	1.798	1.623
	(1.75)	(1.90)	(2.36)	(3.32)	(1.57)	(5.14)
	[0.13]	[0.09]	[0.08]	[0.18]	[0.17]	[0.00]
Controls		X		X		X
Observations	12	12	11	11	4	4
R^2	0.230	0.341	0.424	0.658	0.551	0.983

Panel C: Standardized Peak Effect on Inflation

	QE 1		QE 2		QE 3	
	(1)	(2)	(3)	(4)	(5)	(6)
CB Affiliation	0.444	0.430	0.197	0.136	0.118	0.107
	(1.80)	(1.85)	(1.85)	(1.31)	(1.66)	(12.58)
	[0.10]	[0.06]	[0.04]	[0.38]	[0.04]	[0.00]
Controls		X		X		X
Observations	12	12	11	11	4	4
R^2	0.206	0.238	0.226	0.326	0.578	0.997

Panel D: Standardized Cumulative Effect on Inflation

	QE 1		QE 2		QE 3	
	(1)	(2)	(3)	(4)	(5)	(6)
CB Affiliation	0.400	0.376	0.156	0.144	0.153	0.138
	(1.54)	(1.62)	(3.20)	(3.92)	(1.57)	(5.14)
	[0.13]	[0.04]	[0.02]	[0.15]	[0.17]	[0.00]
Controls		X		X		X
Observations	12	12	11	11	4	4
R^2	0.152	0.208	0.505	0.657	0.551	0.983

Table G.36: **Significance: By U.S. QE Program**

This table repeats the analysis in Table 4 in the main paper, separately for each of the three U.S. QE programs studied. Controls include the logarithm of three plus the average author experience and the number of authors.

Panel A: Economic Significance for Output

	QE 1		QE 2		QE 3	
	(1)	(2)	(3)	(4)	(5)	(6)
CB Affiliation	0.663	0.691	0.295	0.563	0.500	1.388
	(2.43)	(2.88)	(1.01)	(1.74)	(1.08)	(1.55)
	[0.12]	[0.04]	[0.34]	[0.22]	[0.48]	[0.52]
Controls		X		X		X
Observations	13	13	13	13	5	5
R^2	0.496	0.587	0.072	0.223	0.313	0.690

Panel B: Economic Significance for Inflation

	QE 1		QE 2		QE 3	
	(1)	(2)	(3)	(4)	(5)	(6)
CB Affiliation	0.672	0.613	0.508	0.559	0.545	0.231
	(2.38)	(3.86)	(1.45)	(1.16)	(0.97)	(.)
	[0.13]	[0.02]	[0.19]	[0.45]	[0.40]	[0.00]
Controls		X		X		X
Observations	11	11	12	12	4	4
R^2	0.486	0.836	0.148	0.180	0.273	1.000

Note: Results on statistical significance unreported due to zero variation in the dependent variable in several specifications.

Appendix H. Additional Analyses for Tone Results

This section presents additional analyses to accompany our main results on differences in the tone of the papers' abstracts. Table H.37 presents several alternative specifications. We show that our tone results are robust to classifying BIS authors as full central bankers. They are also robust to classifying researchers at the International Monetary Fund and the World Bank as 0.5 central bankers. Moreover, our tone results hold also when we replace the share of central bank authors by an indicator we call *Discrete*, which is equal to one if at least one of the authors is affiliated with a central bank or the BIS, and zero otherwise. Table H.37 also reports results from the analysis that computes the abstract's sentiment score based on two alternative dictionaries of positive and negative words: the Harvard IV4 semantic dictionary and the Loughran and McDonald (2011) financial dictionary.

In Table H.38 we show that the point estimates of β in equation (2) in the main paper remain similar when we add controls for the magnitudes of the reported effects on output and inflation. In Table H.39, we also conduct a textual analysis of the papers' conclusions.

Table H.37: **Alternative Specifications for Tone of the Abstract**

This table presents robustness tests for our analysis of the tone in the paper's abstract. All regressions use the same specification as in Table 5, Panel A, column (3) in the main paper. For brevity, we only report coefficients of interest and suppress control variables. *Treat BIS as central bank* treats researchers who are affiliated with the Bank of International Settlements as affiliated with a central bank. *Treat BIS/IMF/WB as 0.5 central banks* treats researchers who are affiliated with the Bank of International Settlements, the International Monetary Fund, or the World Bank as 0.5 central bankers. *Discrete measure* uses an indicator equal to one if at least one of the authors is associated with a central bank, 0.5 if at least one of the authors is associated with the BIS, and zero otherwise. *Harvard dictionary* refers to the Harvard IV4 dictionary. *LM dictionary* is the Loughran and McDonald (2011) dictionary. t-statistics are based on robust standard errors. p-values are obtained using the wild cluster bootstrap procedure (10,000 repetitions).

	β	t-stat	p-value
Baseline	0.056	2.60	0.009
Treat BIS as central bank	0.039	1.64	0.100
Treat BIS/IMF/WB as 0.5 central banks	0.051	2.15	0.031
Discrete measure	0.038	1.69	0.091
Harvard IV4 dictionary	-0.001	-0.11	0.912
LM dictionary	0.003	0.53	0.594

Table H.38: **Tone of the Abstract: Additional Controls**

This table repeats Table 5 in the main paper, after adding controls for the estimated effect on output and inflation, respectively. The other controls include the logarithm of the average author experience and the number of authors.

Panel A: Sentiment Score

	(1)	(2)	(3)	(4)
CB Affiliation	0.061	0.052	0.056	0.047
	(2.44)	(1.72)	(2.15)	(1.54)
	[0.023]	[0.097]	[0.033]	[0.130]
Country Dummies	X	X	X	X
Controls	X	X	X	X
Output Effects	X			
Price Effects		X		
Output Effects (Standardized)			X	
Price Effects (Standardized)				X
Observations	46	42	46	42
R^2	0.215	0.118	0.175	0.120

Panel B: Percentage of Positive Adjectives

	(1)	(2)	(3)	(4)
CB Affiliation	0.038	0.037	0.035	0.033
	(1.60)	(1.37)	(1.51)	(1.27)
	[0.122]	[0.189]	[0.139]	[0.199]
Country Dummies	X	X	X	X
Controls	X	X	X	X
Output Effects	X			
Price Effects		X		
Output Effects (Standardized)			X	
Price Effects (Standardized)				X
Observations	46	42	46	42
R^2	0.172	0.112	0.156	0.109

Panel C: Percentage of Negative Adjectives

	(1)	(2)	(3)	(4)
CB Affiliation	-0.023	-0.015	-0.021	-0.014
	(-1.87)	(-1.01)	(-1.56)	(-0.93)
	[0.086]	[0.337]	[0.151]	[0.384]
Country Dummies	X	X	X	X
Controls	X	X	X	X
Output Effects	X			
Price Effects		X		
Output Effects (Standardized)			X	
Price Effects (Standardized)				X
Observations	46	42	46	42
R^2	0.149	0.080	0.111	0.088

Table H.39: **Tone of the Conclusion**

This table repeats Table 5 in the main paper, but uses the tone of the conclusion rather than the tone of the abstract as the dependent variable. Controls include the logarithm of the average author experience and the number of authors.

Panel A: Sentiment Score

	(1)	(2)	(3)
CB Affiliation	0.020	0.024	0.024
	(1.28)	(1.38)	(1.37)
	[0.199]	[0.184]	[0.170]
Country Dummies		X	X
Controls			X
Observations	53	53	53
R^2	0.025	0.060	0.060

Panel B: Percentage of Positive Adjectives

	(1)	(2)	(3)
CB Affiliation	0.009	0.014	0.012
	(0.68)	(0.90)	(0.82)
	[0.499]	[0.375]	[0.427]
Country Dummies		X	X
Controls			X
Observations	53	53	53
R^2	0.008	0.050	0.056

Panel C: Percentage of Negative Adjectives

	(1)	(2)	(3)
CB Affiliation	-0.011	-0.010	-0.012
	(-1.52)	(-1.36)	(-1.59)
	[0.134]	[0.176]	[0.094]
Country Dummies		X	X
Controls			X
Observations	53	53	53
R^2	0.025	0.053	0.061

Appendix I. Methodological Choices

This section presents our results on differences in methodological choices between central bankers and academics. In Panel A of Table I.40, we repeat the regression from equation (2) in the main paper, after replacing the dependent variable by an indicator equal to one if the study uses a DSGE model, and zero otherwise.

