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IZA DP No. 17029

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Hans H. Sievertsen
VIVE, University of Bristol and IZA

Sarah Smith
University of Bristol, IFS and CEPR

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ISSN: 2365-9793

IZA – Institute of Labor Economics

Schaumburg-Lippe-Straße 5–9
53113 Bonn, Germany

Phone: +49-228-3894-0
Email: publications@iza.org

www.iza.org

ABSTRACT

Do Female Experts Face an Authority Gap? Evidence from Economics*

This paper reports results from a survey experiment comparing the effect of (the same) opinions expressed by male versus female experts. Members of the public were asked for their opinions on topical issues and shown the opinion of either a male or a female economist, all professors at leading US universities. We find, first, that experts can persuade members of the public – the opinions of individual expert economists have an effect on public opinion – and, second, that the opinions expressed by female economists are more persuasive than the same opinions expressed by male economists.

JEL Classification: A11, D83, J16

Keywords: economic expertise, persuasion, gender, stereotypes, survey experiments

Corresponding author:
Hans Henrik Sievertsen
Department of Economics
University of Bristol
Priory Road, Office 2C0
Bristol BS8 1TU
United Kingdom
E-mail: h.h.sievertsen@bristol.ac.uk

* The authors would like to thank seminar participants at IZA and at the universities of Bristol and Cardiff, as well as Jens Dietrichson, Niels-Jakob Harbo Hansen, Oliver Hauser, Rasmus Tue Pedersen and Miriam Wüst for useful comments and suggestions. Funding for the survey came from University of Bristol School of Economics research funds. Pre-registration: AEARCTR-0011764

1. Introduction

Expert economists are seen as wielding considerable authority in political and public debates (Hirschman and Pop Berman, 2014). The media's use of experts has been increasing (Albæk et al., 2003) with high demand for economics ideas and knowledge (Foucade, 2009) and the opinions expressed by economists may affect public opinion and policy decisions. However, several studies have documented a gender gap in economics expertise in the public sphere: Male economists are over-represented as experts in the media, even compared to their numerical representation in the profession (Niemi and Pitkänen, 2017; Jones, 2020), and female economists are less willing, and less confident, to give their opinion (Sarsons and Xu, 2021; Sievertsen and Smith, 2022). This paper considers the "demand side" of the market for public expertise and asks whether female economists face an authority gap in the eyes of the public. We address this question through an information provision experiment (Haaland, Roth and Wohlfart, 2021) conducted via a survey with members of the US public. Specifically, we compare the effect on the public of seeing an opinion about a topical policy issue expressed by a senior female economist with the effect of seeing the same opinion expressed by a senior male economist.

Experts' ability to persuade members of the public depends critically on their perceived credibility (Della Vigna and Gentzkow, 2010). There is widespread evidence of female expertise being discounted and challenged, both by fellow experts and by the public. Examples include hiring decisions (Moss-Rascusin et al, 2012), academic reference letters (Baltrunaite et al, 2022; Eberhardt et al, 2022), evaluations of research (Sarsons et al, 2021, Witteman et al, 2019), seminars (Blair-Loy et al, 2017; Dupas et al, 2022), teaching evaluations (Boring, 2017; Mengel et al, 2019) and medical and financial advice (Prince et al, 2006; de Vaan, M., & Stuart, T. 2022; Sarsons, 2017; Klein et al, 2022). That female experts are seen as less credible is often attributed to stereotyped beliefs (Bordalo et al, 2016) about who is an expert (Reuben et al, 2013; Hannick et al, 2023).

However, in our setting, there are potential channels through which discrimination against female expertise may be reduced, or even reversed. The first potential channel is that the members of the public in our survey are made aware that the economists are professors at leading US universities. As argued by Bohren et al (2019), discrimination based on stereotyped beliefs can be undone by credentials of expertise. Credentials provide an information signal that mitigates the effect of biased beliefs; moreover, in the face of discrimination against women, the informational content of the signal provided by credentials may differ – and be stronger – for women. Put simply, visibly successful women, if they have "made it" in stereotypically male domains, may be perceived as better than their

male counterparts.[1] In an experimental setting, Ayalew, Manian, and Sheth (2021) show that discrimination against women managers is undone by education credentials, while Booth et al (1999), Rosette and Tost (2010), and Mengel et al (2018) find that the discrimination faced by female academics at junior levels is reversed at senior levels. A second potential channel stems directly from the supply-side gender gap: A common belief that women are less confident about speaking up, compared to men – and only do so when they are more certain – would add credibility to their opinions. Given this, it is *a priori* unclear if the opinions of female expert economists who have relevant credentials will be more or less persuasive than the opinions of their male counterparts.[2]

To test which gender is more persuasive, we draw on an existing set of public opinions expressed by male and female members of the University of Chicago's Clark Centre Forum's Economist Expert Panel (EEP).[3] The purpose of the panel, which has run since 2011, is to explore economists' views on current policy issues. The EEP has a permanent set of members who are invited to be on the panel as "distinguished experts with a keen interest in public policy from the main areas of economics."[4] We focus on the 43 US-based EEP members, of whom seven are women. All panel members are leading academic economists at top institutions (Berkeley, Chicago, Harvard, MIT, Princeton, Stanford, and Yale). Members of the panel are regularly asked for their views on topical issues; their opinions are collected in a standardized format (on a Likert scale) and are published online. We selected ten issues for our experiment and constructed a sub-sample of all female panel members who expressed opinions on the ten issues, matched one-to-one by expert-issue to a male "pair" who expressed the same opinion. We surveyed 3,027 members of the US public for their views on the same ten issues and, for each issue, showed them the opinion of a single expert, drawn randomly from the gender- and opinion-balanced sub-sample. Alongside the expert's opinion, we provided their name, their institutional affiliation and the photo from the EEP website.