In Panel B of Table I.40, columns (1) to (3), the dependent variable is an indicator equal to one if the paper does not disclose the confidence level, and zero if it does. In columns (4) to (6), we repeat the same regression, but now the dependent variable is an indicator equal to one if the study uses a 95% confidence interval, and zero otherwise. Throughout Panel B, we restrict the sample to papers that assess the statistical significance of the effect on either output or inflation. In other words, we exclude all papers for which statistical significance for both output and inflation effects is indicated as "N/A" in Table A.4. In Table I.41 we repeat the analysis after controlling for a dummy variable indicating the Bayesian/frequentist approach.

Table I.40: **Methodological Choices**

This table regresses methodological choices on the share of central bank affiliated authors. In Panel A, we regress model choice on the share of central bank affiliated authors. The dependent variable is an indicator equal to one if the paper uses a DSGE model, and zero if it uses a VAR model. In Panel B, columns (1) to (3), the dependent variable is an indicator equal to one if the paper does not specify the width of the confidence interval, and zero otherwise. In columns (4) to (6), the dependent variable is an indicator equal to one if the paper uses a 95% confidence interval, and zero otherwise. Throughout Panel B, we restrict the sample to papers that assess the statistical significance of the effect on either output or inflation. Controls include the number of authors and the logarithm of three plus the average author experience. t-statistics, reported in parentheses, are based on robust standard errors. p-values obtained using the wild cluster bootstrap procedure (10,000 repetitions) are reported in square brackets. The unit of observation is the paper.

Panel A: Choice of the Model (DSGE vs. VAR)

	(1)	(2)	(3)
CB Affiliation	0.363	0.296	0.319
	(2.27)	(1.71)	(1.80)
	[0.032]	[0.103]	[0.090]
Country Dummies		X	X
Controls			X
Observations	50	50	50
R^2	0.087	0.155	0.170

Panel B: Specification of the Confidence Interval

	Unreported CI			95% CI		
	(1)	(2)	(3)	(4)	(5)	(6)
CB Affiliation	0.136	0.062	0.158	-0.295	-0.200	-0.202
	(1.02)	(0.44)	(0.85)	(-1.99)	(-2.23)	(-1.99)
	[0.350]	[0.667]	[0.423]	[0.091]	[0.027]	[0.074]
Country Dummies		X	X		X	X
Controls			X			X
Observations	31	31	31	31	31	31
R^2	0.028	0.137	0.230	0.167	0.629	0.651

Table I.41: **Choice of Confidence Interval: Control for Bayesian vs. Frequentist**

This table repeats Table I.40, Panel A, after adding a control for the type of statistical inference used (Bayesian vs. frequentist). In columns (1) to (3), the dependent variable is an indicator equal to one if the paper does not specify the width of the confidence interval. In columns (4) to (6), the dependent variable is an indicator equal to one if the paper uses a 95% confidence interval, and zero otherwise. We restrict the sample to papers that assess the statistical significance of the effect on either output or inflation. Controls include the logarithm of three plus the average author experience and the number of authors.

	Unreported CI			95% CI		
	(1)	(2)	(3)	(4)	(5)	(6)
CB Affiliation	0.112	0.056	0.116	-0.220	-0.151	-0.147
	(0.88)	(0.44)	(0.65)	(-2.07)	(-2.37)	(-1.78)
	[0.574]	[0.719]	[0.738]	[0.045]	[0.017]	[0.174]
Country Dummies		X	X		X	X
Controls			X			X
Observations	30	30	30	30	30	30
R^2	0.077	0.212	0.239	0.304	0.697	0.748

Appendix J. Additional Analyses for Career Outcomes

This section provides additional graphs and analyses to accompany our main analysis of career outcomes. Appendix J.1 reports the relationship between career outcomes and other research outcomes, including the effect on inflation and economic significance. In Appendix J.2, we repeat our analysis of the relationship between the estimated effect on output and subsequent career outcomes after controlling for an indicator equal to one if the paper came out in a peer-reviewed journal and zero otherwise. In Appendix J.3, we report results obtained when we include authors with no career updates, and in Appendix J.4 we treat departures to academia and the private sector as demotions.

Appendix J.1. Other Research Outcomes

Table J.42: **Career Outcomes and Effects of QE on Inflation**

The table repeats Table 6 in the main paper, after replacing the effects on output with effects on inflation. Controls include the logarithm of the researcher's experience, the number of authors, the number of years since the author's last career update, as well as dummy variables indicating the author's rank at the time of the paper's first circulation.

Panel A: Total Program Effect

	Peak Effect			Cumulative Effect		
	(1)	(2)	(3)	(4)	(5)	(6)
Effect on inflation	-0.167	-0.184	-0.140	-0.133	-0.163	-0.117
	(-0.68)	(-0.73)	(-1.10)	(-0.56)	(-0.68)	(-0.92)
	[0.685]	[0.693]	[0.242]	[0.747]	[0.731]	[0.326]
Country FE		X	X		X	X
Controls			X			X
Observations	31	31	29	31	31	29
R^2	0.023	0.079	0.482	0.016	0.075	0.478

Panel B: Standardized Effect

	Peak Effect			Cumulative Effect		
	(1)	(2)	(3)	(4)	(5)	(6)
Effect on inflation	0.343	0.046	0.601	0.348	0.048	0.622
	(0.60)	(0.07)	(0.66)	(0.61)	(0.07)	(0.68)
	[0.732]	[0.952]	[0.613]	[0.720]	[0.942]	[0.601]
Country FE		X	X		X	X
Controls			X			X
Observations	31	31	29	31	31	29
R^2	0.010	0.051	0.483	0.010	0.051	0.484

Table J.43: **Career Outcomes and Economic Significance**

The table repeats Table 6 in the main paper, after replacing the effect on output with the economic significance of the effect on output and inflation. Controls include the logarithm of the researcher's experience, the number of authors, the number of years since the author's last career update, as well as dummy variables indicating the author's rank at the time of the paper's first circulation.

	Effect on Output			Effect on Inflation		
	(1)	(2)	(3)	(4)	(5)	(6)
Economic Significance	-0.327	-0.110	1.180	-0.364	-0.222	0.046
	(-0.72)	(-0.28)	(1.10)	(-0.88)	(-0.57)	(0.07)
	[0.508]	[0.761]	[0.269]	[0.388]	[0.550]	[0.948]
Country FE		X	X		X	X
Controls			X			X
Observations	34	34	31	30	30	28
R^2	0.003	0.047	0.488	0.007	0.051	0.468

Appendix J.2. Control for Publication

Table J.44: **Career Outcomes and Effects of QE on Output: Control for Publication**

This table repeats Table 6 in the main paper, after adding an indicator equal to one if the paper is published in a peer-reviewed journal to the set of control variables. The other controls include the logarithm of the researcher's experience, the number of authors, the number of years since the author's last career update, as well as dummy variables indicating the author's rank at the time of the paper's first circulation.

Panel A: Total Program Effect

	Peak Effect			Cumulative Effect		
	(1)	(2)	(3)	(4)	(5)	(6)
Effect on output	0.264	0.219	0.540	0.204	0.204	0.440
	(2.32)	(1.85)	(3.13)	(1.78)	(1.25)	(2.13)
	[0.028]	[0.035]	[0.008]	[0.080]	[0.229]	[0.015]
Country FE		X	X		X	X
Controls			X			X
Observations	34	34	31	32	32	30
R^2	0.030	0.066	0.592	0.027	0.076	0.574

Panel B: Standardized Effect

	Peak Effect			Cumulative Effect		
	(1)	(2)	(3)	(4)	(5)	(6)
Effect on output	1.407	1.009	2.610	2.311	1.838	3.940
	(1.41)	(1.15)	(1.98)	(2.00)	(1.45)	(2.22)
	[0.226]	[0.359]	[0.064]	[0.038]	[0.137]	[0.012]
Country FE		X	X		X	X
Controls			X			X
Observations	34	34	31	32	32	30
R^2	0.044	0.062	0.569	0.051	0.081	0.592

Appendix J.3. Including No Career Updates

Table J.45: **Career Outcomes and Effects of QE on Output: Including No Career Updates**

The table repeats Table 6 in the main paper, after replacing the dependent variable – change in the author's rank – with zero if the author does not experience any career update within five years after the paper's first distribution. Controls include the logarithm of the researcher's experience, the number of authors, the number of years since the author's last career update, as well as dummy variables indicating the author's rank at the time of the paper's first circulation.