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[1] This idea can be summarized in a quote from former Prime Minister of Denmark, Helle Thorning Schmidt *"There's a huge difference between getting to the top and being at the top in how you are treated as a woman"* (quoted in Sieghart, 2020)

[2] Greve-Poulsen et al. (2023) found no gender difference in the effect of a mock newspaper article authored by a fictional male or female (medical or economics) expert on the Danish public's views on the topics. Compared to this, showing a photo may make gender more salient. D'Ancunto et al (2022) found that images of a white female or black male member of the US Federal Open Market Committee (FOMC) increased the effect of FOMC forecasts on the public's economic expectations (compared to an image of a white member). Their study focused on perceptions of the FOMC diversity rather than the effect of individual expert identity. Other studies focus on reported credibility of expert identity rather than persuasiveness (Bundi et al, 2024).

[3] https://www.kentclarkcenter.org/us-economic-experts-panel/ For a selection of research papers drawing on the EEP, see Sapienza and Zingales (2013), Gordon and Dahl (2013), Sarsons and Xu (2021), Sievertsen and Smith (2023), Nordhaus and Rivers (2023)

[4] The panel includes recipients of top national and international prizes in economics, fellows of the Econometric society and the European Economic Association, members of distinguished national and international policymaking bodies in Europe, recipients of significant grants for economic research, highly accomplished affiliates and program directors of the Centre for Economic Policy Research and the National Bureau of Economic Research, and past and current editors of leading academic journals in the profession.

Before testing for a gender gap, we first investigate whether individual economists can persuade the public. Reported levels of public trust in economists are low, lower than trust in scientists, for example, and economics expertise has been called into question.[5] Previous studies have found that telling members of the public about consensus economist opinion, i.e. saying what "most economists" think on a topic, has little effect on public opinion (Sapienza and Zingales, 2013, Johnston and Ballard, 2020; Meyer et al, 2023). In contrast to these studies, we exploit within-topic variation in panel members' opinions, i.e. we compare the effect on public opinion of seeing different expert views on the same topic, and we find that the opinions of individual experts affect the views expressed by the public.

Turning to the effect of expert gender identity, we find that individual expert opinions are more persuasive when they are expressed by senior female economists. The additional effect of seeing an opinion expressed by a female expert is around 20 per cent greater than the effect of seeing the same opinion expressed by a male expert. The gap is robust to including controls for the expert's institution, age, existing media presence and features of the photo.

We rule out that the authority gap in favour of female experts is attributable to homophily. Greenwood et al (2018) and Aslan et al (2019) find that gender and racial concordance between doctor and patient increases post-heart attack survival rates, while Stolper and Walter (2019) find that gender and age concordance is important for following financial advice. By contrast, we find no differential effect of opinions expressed by female versus male experts on the views of men and women. However, the authority gap in favour of female experts is reversed among more conservative members of the public, i.e. those who are older and those who align with the Republican Party.

2. Data and experiment design

Our experiment uses the publicly-expressed opinions of the US members of the University of Chicago's Clark Centre Forum's Economist Expert Panel (EEP). Panel members sign up, knowing that they will regularly be asked to give their opinion on different topics. Approximately twice a month, members are polled by email for their views on current topics. Specifically, they are shown a policy statement, for example, "The current combination of US fiscal and monetary policy poses a serious risk of prolonged higher inflation", and asked whether they agree or disagree. Responses are on a five-point Likert scale – Strongly Disagree, Disagree, Uncertain (i.e. neither disagree nor agree), Agree and Strongly Agree. The panel members are also allowed to respond "No opinion". All individual responses – and a summary – are made public via the panel website and are occasionally reported on by the

[5] See for example, Why Nobody Trusts Economists | The University of Chicago Harris School of Public Policy (uchicago.edu)

media. Individual panel member views may also be scrutinized if they are nominated for a public position. Panel members therefore have an incentive to take giving an opinion seriously.

From the website, we observe panel members' name and, for each question answered, the opinion expressed. We assigned a binary gender identity based on their name, drawing on additional sources, including Wikipedia. We also manually collected information from individual websites, including current institution and year of PhD. which we use to assign a panel member's "age".

We selected ten recent statements to use in the experiment. The statements cover a broad range of policy areas, represent a mix of technical/ non-technical issues (Johnston and Ballard, 2016, find that citizens give more weight to expert opinion on more technical issues) and have a mix of opinions among the panel members (agree/ uncertain/ disagree).

The ten statements are:

1. Use of **artificial intelligence** over the next ten years will lead to a substantial increase in the growth rates of real per capita income in the US and Western Europe over the subsequent two decades.
2. There needs to be more government regulation around **Twitter's** content moderation and personal data protection.
3. It would serve the US economy well to make it unlawful for companies with revenues over $1 billion to offer goods or services for sale at an excessive price during an exceptional market shock. **(Price Gouging)**
4. Efforts to achieve the goal of reaching **net-zero** emissions of greenhouse gases by 2050 will be a major drag on global economic growth.
5. Given the centrality of **semiconductors** to the manufacturing of many products, securing reliable supplies should be a key strategic objective of national policy.
6. A significant factor behind today's higher US inflation is dominant corporations in uncompetitive markets taking advantage of their market power to raise prices. (**Greedflation**)
7. **Financial regulators** in the US and Europe lack the tools and authority to deter runs on banks by uninsured depositors.
8. When **economic policy**-makers are unable to commit credibly in advance to a specific decision rule, they will often follow a poor policy trajectory.
9. A **windfall tax** on the profits of large oil companies , with the revenue rebated to households, would provide an efficient means to protect the average US household.

10. A ban on advertising **junk foods** (those that are high in sugar, salt, and fat) would be an effective policy to reduce child obesity.

A summary of EEP opinions on these ten statements is shown in Table 1, cols (1) and (2).

Table 1: Expert versus public opinion

	Experts: EEP		Public: Baseline		Distance	Experts: sub-panel		Public: Experiment		Distance	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
	Certain	Agree	Certain	Agree	|2 – 4|	Certain	Agree	Certain	Agree	|7 – 4|	|7 – 9|
AI	0.46	0.95	0.58	0.48	0.47	0.41	1.00	0.61	0.66	0.52	0.34
Twitter	0.53	0.70	0.82	0.70	0.00	1.00	0.49	0.86	0.64	0.21	0.15
Gouging	0.70	0.07	0.74	0.88	0.81	0.81	0.26	0.77	0.73	0.62	0.47
Net Zero	0.47	0.25	0.80	0.35	0.10	0.68	0.00	0.78	0.36	0.35	0.36
Semiconductors	0.74	1.00	0.70	0.96	0.04	1.00	1.00	0.80	0.97	0.04	0.03
Greedflation	0.74	0.09	0.84	0.79	0.69	1.00	0.00	0.78	0.71	0.79	0.71
Financial reg	0.61	0.44	0.52	0.58	0.14	0.67	0.49	0.53	0.56	0.09	0.07
EconPolicy	0.63	0.93	0.56	0.93	0.00	0.50	1.00	0.56	0.91	0.07	0.09
Windfall Tax	0.65	0.54	0.68	0.81	0.27	0.51	0.00	0.66	0.65	0.81	0.65
Junk Food	0.53	0.83	0.88	0.64	0.19	0.50	1.00	0.82	0.60	0.36	0.40
Mean	0.61	0.58	0.71	0.71	0.27	0.71	0.52	0.72	0.68	0.39	0.33
N	422	258	1000	712		30270	21492	30270	21794		

Notes: Certain = 1 if the respondent is not uncertain, i.e. the response is one of agree, agree strongly, disagree, disagree strongly, = 0 if the response is uncertain/ no opinion or, in the case of the full EEP, if they provide no response. Agree = 1 if the respondent agrees or agrees strongly with the statement, =0 if the respondent disagrees or disagrees strongly. Agree is missing in the case of uncertain/ no opinion. Distance = the absolute difference between the proportions of experts and publics who agree with the statement. The means weight each statement equally.

Expert versus public opinion

We conducted a baseline survey of 100 members of the public who were shown the same ten statements without an expert's opinion, 12 days before the main survey. This baseline survey provides insights into how the opinions of experts and the public compare (Table 1, cols 1 – 4). We follow Sapienza and Zingales (2013) and define the distance in opinion between experts and the public as the absolute difference in the proportions agreeing. The average distance is 0.27 (Table 1, col 5), compared to 0.35 in Sapienza and Zingales (2013). There is close alignment between experts and members of the public on some issues (Twitter, NetZero, Semiconductors and Economic Policy) and greater distances on others (Price Gouging, Greedflation). There is mixed support for Sapienza and Zingales' (2013) conclusion that expert opinions are "more distant from those of the US population on those topics where economists agree the most among themselves" (see Appendix, Figure A1). There is a high level of expert certainty on Gouging and Greedflation, where expert opinion is more distant

from the public's. However, on Semiconductors, and to a lesser extent Economic Policy, experts are equally certain, but their views are almost identical to those of the public.

Balanced sub-panel

For the experiment, we constructed a gender- and opinion-balanced sub-panel of opinions. First, we identified the opinions of all female panel members who responded to each statement. There are, for example, two female opinions on the Windfall Tax and six female opinions on Junk Food. Second, for each female opinion/ statement, we identified all potential male matches, i.e. all male EEP members with the same (Likert scale) response to that statement. On Artificial Intelligence, for example, Marianne Bertrand ("Agree") has 16 potential male matches (also "Agree"). Finally, from this set of potential male matches for each female opinion, we randomly select one male "pair" to be on the balanced sub-panel.