Panel A: Total Program Effect

	Peak Effect			Cumulative Effect		
	(1)	(2)	(3)	(4)	(5)	(6)
Effect on output	0.020	0.009	0.087	0.036	0.024	0.062
	(0.25)	(0.14)	(0.93)	(0.54)	(0.32)	(0.65)
	[0.823]	[0.893]	[0.353]	[0.607]	[0.758]	[0.527]
Country FE		X	X		X	X
Controls			X			X
Observations	64	64	57	62	62	56
R^2	0.000	0.019	0.234	0.002	0.022	0.223

Panel B: Standardized Effect

	Peak Effect			Cumulative Effect		
	(1)	(2)	(3)	(4)	(5)	(6)
Effect on output	0.228	0.043	0.256	0.072	-0.049	0.085
	(0.58)	(0.15)	(0.64)	(0.27)	(-0.19)	(0.22)
	[0.592]	[0.885]	[0.562]	[0.798]	[0.853]	[0.831]
Country FE		X	X		X	X
Controls			X			X
Observations	64	64	57	62	62	56
R^2	0.004	0.019	0.229	0.000	0.022	0.217

Appendix J.4. Including Exits

Table J.46: **Career Outcomes and Effects of QE on Output: Including Exits**

The table repeats Table 6 in the main paper, after replacing the dependent variable with the following variable. The dependent variable is equal to (minus) one if the author's rank after her first career update following the paper's first circulation is higher (lower) than her rank at the time of circulation. It is equal to zero if the author remains in the same position, and equal to minus one if the author leaves to academia or to the private sector. Controls include the logarithm of the researcher's experience, the number of authors, the number of years since the author's last career update, as well as dummy variables indicating the author's rank at the time of the paper's first circulation. We restrict the sample to central bankers who experience at least one career update after the paper's first public distribution.

Panel A: Total Program Effect

	Peak Effect			Cumulative Effect		
	(1)	(2)	(3)	(4)	(5)	(6)
Effect on output	0.195	0.150	0.215	0.180	0.160	0.291
	(2.37)	(1.94)	(1.79)	(2.95)	(2.32)	(2.90)
	[0.050]	[0.083]	[0.114]	[0.030]	[0.050]	[0.012]
Country FE		X	X		X	X
Controls			X			X
Observations	40	40	34	38	38	33
R^2	0.085	0.153	0.442	0.105	0.180	0.551

Panel B: Standardized Effect

	Peak Effect			Cumulative Effect		
	(1)	(2)	(3)	(4)	(5)	(6)
Effect on output	0.277	0.075	0.595	0.324	0.188	2.417
	(0.74)	(0.21)	(1.09)	(0.63)	(0.40)	(2.75)
	[0.493]	[0.848]	[0.285]	[0.628]	[0.789]	[0.025]
Country FE		X	X		X	X
Controls			X			X
Observations	40	40	34	38	38	33
R^2	0.014	0.107	0.377	0.016	0.105	0.558

Appendix K. Interaction with Author Seniority

This section presents our results on author seniority. In Table K.47, we repeat the analysis from Table 6 in the main paper, after interacting $Effect_{ij}$ with the author's career rank (*Seniority*). To simplify the interpretation of the results, we standardize *Seniority* to have zero mean and a standard deviation of one. In Table K.48, we repeat the analysis from Tables 2 through 4 in the main paper, except that we interact *CB Affiliation* with the rank of the most senior author on the team, *Max Seniority*. We standardize *Max Seniority* to zero mean and unit standard deviation. The results are weaker if we use the average author rank instead of the rank of the most senior author, suggesting that the seniority of the most senior author matters more. See Table K.49.

Table K.47: **Career Outcomes, the Effects of QE, and Author Seniority**

This table repeats the analysis in Table 6, after adding an interaction between the estimated effects on output and inflation and author seniority, which is standardized to have a mean of zero and a standard deviation of one. t-statistics, reported in parentheses, are based on standard errors clustered at the author level. p-values obtained using the wild cluster bootstrap procedure (10,000 repetitions) are reported in square brackets. The unit of observation is the author-paper-country.

Panel A: Effect on Output

	Total Program Effect		Standardized Effect	
	Peak	Cumulative	Peak	Cumulative
	(1)	(2)	(3)	(4)
Effect on output	0.802	0.808	3.686	7.380
	(2.78)	(3.22)	(6.42)	(4.48)
	[0.050]	[0.006]	[0.003]	[0.001]
Effect on output × Seniority	0.364	0.375	2.079	4.108
	(2.02)	(2.75)	(4.43)	(3.15)
	[0.065]	[0.007]	[0.047]	[0.005]
Seniority	-1.831	-1.559	-2.365	-1.999
	(-2.78)	(-2.68)	(-5.12)	(-4.79)
	[0.064]	[0.055]	[0.054]	[0.009]
Country FE + Controls	X	X	X	X
Observations	31	30	31	30
R^2	0.594	0.612	0.648	0.676

Panel B: Effect on Inflation

	Total Program Effect		Standardized Effect	
	Peak	Cumulative	Peak	Cumulative
	(1)	(2)	(3)	(4)
Effect on inflation	-0.414	-0.235	1.887	1.912
	(-1.01)	(-0.72)	(4.84)	(5.29)
	[0.459]	[0.576]	[0.113]	[0.071]
Effect on inflation × Seniority	-0.360	-0.158	1.720	1.720
	(-0.84)	(-0.46)	(6.89)	(7.53)
	[0.564]	[0.756]	[0.095]	[0.055]
Seniority	-0.298	-0.909	-3.000	-2.997
	(-0.20)	(-0.69)	(-6.40)	(-6.72)
	[0.886]	[0.609]	[0.050]	[0.046]
Country FE + Controls	X	X	X	X
Observations	29	29	29	29
R^2	0.515	0.486	0.633	0.639

Table K.48: **Author Seniority and the Effects of QE**

This table repeats the analysis in Tables 2 to 4 in the main paper, after adding an interaction between central bank affiliation and the rank of the most senior author on the team, which is standardized to have a mean of zero and a standard deviation of one. t-statistics, reported in parentheses, are based on standard errors clustered at the paper level. p-values obtained using the wild cluster bootstrap procedure (10,000 repetitions) are reported in square brackets. The unit of observation is the paper.

Panel A: Effect on Output

	Total Program Effect		Standardized Effect	
	Peak	Cumulative	Peak	Cumulative
	(1)	(2)	(3)	(4)
CB Affiliation	0.621	0.492	0.117	0.110
	(1.66)	(1.32)	(1.75)	(1.79)
	[0.121]	[0.198]	[0.113]	[0.071]
CB Affiliation × Max Seniority	0.961	0.864	0.175	0.145
	(2.08)	(1.57)	(1.79)	(1.44)
	[0.073]	[0.190]	[0.092]	[0.163]
Max Seniority	-0.546	-0.584	-0.073	-0.093
	(-1.82)	(-1.71)	(-1.20)	(-1.56)
	[0.144]	[0.256]	[0.226]	[0.173]
Country FE + Controls	X	X	X	X
Observations	56	55	56	55
R^2	0.168	0.140	0.264	0.137

Panel B: Effect on Inflation

	Total Program Effect		Standardized Effect	
	Peak	Cumulative	Peak	Cumulative
	(1)	(2)	(3)	(4)
CB Affiliation	1.478	1.703	0.205	0.206
	(2.95)	(2.04)	(2.80)	(2.26)
	[0.004]	[0.049]	[0.006]	[0.014]
CB Affiliation × Max Seniority	0.811	0.286	0.166	0.099
	(1.79)	(0.52)	(2.12)	(1.17)
	[0.090]	[0.569]	[0.058]	[0.278]
Max Seniority	-0.779	-0.733	-0.076	-0.069
	(-2.45)	(-1.97)	(-1.80)	(-1.69)
	[0.037]	[0.053]	[0.123]	[0.093]
Country FE + Controls	X	X	X	X
Observations	51	51	51	51
R^2	0.332	0.246	0.362	0.242

Panel C: Significance

	Effect on Output		Effect on Inflation	
	Statistical	Economic	Statistical	Economic
	(1)	(2)	(3)	(4)
CB Affiliation	0.381	0.424	0.210	0.235
	(2.05)	(3.57)	(1.39)	(1.69)
	[0.086]	[0.008]	[0.179]	[0.125]
CB Affiliation × Max Seniority	0.346	0.282	0.315	0.220
	(2.53)	(2.52)	(2.12)	(1.75)
	[0.050]	[0.030]	[0.080]	[0.159]
Max Seniority	-0.232	-0.183	-0.197	-0.134
	(-2.33)	(-2.05)	(-1.93)	(-1.34)
	[0.136]	[0.117]	[0.224]	[0.320]
Country FE + Controls	X	X	X	X
Observations	36	61	33	55
R^2	0.478	0.333	0.295	0.203

Table K.49: **Mean Author Seniority and the Effects of QE**

This table repeats Table K.48, after replacing the rank of the most senior author with the average author rank (*Mean Seniority*). For ease of interpretation, we standardize *Mean Seniority* to have a mean of zero and a standard deviation of one.

Panel A: Effect on Output

	Total Program Effect		Standardized Effect	
	Peak	Cumulative	Peak	Cumulative
	(1)	(2)	(3)	(4)
CB Affiliation	0.664	0.522	0.135	0.116
	(1.61)	(1.31)	(1.84)	(1.81)
	[0.128]	[0.189]	[0.096]	[0.070]
CB Affiliation × Mean Seniority	0.220	0.318	0.049	0.064
	(0.50)	(0.71)	(0.59)	(0.97)
	[0.637]	[0.514]	[0.560]	[0.303]
Mean Seniority	0.036	-0.392	-0.011	-0.073
	(0.10)	(-1.05)	(-0.17)	(-1.22)
	[0.930]	[0.381]	[0.877]	[0.232]
Country FE + Controls	X	X	X	X
Observations	56	55	56	55
R^2	0.117	0.109	0.215	0.120

Panel B: Effect on Inflation

	Total Program Effect		Standardized Effect	
	Peak	Cumulative	Peak	Cumulative
	(1)	(2)	(3)	(4)
CB Affiliation	1.350	1.573	0.200	0.201
	(2.60)	(1.94)	(2.58)	(2.27)
	[0.014]	[0.065]	[0.007]	[0.012]
CB Affiliation × Mean Seniority	0.462	0.013	0.074	0.009
	(1.01)	(0.02)	(1.39)	(0.14)
	[0.344]	[0.985]	[0.187]	[0.880]
Mean Seniority	-0.307	-0.528	-0.020	-0.046
	(-1.02)	(-1.02)	(-0.53)	(-0.99)
	[0.370]	[0.345]	[0.581]	[0.294]
Country FE + Controls	X	X	X	X
Observations	51	51	51	51
R^2	0.301	0.243	0.316	0.242

Panel C: Significance

	Effect on Output		Effect on Inflation	
	Statistical	Economic	Statistical	Economic
	(1)	(2)	(3)	(4)
CB Affiliation	0.388	0.431	0.259	0.236
	(1.97)	(3.60)	(1.63)	(1.71)
	[0.077]	[0.004]	[0.107]	[0.118]
CB Affiliation × Mean Seniority	0.161	0.137	0.267	0.101
	(0.75)	(1.06)	(1.52)	(0.83)
	[0.517]	[0.344]	[0.137]	[0.433]
Mean Seniority	-0.061	-0.102	-0.207	-0.105
	(-0.39)	(-1.03)	(-2.04)	(-1.20)
	[0.749]	[0.406]	[0.131]	[0.319]
Country FE + Controls	X	X	X	X
Observations	36	61	33	55
R^2	0.378	0.285	0.279	0.182

Appendix L. Research Quality

This section explores potential differences in research quality between papers written by central bankers and academics. Figure L.7 reports the relationship between the share of central-bank-affiliated authors and three measures of paper quality: publication status, journal impact factor, and the article influence score. In Table L.50 we show that finding larger effects of QE on output increases the odds of publication in a peer-reviewed journal.

Tables C.19 to C.21 document that the difference in research findings between central bankers and academics remains largely unchanged once we condition on papers published in peer-reviewed journals. We also find similar results if we use weighted least squares regressions, where weights are proportional to the paper's abnormal citations on Google Scholar as of September 2019 (see Tables L.51 to L.53).

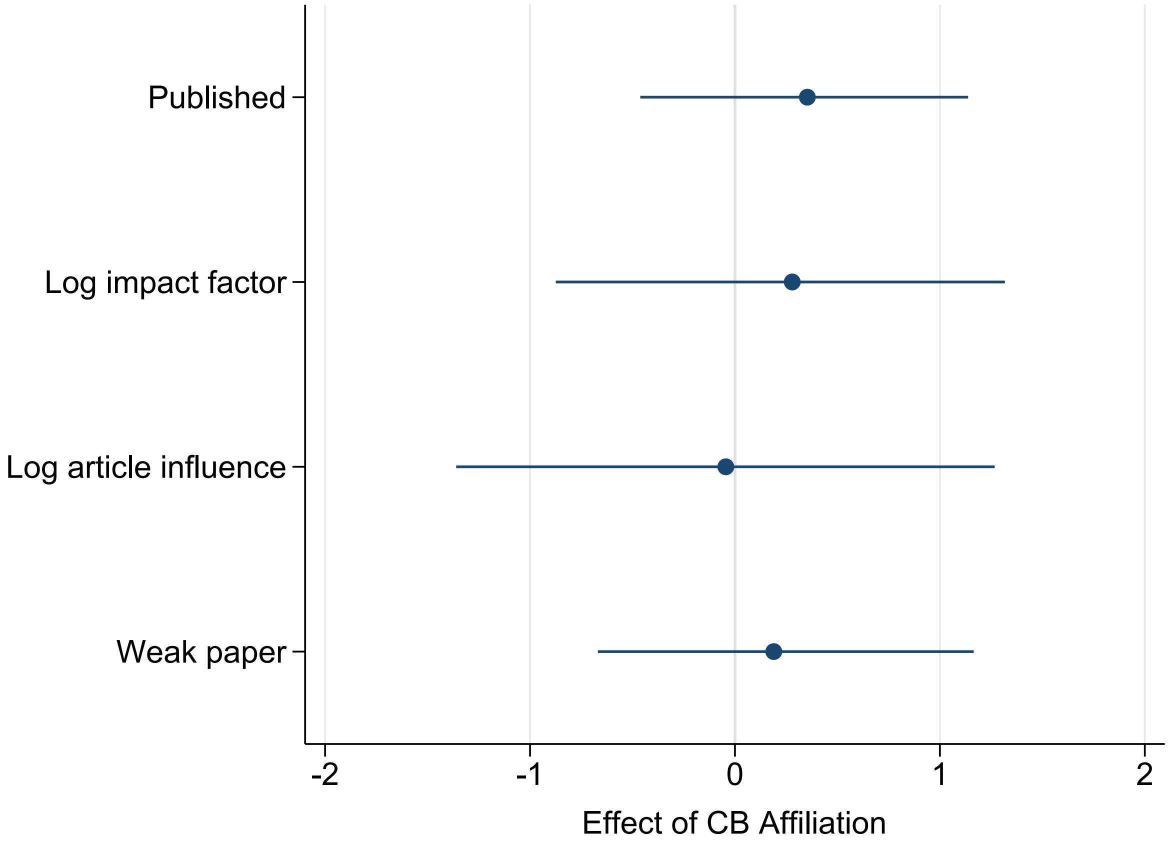


Figure L.7: **Central Bank Affiliation and Paper Quality.** The figure plots the coefficient on the share of central-bank-affiliated authors from regressions of four measures of paper quality on the share of central-bank-affiliated authors. Each row is a separate regression, and the dependent variable is standardized to have mean zero and a standard deviation of one. We also plot the corresponding 95% confidence intervals obtained using the wild bootstrap procedure (10,000 repetitions) and robust standard errors. The unit of observation is at the paper level. All regressions include year fixed effects, where the year refers to the year of the paper's first public distribution. *Published* is an indicator equal to one if the paper is published in a peer-reviewed academic journal, and zero otherwise. The impact factor and article influence score are obtained from the Clarivate Analytics Web of Science dataset, using the year of the paper's journal publication. *Weak paper* is an indicator equal to one if the paper was publicly circulated before 2014 but remains unpublished.

Table L.50: **Research Findings and Publication**

The table regresses an indicator equal to one if the paper is published in a peer-reviewed journal, and zero otherwise, on the effect on output (Panels A and B); the effect on inflation (Panels C and D), and the significance of the effect on output (Panel E) and inflation (Panel F). Controls include the logarithm of three plus the average author experience and the number of authors.