This process generated a gender- and opinion-balanced sub-panel of 72 expert opinions (36 female opinions, balanced with 36 male opinions) across the ten statements. The full distribution of experts/ opinions in the sub-panel is shown in the Appendix (Table A1). Table 1, cols 6 and 7, provide summaries of the opinions of the sub-panel. Comparisons of cols 1 and 2 and cols 6 and 7 show how the opinions of the sub-panel differ to those of the full EEP. The distance measure in Table 1, col 10 indicates that the opinions of the sub-panel are further away from baseline public opinion than the opinions of the full EEP (0.39 compared to 0.27).

The survey experiment

We worked with a leading US survey company, Qualtrics, and the participant recruitment service, Prolific. The survey was run in June-July 2023. We targeted a gender-balanced sample of 3,000 people and achieved 3,027 respondents. Looking at other characteristics of respondents, the sample is younger and better-educated than the US population (see Appendix A2). We discuss the implications of this in section 5.

A full draft of the survey is available in the Appendix. In the introduction to the survey, respondents were told the following:

> *This is a survey to collect opinions from members of the public on economic policy issues. Everyone is affected by what is happening in the economy – so we want to know what you think about the issues. The real-world topics covered by the questions include climate change,*

twitter and artificial intelligence, so you don't need a background in economics – just give us your opinion.[6]

After being asked for background information (gender, age, education, partisan affiliation and self-assessed economics knowledge), respondents were shown the ten statements in turn, preceded by this text:

You will now see ten statements about topical, economic policy issues and you will see the opinion of an expert economist who has been asked the same question, for comparison. We would like to know your opinion on the issues. There are no right or wrong answers. Tell us, for each of the statements whether you agree/ disagree or are uncertain.

Members of the public were asked for their opinions on each of the statements in the same way as the experts, i.e. on a Likert scale. They were shown the opinion of one expert, randomly selected from the gender- and opinion-balanced sub-panel, together with the expert's name, institutional affiliation and image (see Figure 1). The images, taken from the EEP website, were included in order to increase the salience of gender. Overall, 50 per cent of the expert opinions seen by respondents were from female experts. We confirm that the experts' opinions are balanced across the respondents who saw male and female experts (Table A2, Appendix).

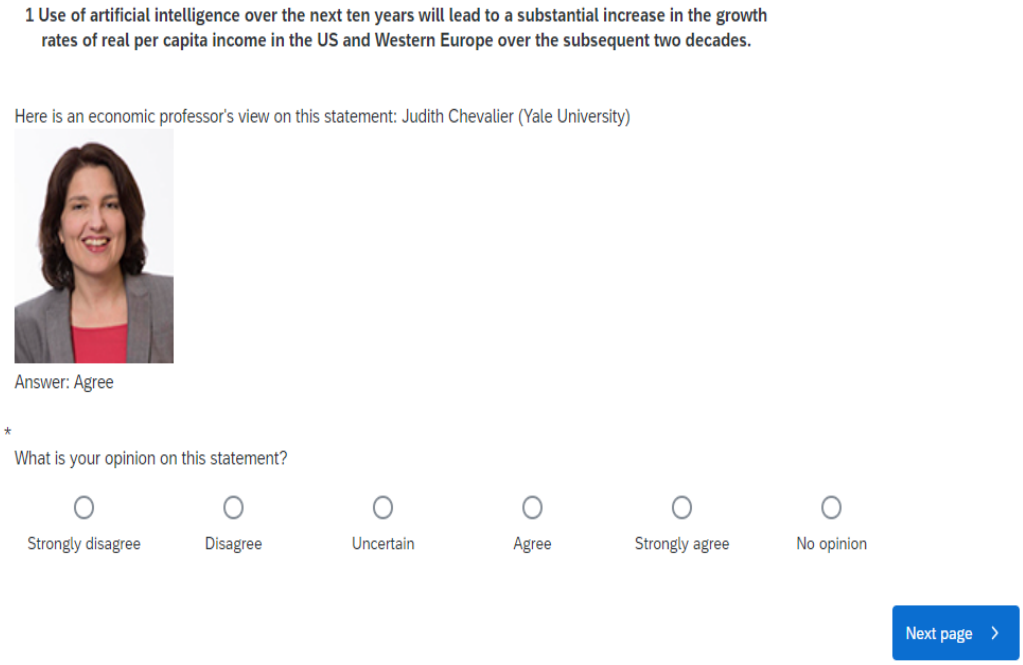
3. Can experts persuade the public?

We first investigate whether seeing the opinion of an expert affects the views expressed by members of the public. Table 1, cols 10 and 11, give a preliminary indication of persuasion – the average distance narrows from 0.39 (comparing the opinions of the sub-panel with baseline public opinion) to 0.33 (comparing the opinions of the sub-panel with the opinions of members of the public who saw the expert opinions). However, our formal test of persuasion exploits within-statement variation, i.e. we

[6]The design of the survey experiment was given ethics approval by the University of Bristol School of Economics ethics committee and was registered with the AEA RCT registry (AEARCTR-0011764). The introduction informed respondents how the data would be securely stored and the legal basis for collecting and processing the data: *The answers will be used for research purposes. Your participation in the survey is voluntary and you can stop at any stage. You may withdraw your participation at any time by sending an email with your participant ID to sarah.smith@bristol.ac.uk and we will delete all data recorded on this ID. We will ask you questions about your background, including age, ethnic origin, and gender. You can choose not to answer a specific question if you prefer not to. All data will be stored anonymously and securely at the University of Bristol, and only members of the research team will be able to access it. The legal basis for collecting and processing this information is legitimate interest (Article 6(1)(f)) of the General Data Protection Regulation 2018). We will never publish any information that could let people figure out who you are. In line with best practice for research, once our study is finished, we will securely archive your information (without any personal information) for other researchers to use in the future.*

compare the opinions of members of the public who saw a different expert opinion on the same statement.

Figure 1: How the statements and expert opinions were presented in the survey



We estimate the following specification:

$$L_{iq} = \alpha + \beta_1 XStrDis_{iq} + \beta_2 XDis_{iq} + \beta_3 XAgr_{iq} + \beta_4 XStrAgr_{iq} + \varphi_q + u_i + \varepsilon_{iq} \qquad (1)$$

Where L_{iq} is the Likert score (rescaled from -2, 2) of respondent *i* on statement q. On the right- hand side is a set of indicators (*XStrDis, XDis, XAgr* and *XStrAgr*) for whether the expert opinion seen by the respondent is Strongly Disagree, Disagree, Agree or Strongly Agree (relative to Uncertain). φ_q and u_i are statement- and respondent fixed effects respectively. We estimate this specification using the linear regression in Stata version 18.0 with the command reghdfe (Carreia, 2020), clustering the standard errors at the respondent level. Full regression results, together with results from an ordered logit regression, are reported in the Appendix (Table A4). If β_1 to β_4 are estimated to be different to zero it indicates that experts are able to persuade (some of) the respondents. The coefficients, plotted in Figure 2, panel A, show that the individual expert opinion seen by the respondent has an effect on their response. Respondents who see an expert opinion that is (Strongly) Agree or (Strongly) Disagree are more likely themselves to (Strongly) Agree or (Strongly) Disagree.

We also estimate a linear specification:

$$L_{iq} = \alpha + \gamma XL_{iq} + \varphi_q + u_i + \varepsilon_{iq} \quad (2)$$

where XL_{iq} is the Likert score (between -2, 2) corresponding to the opinion of the expert seen by the individual for that statement. Estimates of the coefficient γ, which captures the degree of persuasiveness of experts,[7] can be compared across different issues and across sub-groups in our sample.

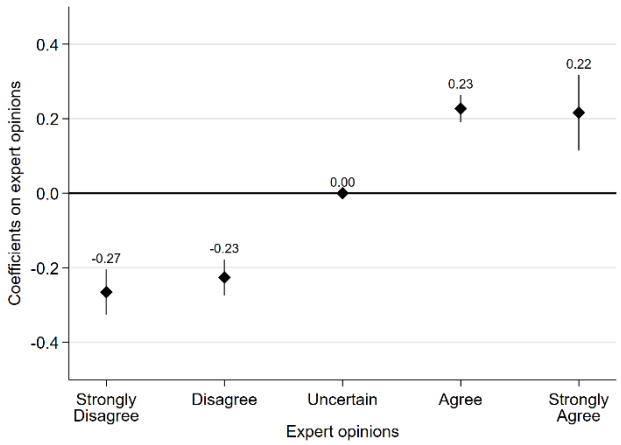
We first pool all responses and then estimate the specification separately for each statement (excluding Semiconductors where there is no variation in expert opinion). The results are shown in Figure 2, panel B. On average, a one-point change on the Likert scale in expert opinion is associated with a 0.172 point change in public opinion, but there is variation in the coefficients, i.e. in the degree of persuasiveness, across statements. Expert opinions have no effect on public opinions about Greedflation, while there are stronger effects for Price Gouging, Financial Regulation and Economic Policy. There is support for the argument made by Della Vigna and Gentzkow (2010) that persuaders are more effective when receivers are less certain: The degree of persuasiveness is weaker on issues where baseline public opinion is more certain (see Appendix, Figure A2). The degree of persuasiveness is also stronger on issues where there is less distance between sub-panel expert opinion and baseline public opinion (see Appendix, Figure A2) – this suggests that experts may be perceived as less credible when their views are further out of line with those of the general public.

Figure 2, panel C compares expert persuasiveness across different sub-groups. The degree of persuasiveness is greater for men [p=0.002] and for non-whites [p=0.000]. It is also greater for those with a degree [p=0.000] and for those with higher self-reported economics knowledge [p=0.000] – both of these groups may be more certain initially, but also see economics experts as more credible. Those who identify as Republicans are also more persuaded by economists' opinions than Democrats/Independents [p=0.030]. This result is at odds with the notion that those who align with the right-wing are more sceptical of expertise (Haniman, 2023); however, to the extent that economists as a group are seen as right-wing, they may be perceived as more credible by Republicans.