Panel A: Total Program Effect on Output

	Peak Effect			Cumulative Effect		
	(1)	(2)	(3)	(4)	(5)	(6)
Effect on output	0.064	0.068	0.081	0.071	0.073	0.083
	(1.37)	(1.39)	(1.77)	(1.98)	(1.88)	(1.99)
	[0.197]	[0.176]	[0.113]	[0.089]	[0.089]	[0.088]
Country FE		X	X		X	X
Controls			X			X
Observations	58	58	58	57	57	57
R^2	0.025	0.037	0.117	0.032	0.036	0.113

Panel B: Standardized Effect on Output

	Peak Effect			Cumulative Effect		
	(1)	(2)	(3)	(4)	(5)	(6)
Effect on output	0.435	0.439	0.580	0.391	0.382	0.489
	(3.02)	(2.72)	(3.85)	(3.34)	(3.10)	(3.67)
	[0.031]	[0.037]	[0.015]	[0.044]	[0.043]	[0.039]
Country FE		X	X		X	X
Controls			X			X
Observations	58	58	58	57	57	57
R^2	0.059	0.063	0.169	0.044	0.045	0.137

Panel C: Total Program Effect on Inflation

	Peak Effect			Cumulative Effect		
	(1)	(2)	(3)	(4)	(5)	(6)
Effect on inflation	-0.036	-0.027	-0.016	0.008	0.009	0.014
	(-0.65)	(-0.45)	(-0.26)	(0.23)	(0.26)	(0.37)
	[0.529]	[0.662]	[0.800]	[0.843]	[0.828]	[0.732]
Country FE		X	X		X	X
Controls			X			X
Observations	53	53	53	53	53	53
R^2	0.012	0.024	0.097	0.001	0.019	0.098

Panel D: Standardized Effect on Inflation

	Peak Effect			Cumulative Effect		
	(1)	(2)	(3)	(4)	(5)	(6)
Effect on inflation	0.112	0.042	0.179	0.187	0.129	0.208
	(0.45)	(0.15)	(0.65)	(1.01)	(0.66)	(0.90)
	[0.688]	[0.885]	[0.570]	[0.433]	[0.561]	[0.458]
Country FE		X	X		X	X
Controls			X			X
Observations	53	53	53	53	53	53
R^2	0.003	0.018	0.101	0.009	0.022	0.105

Panel E: Significance for Output

	Statistical Significance			Economic Significance		
	(1)	(2)	(3)	(4)	(5)	(6)
Significance of output	-0.044	-0.059	-0.176	0.087	0.084	0.048
	(-0.14)	(-0.18)	(-0.58)	(0.45)	(0.42)	(0.25)
	[0.908]	[0.892]	[0.637]	[0.671]	[0.687]	[0.813]
Country FE		X	X		X	X
Controls			X			X
Observations	41	41	41	66	66	66
R^2	0.001	0.004	0.106	0.004	0.006	0.050

Panel F: Significance for Inflation

	Statistical Significance			Economic Significance		
	(1)	(2)	(3)	(4)	(5)	(6)
Significance of inflation	0.396	0.401	0.243	0.112	0.112	0.157
	(2.46)	(2.40)	(1.44)	(0.61)	(0.61)	(0.92)
	[0.090]	[0.090]	[0.222]	[0.553]	[0.561]	[0.382]
Country FE		X	X		X	X
Controls			X			X
Observations	38	38	38	60	60	60
R^2	0.083	0.084	0.197	0.007	0.010	0.081

Table L.51: **Effects of QE on Output: Weighted Least Squares Regression using Google Scholar Citations**

This table repeats Table 2 in the main paper using a weighted least squares regression, where the weights are proportional to the paper's abnormal number of citations on Google Scholar as of September 2019. The abnormal number of citations is computed as the logarithm of one plus the number of citations for the paper, divided by the logarithm of one plus the average number of citations across all papers released in the same calendar year. Controls include the logarithm of three plus the average author experience and the number of authors.

Panel A: Total Program Effect

	Peak Effect			Cumulative Effect		
	(1)	(2)	(3)	(4)	(5)	(6)
CB Affiliation	0.745	0.760	0.686	0.489	0.465	0.451
	(2.24)	(2.20)	(1.81)	(1.39)	(1.37)	(1.20)
	[0.032]	[0.035]	[0.083]	[0.173]	[0.165]	[0.241]
Country FE		X	X		X	X
Controls			X			X
Observations	57	57	57	56	56	56
R^2	0.064	0.091	0.108	0.029	0.081	0.085

Panel B: Standardized Effect

	Peak Effect			Cumulative Effect		
	(1)	(2)	(3)	(4)	(5)	(6)
CB Affiliation	0.162	0.154	0.139	0.122	0.112	0.107
	(2.52)	(2.44)	(2.04)	(2.21)	(2.08)	(1.75)
	[0.018]	[0.022]	[0.057]	[0.022]	[0.029]	[0.082]
Country FE		X	X		X	X
Controls			X			X
Observations	57	57	57	56	56	56
R^2	0.057	0.209	0.246	0.038	0.076	0.097

Table L.52: **Effects of QE on Inflation: Weighted Least Squares Regression using Google Scholar Citations**

This table repeats Table 3 in the main paper using a weighted least squares regression, where the weights are proportional to the paper's abnormal number of citations on Google Scholar as of September 2019. The abnormal number of citations is computed as the logarithm of one plus the number of citations for the paper, divided by the logarithm of one plus the average number of citations across all papers released in the same calendar year. Controls include the logarithm of three plus the average author experience and the number of authors.

Panel A: Total Program Effect

	Peak Effect			Cumulative Effect		
	(1)	(2)	(3)	(4)	(5)	(6)
CB Affiliation	1.577	1.560	1.288	1.500	1.493	1.250
	(3.39)	(3.30)	(2.83)	(2.50)	(2.46)	(2.20)
	[0.003]	[0.003]	[0.011]	[0.013]	[0.016]	[0.024]
Country FE		X	X		X	X
Controls			X			X
Observations	51	51	51	51	51	51
R^2	0.171	0.249	0.322	0.133	0.136	0.188

Panel B: Standardized Effect

	Peak Effect			Cumulative Effect		
	(1)	(2)	(3)	(4)	(5)	(6)
CB Affiliation	0.237	0.246	0.207	0.209	0.216	0.184
	(2.65)	(2.73)	(2.75)	(2.22)	(2.23)	(2.37)
	[0.007]	[0.006]	[0.005]	[0.010]	[0.010]	[0.004]
Country FE		X	X		X	X
Controls			X			X
Observations	51	51	51	51	51	51
R^2	0.123	0.279	0.329	0.096	0.183	0.216

Table L.53: **Significance of the Effects of QE: Weighted Least Squares Regression using Google Scholar Citations**

This table repeats Table 4 in the main paper using a weighted least squares regression, where the weights are proportional to the paper's abnormal number of citations on Google Scholar as of September 2019. The abnormal number of citations is computed as the logarithm of one plus the number of citations for the paper, divided by the logarithm of one plus the average number of citations across all papers released in the same calendar year. Controls include the logarithm of three plus the average author experience and the number of authors.

Panel A: Effect on Output

	Statistical Significance			Economic Significance		
	(1)	(2)	(3)	(4)	(5)	(6)
CB Affiliation	0.390	0.380	0.362	0.313	0.318	0.366
	(2.37)	(2.43)	(2.27)	(2.76)	(2.77)	(3.23)
	[0.044]	[0.034]	[0.035]	[0.017]	[0.014]	[0.005]
Country FE		X	X		X	X
Controls			X			X
Observations	40	40	40	65	65	65
R^2	0.224	0.277	0.306	0.118	0.129	0.191

Panel B: Effect on Inflation

	Statistical Significance			Economic Significance		
	(1)	(2)	(3)	(4)	(5)	(6)
CB Affiliation	0.105	0.132	0.087	0.141	0.144	0.177
	(0.89)	(1.03)	(0.82)	(1.10)	(1.12)	(1.68)
	[0.418]	[0.315]	[0.401]	[0.295]	[0.290]	[0.108]
Country FE		X	X		X	X
Controls			X			X
Observations	36	36	36	58	58	58
R^2	0.011	0.128	0.195	0.023	0.027	0.178

Appendix M. External Feedback

After we made our dataset publicly available in October 2020, several readers sent us a small number of helpful comments on individual data points. It is not clear how we should treat such feedback given our objective to maximize the accuracy of our results. On the one hand, changing data in response to external feedback may reduce potential data errors. On the other hand, changing data may introduce a selection bias because the nature of the comments we receive is unlikely to be random. For example, all of the feedback we have received by email as of this writing, in early 2021, came from current or former central bankers, or from policy economists.

In an effort to strike a balance between maximizing transparency and avoiding the selection bias, we have decided to report the external feedback in this section, and also show how our main results change if we incorporate this feedback in our dataset. Below, we first review the external comments and then describe how they affect our results. As a preview, we find that our conclusions remain unchanged.

Appendix M.1. Bhattarai et al. (2015)

As we discuss in footnote *i* of this Appendix, we treat the paper by Bhattarai et al. (2015) as having 50% central bankers despite all authors being academics, because the paper came out as a Dallas Fed working paper. A former central banker noted that there may be other similar cases in our sample that are not treated in the same way as Bhattarai et al. (2015), such as Peersman (2011). Gert Peersman is an academic who held visiting positions at multiple central banks, and his 2011 paper came out as an ECB working paper. Although we believe our treatment of Bhattarai et al. (2015) is justified, in this section we treat that paper as having 100% academic authors; i.e., we change the value of *CB Affiliation* for this paper from 0.5 to 0.