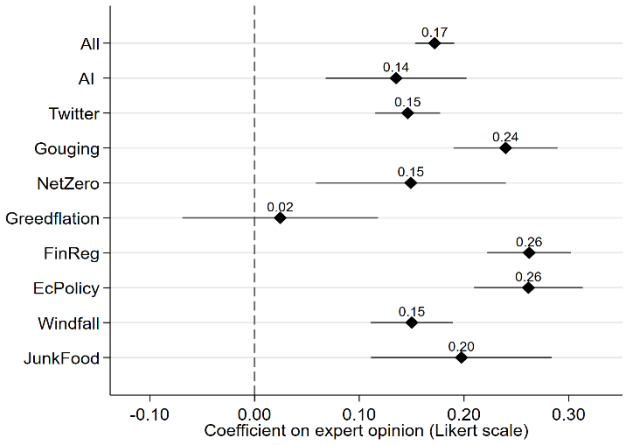
[7] This has parallels with the "persuasion rate" defined by Della Vigna and Gentzkow (2010).

Figure 2: The effect of expert opinions on the public
Outcome = Public Likert response [-2,2]

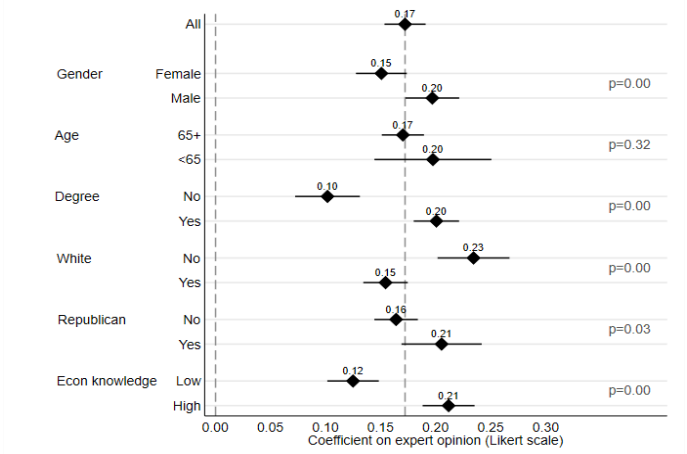
(a) Overall effects



(b) Issue-specific effects



(c) Effects on sample sub-groups



Notes: The chart shows regression coefficients from an OLS estimation of equation (1) (panel a) and equation (2) (panel b and c). In panel (a) the treatment is the expert opinion as a categorical variable. In panel (b) and (c) the treatment is the expert opinion on the same Likert scale from -2 to 2. -2 is for "Strongly Disagree" and 2 is for "Strongly Agree". The lines show 95% confidence intervals, based on standard errors clustered at the respondent level. N= 29,705.

4. Testing for a gender gap

To test whether an expert's gender affects their persuasiveness, we estimate the following specification:

$$Match_{iq} = \alpha + \delta FemX_{iq} + \varphi_q + u_i + \varepsilon_{iq} \quad (3)$$

Match is a binary indicator if the opinion of respondent *i* matches, on the 5-point Likert scale, the opinion of the expert for statement *q*. *FemX* is an indicator if the respondent sees a female expert. Given the balance in opinions across male and female experts, the coefficient δ captures the differential effect of seeing an opinion expressed by a female expert compared to seeing the same opinion expressed by a male expert. This measure equates to the difference (in percentage points) in the persuasion rates (Della Vigna and Gentzkow, 2010) between the opinions of male and female experts.[8]

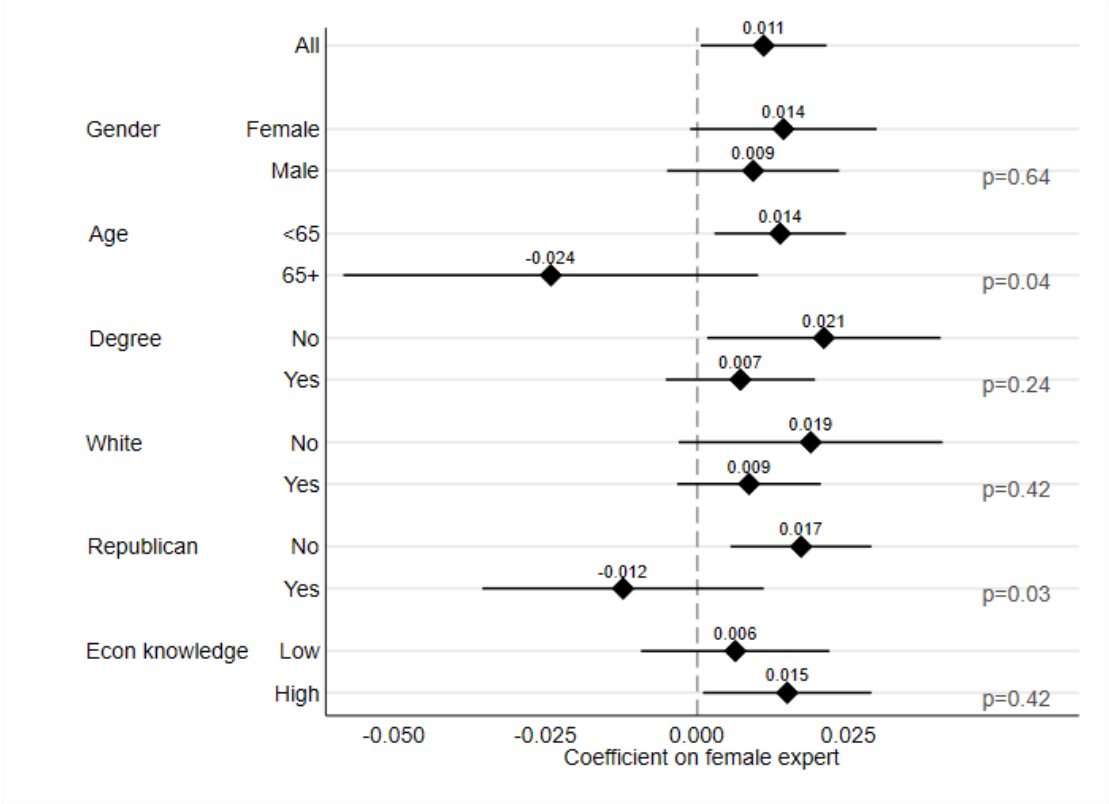
Results are shown graphically in Figure 3 (first bar) and summarized in Table 2. The estimated coefficient is +0.011 [p=.038] i.e. members of the public are 1.1 percentage points *more* likely to match with the opinion of a female expert than with the same opinion expressed by a male economist. We also report regression results using a "broad match" outcome measure, based on a collapsed, 3-point Likert scale (Table 2, col 2) and using a "distance" outcome measure, based on the absolute gap between the respondent's and the expert's responses on the 5-point Likert scale (Table 2, col 3). Both of these specifications show a positive effect of seeing the opinion of a female expert.

Further analysis shows that members of the public are more likely to match with the opinion of a female expert across different Likert responses – female experts are more persuasive when they express opinions that are "Uncertain", "(Strong) Agree", "(Strong) Disagree", "Strong Agree/ Disagree" and "Agree/Disagree" (see Appendix, Table A4). We run "leave-one-out" regressions to confirm that the effect is not driven by a single, female expert nor by any single statement (see Appendix, Figures A4 and A5). We also confirm that the result is not due to respondents being more likely to see an individual female expert for a second time (compared to an individual male expert) by dropping any statements for which the respondent does not see an individual expert for the first time (Appendix, Figure A6).

[8] When everyone receives the message, Della Vigna and Gentzkow (2010)'s persuasion rate $\mathrm{f} = \frac{\mathrm{y}^{\mathrm{T}} - \mathrm{y}^{\mathrm{C}}}{\mathrm{y}^{0}}$ where y^{G} is the share of (Treatment/ Control) group G adopting the behavior of interest, and y^{0} is the share that would adopt if there were no message. In our case, we estimate $\mathrm{y}^{\mathrm{F}} - \mathrm{y}^{\mathrm{M}}$ for groups who see female (F) and male (M) experts. We do not observe y^{0} in our study.

Figure 3: Differential effect of seeing a female expert's opinion

Outcome = Public opinion matches with the expert opinion (0/1)



Notes: The chart shows regression coefficients from an OLS estimation of equation (3). The outcome is an exact match (0/1) on a 5 point Likert scale between the opinion of the respondent and the expert's opinion. P-values are for the nulhypothesis that the effect is the same across groups, based on, based on standard errors clustered at the respondent level. N= 29,705. Significance is indicated at the following levels * p<0.1 ** p<0.05 *** p<0.01.

How big is the estimated effect? The match rate among those who see a male expert opinion is 33.5 per cent. However, this does not take account of coincidental matches who would "match" even if they did not see the expert opinion.[9] The share of coincidental matches is unknown in our case; we therefore instead compare the degree of persuasiveness between the opinions of male and female experts by including an interaction term ($FemX\_XL_{iq}$) in specification (2):

$$L_{iq} = \alpha + \beta_1 XL_{iq} + \beta_2 FemX\_XL_{iq} + \beta_3 FemX_{iq} + \varphi_q + u_i + \varepsilon_{iq} \qquad (4)$$

The coefficient β_2 captures the differential effect of seeing a female expert's opinion, relative to the effect of seeing the same opinion of a male expert (β_1). The results (Table 2, col 4) show that female expert opinion has an additional effect of +0.033, relative to an effect of male expert opinion of 0.155.

[9] Corresponding to y^0 in Della Vigna and Gentzkow's persuasion rate.

Together these results imply that the degree of persuasiveness of female expert opinions is around 20 per cent higher.