Appendix M.2. Hohberger et al. (2019)

Another former central banker found an earlier version of the working paper by Hohberger et al. (2019), in which one of the authors, Romanos Priftis, had a non-central bank affiliation. In other words, this author's primary affiliation was a central bank at the time he co-authored the version we found during our search (and he is still affiliated with that central bank, Bank of Canada, as of early 2021 when we write these words), but there also exists an earlier version of the paper in which his primary affiliation is listed as a different policy institution (the European Commission). We did not use the earlier working paper version of the paper in our main dataset because it did not appear in our original search results, unlike the working paper version that we have used. If we use the earlier version, then the value of *CB Affiliation* for this paper changes from 0.33 to 0. We make that change in this section.

Appendix M.3. Haldane et al. (2016)

The same former central banker also had a different interpretation of the output effect and statistical significance of output in the euro area for the paper by Haldane et al. (2016). We believe that his interpretation is reasonable, but so is ours, as we explain below.

To code the estimated effects for the Haldane et al. (2016) paper, we follow a simple procedure based on a visual examination of Table 4 in their paper. That table reports the output effects across our three countries of interest (US, UK, and EA) and four different identification schemes. What makes interpreting the numbers from Table 4 difficult is that, rather than reporting all values and marking those that are significant as such, Haldane et al. (2016) chose to report only statistically significant effects and leave all other cells empty. In our main dataset, we address this challenge as follows. For countries for which the table reports the average effect on output across all four identification schemes (US and UK), we use that average effect, along with its statistical significance. For the one country for which the table does not report the average (EA), we use the only effect reported in the table, along with its statistical significance.

The former central banker pointed out that the empty cell in the average column in Table 4 indicate that the ECB's balance sheet expansion did not have a significant effect on output and prices, which could be interpreted as a zero effect. We do not fully agree with this interpretation. While the absence of a reported number may indeed indicate that the average effect is statistically insignificant, the point estimate could very well be greater than zero. Since the authors do not report insignificant effects, we cannot know what the point estimate would have been. We therefore prefer our original treatment, which uses the only point estimate that is reported in Table 4.

Nevertheless, for the purpose of this section, we change the output effect of the total program in the EA from 1.56 (=0.15 × 10.38) to 0.78 (=0.075 × 10.38) percentage points, and the statistical significance of the output effect from 1 to 0.

Appendix M.4. Blattner and Joyce (2016)

A policy economist pointed out that our sample of 54 papers does not include Blattner and Joyce (2016). This paper did pop up in our search, but it is not included in our sample because it does not estimate the effect of QE on the euro area as a whole. What the paper does estimate is the effect of QE on the four largest euro area countries—Germany, France, Italy, and Spain. The paper uses the aggregate effect on these four countries to approximate the effect of QE on the whole euro area. This approximation is imperfect because the euro area includes 19 countries (as of early 2021). By the paper's own admission, the combined output of the four countries is equal to only about three quarters of the output of the euro area. None of the 26 papers in our sample that focus on the euro area makes such a rough approximation, so it is a judgment call whether to include Blattner and Joyce (2016) in the sample. For the purpose of this section, we do add this paper, increasing the number of papers to 55.

The paper was first circulated as an ECB working paper in 2016. The only other version of the paper we could find was the published version in the *Journal of Money, Credit, and Banking* from September 2020. We therefore use the original working paper version from 2016 for our analysis, since this is the only version of the paper that was publicly available at the time we collected our dataset. Given that both authors were affiliated with the ECB at the time of the paper's first release, *CB Affiliation* is equal to 1. The country studied is the EA. The estimated peak effects on output and inflation are 0.2 and 0.6 percentage points, respectively. The cumulative effects on output and inflation are 0.0 and 0.6 percentage points, respectively. The authors do not assess the statistical significance of these effects, but they do claim their effects are "substantial." Hence, we set economic significance equal to 1 for both output and inflation.

Appendix M.5. Wu and Xia (2016)

In the discussion of our paper at the 2021 spring meeting of the NBER Economic Fluctuations and Growth research group, the discussant raised questions regarding our point estimates for the estimated effects on output in Wu and Xia (2016). In their Figure 6, Wu and Xia (2016) report two counterfactuals. The first counterfactual (I) refers to a scenario where the Fed follows a historical version of the Taylor rule, whereas the second counterfactual (II) refers to a scenario where the shadow federal funds rate never falls below the lower bound $\underline{r}$ (assumed to be equal to 0.25%). The discussant suggested that we use counterfactual II to infer point estimates rather than counterfactual I, which we use in our main dataset. However, we continue to believe that deviations from counterfactual I provide estimates that are more appropriate for the purpose of our study, for several reasons.

- **The results based on counterfactual I are discussed much more prominently by Wu and Xia (2016).** On page 267, the authors discuss the effect of unconventional monetary policy on industrial production and inflation based on the deviations from counterfactual I: *"In the absence of expansionary monetary policy, in December 2013, the unemployment rate would be 0.13% higher at the 6.83% level rather than 6.7% in the data. The industrial production index would have been 101.0 rather than 101.8, [...]. Interestingly, the accommodative monetary policy during this period has not boosted real activity at the cost of high inflation."* The effects on industrial production and inflation based on counterfactual II are not discussed anywhere in the paper.

- **Wu and Xia (2016) explicitly state that the results based on counterfactual II are subject to greater uncertainty and represent an upper bound on the contribution of unconventional monetary policy measures.** Specifically, on page 268, they write: *"Another question of interest is what would happen if the Fed had adopted no unconventional monetary policy at all. This question is more difficult to answer, because it is not clear what the counterfactual shadow rate would be. One possible counterfactual to consider would be what would have happened if the shadow federal funds rate had never fallen below the lower bound* $\underline{r}$*. [...] One might view the difference between the actual shadow rate and this counterfactual as an upper bound on the contribution of unconventional monetary policy measures."*

- **Wu and Xia (2016) themselves always use their results based on counterfactual I to compare their estimates to existing studies.** On page 268, they write: *"Our estimated effect of unconventional monetary policy on the unemployment rate is smaller than the ones found in Chung et al. (2012) and Baumeister and Benati (2013). This is primarily because they assumed that unconventional monetary policy had a big impact on the yield curve. For example, Chung et al. (2012) assumed that the large-scale asset purchases reduced the long-term interest rates by 50 basis points and then translated this number into a 1.5% decrease in the unemployment rate. If we were to use Hamilton and Wu (2012)'s estimate of 13 basis-point decrease in the 10-year rate, a simple linear calculation would translate this number into a 0.39% reduction in the unemployment rate. This is comparable to our estimate."* These statements suggest Wu and Xia (2016) are using their estimated effect on the unemployment rate of 0.13% (based on counterfactual I) to compare to existing studies, rather than the 1.0% estimate based on counterfactual II. If they were using 1.0% as their estimate, then it would be unclear why 0.39% is more comparable to their results than 1.5%.

- **Using counterfactual II would make Wu and Xia (2016) a massive outlier in the dataset.** The peak effect on output implied by counterfactual II is ca. 11 percent — roughly double the largest estimate in our sample. This stands in stark contrast to statements made by Wu and Xia (2016) about their estimates being smaller than those by existing studies, such as Chung et al. (2012) and Baumeister and Benati (2013), which are also in our sample. Wu and Xia (2016) are clearly aware that using counterfactual II would produce implausible results, as they emphasize their results based on counterfactual I throughout.

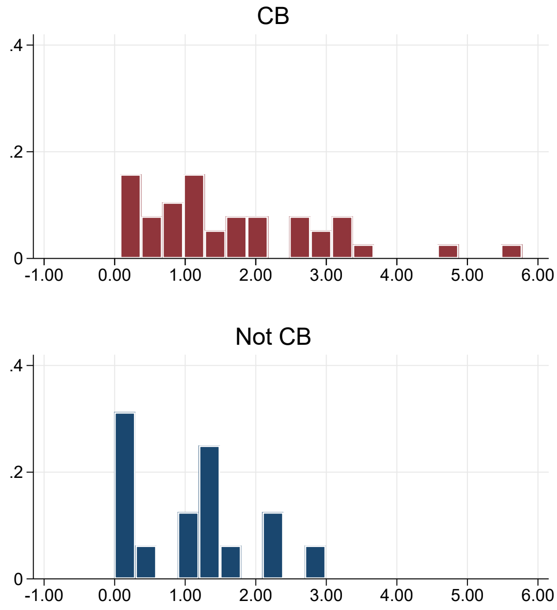
Appendix M.6. Andrade et al. (2016)

The same discussant also suggested that we incorrectly treat the inflation rate reported in Andrade et al. (2016) as a quarterly rate, when in fact the authors report an annualized rate. The discussant had confirmed this after contacting the authors of that study. Since the authors do not explicitly state in their paper that they use annualized rates, our treatment of Andrade et al. (2016) is perfectly in line with our approach described on page 6 of this Appendix (*"We assume that authors show quarter-on-quarter growth rates, unless the authors explicitly state that they use annualized rates"*). We believe this approach is reasonable, because we are trying to capture how a reader of the paper, who can see the paper but cannot see inside the minds of the paper's authors, would reasonably interpret the results. Nevertheless, for the purpose of the exercise in this section, we set the estimated peak and cumulative effect on inflation for Andrade et al. (2016) to 1.07 percent.

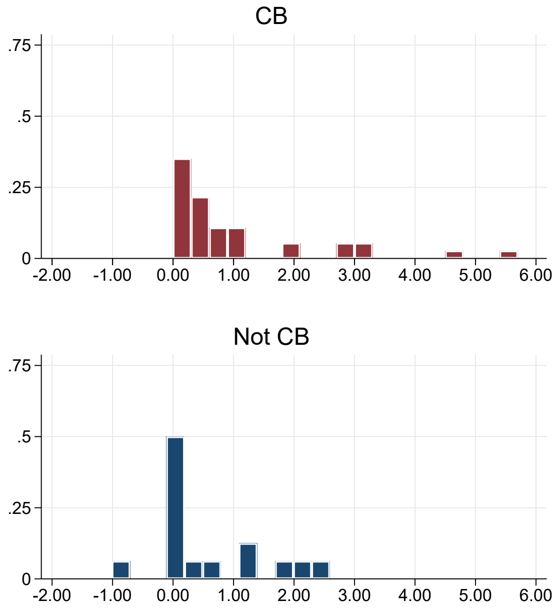
Appendix M.7. Results

We repeat our analysis in the main paper after making the above changes to the dataset. All our conclusions from the main paper continue to hold. Central bank studies report stronger effects of QE on both output and inflation (Tables M.55 and M.56). Central bank studies are also more likely to report significant QE effects on output (Table M.57), and their abstracts use more favorable language (Table M.58). Moreover, central bankers who report larger effects on output experience more favorable career outcomes (Table M.59).

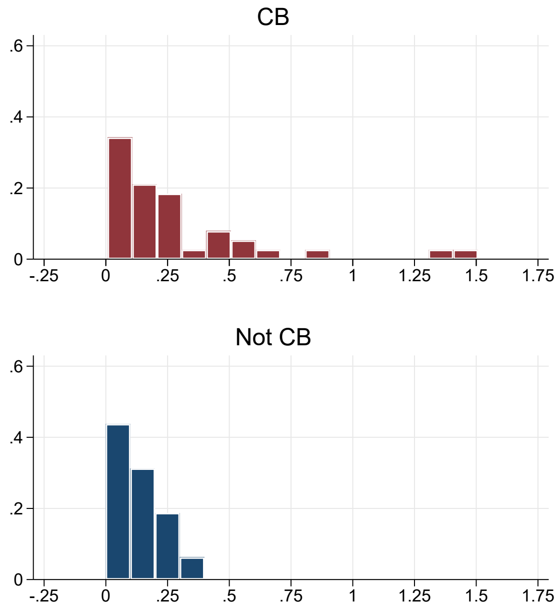
In terms of economic magnitude, the differences become slightly smaller relative to the main paper, but they remain sizable. In terms of the level of statistical significance, we observe no change in the level of significance in 35 out of 57 specifications; a decrease in significance in 20 out of 57 specifications, and an increase in significance in 2 out of 57 specifications. Overall, these results highlight the robustness of our main findings. That said, we are only in partial agreement with the comments received, as described above, and we are also concerned about the selection effect discussed earlier. Due to these concerns, we stick to our original dataset for the main analysis.



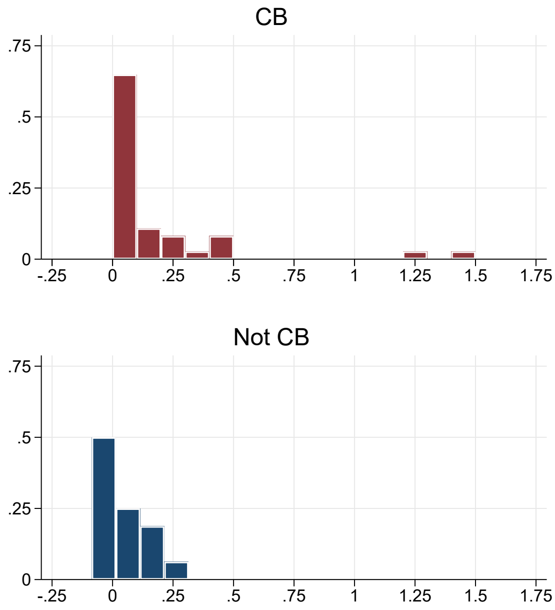
(a) Total Peak Effect



(b) Total Cumulative Effect



(c) Standardized Peak Effect



(d) Standardized Cumulative Effect

Figure M.8: **Effects of QE on Output by Central Bank Affiliation After External Feedback.** The figure repeats Figure 2 in the main paper using the alternative version of our dataset that incorporates external feedback.

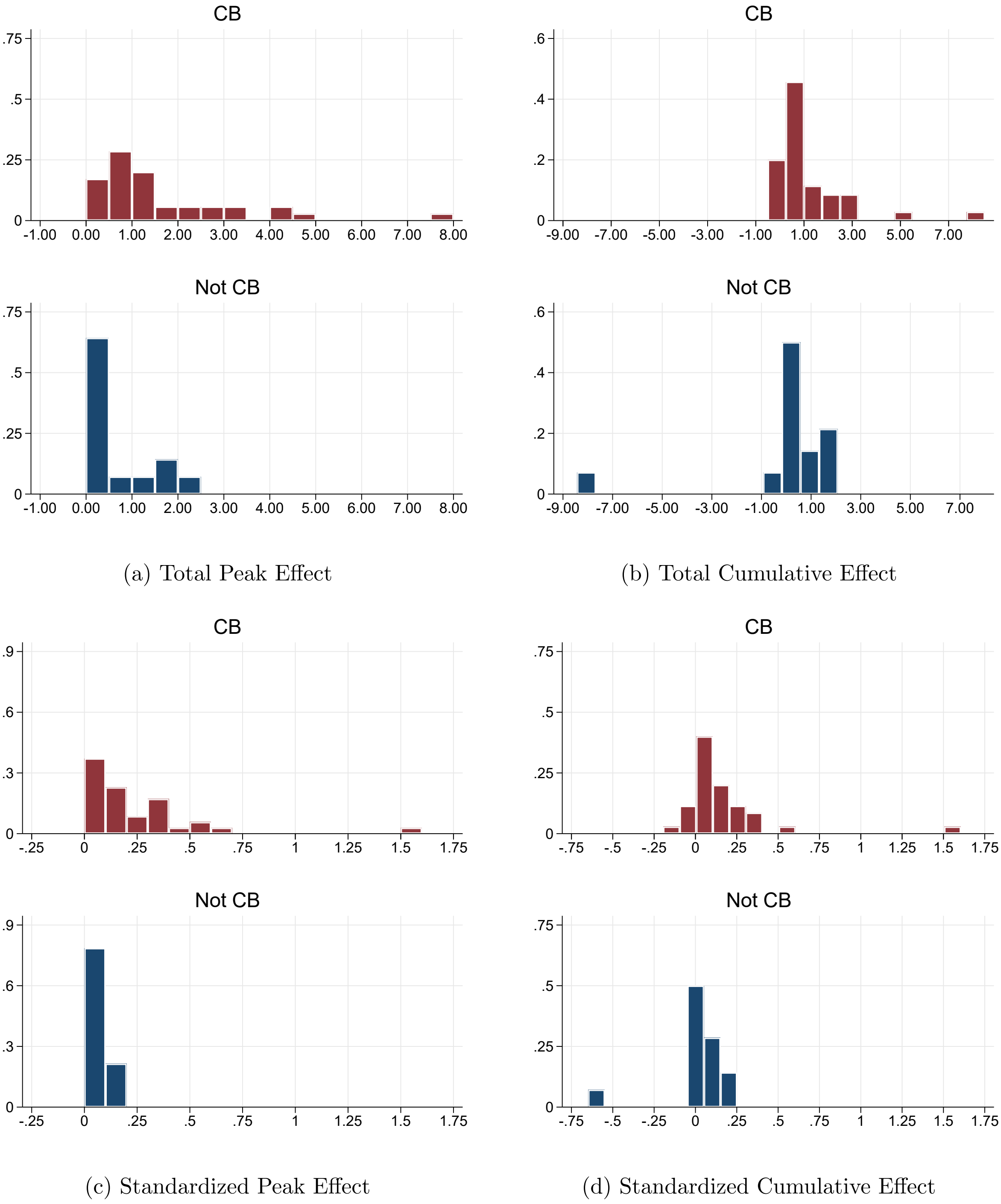


Figure M.9: **Effects of QE on Inflation by Central Bank Affiliation After External Feedback.** The figure repeats Figure 3 in the main paper using the alternative version of our dataset that incorporates external feedback.

Table M.54: **Effects of QE on Output and Inflation by Central Bank Affiliation After External Feedback**

This table repeats Table 1 in the main paper using the alternative version of our dataset that incorporates external feedback.

	All	CB	Not CB
Panel A: Effect on Output			
Peak effect on output	1.52	1.67	1.04
	(1.23)	(1.27)	(1.10)
Standardized peak effect on output	0.23	0.28	0.11
	(0.16)	(0.17)	(0.10)
Cumulative effect on output	0.85	1.01	0.56
	(0.37)	(0.42)	(0.11)
Standardized cumulative effect on output	0.13	0.18	0.05
	(0.04)	(0.05)	(0.02)
Panel B: Effect on Inflation			
Peak effect on inflation	1.35	1.66	0.65
	(0.92)	(1.07)	(0.43)
Standardized peak effect on inflation	0.18	0.23	0.06
	(0.10)	(0.11)	(0.04)
Cumulative effect on inflation	0.83	1.22	-0.05
	(0.74)	(0.80)	(0.16)
Standardized cumulative effect on inflation	0.12	0.16	0.00
	(0.08)	(0.09)	(0.02)
Panel C: Significance			
Statistical significance: output	0.85	0.95	0.55
	(1.00)	(1.00)	(1.00)
Statistical significance: inflation	0.84	0.89	0.78
	(1.00)	(1.00)	(1.00)

Table M.55: **Effects of QE on Output After External Feedback**

This table repeats Table 2 in the main paper using the alternative version of our dataset that incorporates external feedback.

Panel A: Total Program Effect

	Peak Effect			Cumulative Effect		
	(1)	(2)	(3)	(4)	(5)	(6)
CB Affiliation	0.664	0.665	0.626	0.524	0.438	0.415
	(1.86)	(1.92)	(1.64)	(1.39)	(1.29)	(1.15)
	[0.075]	[0.061]	[0.127]	[0.178]	[0.203]	[0.255]
Country FE		X	X		X	X
Controls			X			X
Observations	59	59	59	58	58	58
R^2	0.051	0.074	0.082	0.032	0.073	0.079

Panel B: Standardized Effect

	Peak Effect			Cumulative Effect		
	(1)	(2)	(3)	(4)	(5)	(6)
CB Affiliation	0.148	0.149	0.137	0.127	0.115	0.108
	(2.21)	(2.34)	(1.98)	(2.04)	(2.03)	(1.77)
	[0.032]	[0.020]	[0.068]	[0.030]	[0.032]	[0.071]
Country FE		X	X		X	X
Controls			X			X
Observations	59	59	59	58	58	58
R^2	0.050	0.163	0.198	0.041	0.071	0.099

Table M.56: **Effects of QE on Inflation After External Feedback**

This table repeats Table 3 in the main paper using the alternative version of our dataset that incorporates external feedback.

Panel A: Total Program Effect

	Peak Effect			Cumulative Effect		
	(1)	(2)	(3)	(4)	(5)	(6)
CB Affiliation	1.129	1.240	1.106	1.411	1.424	1.226
	(2.92)	(2.86)	(2.53)	(1.98)	(1.95)	(1.87)
	[0.007]	[0.006]	[0.018]	[0.024]	[0.028]	[0.065]
Country FE		X	X		X	X
Controls			X			X
Observations	54	54	54	54	54	54
R^2	0.102	0.226	0.261	0.097	0.097	0.139

Panel B: Standardized Effect

	Peak Effect			Cumulative Effect		
	(1)	(2)	(3)	(4)	(5)	(6)
CB Affiliation	0.167	0.199	0.180	0.175	0.192	0.170
	(2.28)	(2.46)	(2.49)	(2.07)	(2.10)	(2.21)
	[0.016]	[0.011]	[0.010]	[0.015]	[0.012]	[0.014]
Country FE		X	X		X	X
Controls			X			X
Observations	54	54	54	54	54	54
R^2	0.084	0.241	0.281	0.083	0.171	0.199

Table M.57: **Significance After External Feedback**

This table repeats Table 4 in the main paper using the alternative version of our dataset that incorporates external feedback.

Panel A: Effect on Output

	Statistical Significance			Economic Significance		
	(1)	(2)	(3)	(4)	(5)	(6)
CB Affiliation	0.344	0.340	0.310	0.307	0.316	0.361
	(2.08)	(2.19)	(2.02)	(2.67)	(2.67)	(3.16)
	[0.069]	[0.054]	[0.074]	[0.020]	[0.021]	[0.008]
Country FE		X	X		X	X
Controls			X			X
Observations	41	41	41	67	67	67
R^2	0.145	0.186	0.245	0.124	0.131	0.230

Panel B: Effect on Inflation

	Statistical Significance			Economic Significance		
	(1)	(2)	(3)	(4)	(5)	(6)
CB Affiliation	0.179	0.188	0.151	0.173	0.182	0.209
	(1.10)	(1.24)	(1.11)	(1.23)	(1.29)	(1.65)
	[0.383]	[0.282]	[0.353]	[0.253]	[0.222]	[0.122]
Country FE		X	X		X	X
Controls			X			X
Observations	38	38	38	61	61	61
R^2	0.036	0.114	0.206	0.034	0.036	0.124

Table M.58: **Tone of the Abstract After External Feedback**

This table repeats Table 5 in the main paper using the alternative version of our dataset that incorporates external feedback.

Panel A: Sentiment Score

	(1)	(2)	(3)
CB Affiliation	0.036	0.042	0.043
	(1.56)	(2.01)	(1.98)
	[0.131]	[0.052]	[0.055]
Country Dummies		X	X
Controls			X
Observations	55	55	55
R^2	0.052	0.098	0.099

Panel B: Percentage of Positive Adjectives

	(1)	(2)	(3)
CB Affiliation	0.026	0.033	0.034
	(1.28)	(1.76)	(1.79)
	[0.200]	[0.096]	[0.084]
Country Dummies		X	X
Controls			X
Observations	55	55	55
R^2	0.036	0.109	0.115

Panel C: Percentage of Negative Adjectives

	(1)	(2)	(3)
CB Affiliation	-0.009	-0.009	-0.009
	(-0.99)	(-0.93)	(-0.83)
	[0.335]	[0.363]	[0.426]
Country Dummies		X	X
Controls			X
Observations	55	55	55
R^2	0.020	0.031	0.036

Table M.59: **Career Outcomes and Effects of QE on Output After External Feedback**

This table repeats Table 6 in the main paper using the alternative version of our dataset that incorporates external feedback.

Panel A: Total Program Effect

	Peak Effect			Cumulative Effect		
	(1)	(2)	(3)	(4)	(5)	(6)
Effect on output	0.270	0.229	0.485	0.211	0.213	0.460
	(2.51)	(2.27)	(2.65)	(1.93)	(1.46)	(2.12)
	[0.026]	[0.007]	[0.017]	[0.063]	[0.139]	[0.017]
Country FE		X	X		X	X
Controls			X			X
Observations	35	35	31	33	33	30
R^2	0.033	0.068	0.553	0.029	0.079	0.550

Panel B: Standardized Effect

	Peak Effect			Cumulative Effect		
	(1)	(2)	(3)	(4)	(5)	(6)
Effect on output	1.431	1.060	2.661	2.363	1.912	4.095
	(1.47)	(1.25)	(1.86)	(2.12)	(1.66)	(2.15)
	[0.219]	[0.322]	[0.089]	[0.032]	[0.068]	[0.018]
Country FE		X	X		X	X
Controls			X			X
Observations	35	35	31	33	33	30
R^2	0.047	0.063	0.553	0.054	0.084	0.569

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