Table 2: Differential effect of seeing a female expert's opinion (OLS results)

Dependent variable =	(1) Match	(2) Broad Match	(3) Distance	(4) Public Likert	(5) Match	(6) Match	(7) Match	(8) Match
Female Expert	0.011**	0.014**	-0.025**	-0.011	0.019***	0.015***	0.027***	0.032**
	(0.005)	(0.006)	(0.011)	(0.013)	(0.006)	(0.005)	(0.009)	(0.016)
Expert Likert				0.155***				
				(0.011)				
Female Expert X Expert Likert				0.033***				
				(0.013)				
Cheerful Expression (0/1)						0.008	0.011	
						(0.008)	(0.008)	
Professional Photo (0/1)						-0.015*	-0.013	
						(0.009)	(0.009)	
(Expert post-PhD age) / 10							0.006	
							(0.005)	
(# Newspaper cites) / 100							0.008**	
							(0.003)	
Female Expert X Male								-0.008
								(0.011)
Female Expert X Age 65+								-0.035*
								(0.019)
Female Expert X Degree								-0.016
								(0.012)
Female Expert X High Econ								0.017
								(0.011)
Female Expert X White								-0.006
								(0.013)
Female Expert X Republican								-0.032**
								(0.013)
Statement FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Respondent FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Expert Institution FE	No	No	No	No	Yes	No	No	No
Constant	0.336***	0.446***	1.075***	0.388***	0.332***	0.341***	0.310***	0.336***
	(0.003)	(0.003)	(0.005)	(0.007)	(0.003)	(0.010)	(0.022)	(0.003)
N	29705	29705	29705	29705	29705	29705	29705	29043

Notes: The table shows regression coefficients from an OLS estimation of equation (3), except column (3) which shows results from estimating equation (4). Match = 1 if the respondent matches exactly with the expert on the 5-point Likert scale. Broad match = 1 if the respondent matches with the expert on a collapsed 3-point Likert scale (Disagree, Uncertain, Agree). Distance is the absolute distance between respondent's and expert's opinions on a 5-point Likert scale. The parentheses show standard errors clustered at the respondent level. Significance is indicated at the following levels * p<0.1 ** p<0.05 *** p<0.01

Ruling out confounding characteristics

As well as seeing the gender of the expert, respondents also see the expert's institutional affiliation and an image (as in Figure 1). We can rule out that the greater persuasiveness of female experts is attributable to their institutional affiliation – our main finding is robust to including institution fixed

effects (Table 2, col 5).[10] Our results are also robust to including controls for features of the photos. We ask ChatGPT for descriptions of the photo (examples below) and use the descriptions to create indicators for the expression of the expert (=1 if the expert is described as smiling) and the photo type (=1 if the photo is described as professional). The results (Table 2, col 6) show that the effect of female expert opinions remains positive when we control for features of the photos in this way. The gap increases when we control for expert age (post-PhD) and for the expert's media presence, captured by a count of the number of appearances (as cited expert or author) in a set of widely-circulated US newspapers[11] (Table 2, col 7).

Chat GPT descriptions of the images (bold highlights words used to define expression and photo type)

The photo shows an individual with shoulder-length hair, **smiling** and facing the camera. The person is wearing **professional** attire: a grey blazer over a red top. The background is plain and light-colored, which is commonly used in **professional** headshots to keep the focus on the individual. This type of image is typically used for **business profiles, academic websites, or corporate directories,** where a clear and approachable image of the individual is desired.

In the photo, there is a person who appears to be a balding man with short hair on the sides. He is wearing a casual white t-shirt with blue trim around the neckline and on the sleeves. The background is a mottled blue, suggesting it might have been taken in front of a studio backdrop, which could indicate a **casual or informal portrait setting.** His expression is **neutral** and he seems to be looking directly at the camera.

Identity concordance?

Figure 3 shows results from estimating equation 3, interacting the female expert indicators with respondent demographic indicators (respondent = male, respondent = aged 65+, respondent = white, respondent = hasdegree, respondent = above average self-reported economics knowledge, respondent = republican). The results, also reported in Table 2, col 8, show a stronger positive effect of seeing a female expert for female respondents, but no difference in the additional effect of female experts' opinions between male and female respondents.

We do, however, find evidence of heterogeneity in the estimated effect. The additional effect of seeing a female expert's opinion on the probability of matching is wiped out among respondents who might

[10] The experts in our sub-panel are from seven institutions – Berkeley, Chicago, Harvard, MIT, Yale, Princeton, Stanford. There is a mix of female and male experts from five of these.

[11] The newspaper sources are: New York Post, NYTimes.com Feed, Washington Post.com, The Wall Street Journal Online, Tampa Bay Times, Chicago Tribune, Star-Tribune, USA Today. We count expert appearances from 2011-2023.

be thought of as being more conservative (those aged 65+ and those who align themselves with the Republican party).

5. Discussion

Our study has two empirical findings. First, that expert economists' opinions were able to persuade the members of the public in our study, on a range of topical issues. Second, that the opinions of female experts were more persuasive, compared to the same opinions being expressed by male experts.

To what extent can we generalise these findings? We have no reason to believe that the additional persuasive effect of female experts would be reversed in the wider population. Our sample is less conservative than the US population (younger and less likely to align with the Republican party) and this would tend to amplify the additional persuasiveness of female experts in our sample compared to the population. However, the proportions with a degree, and who are white, are also higher in our sample and both these would reduce the additional persuasiveness of female experts, compared to the population (see Appendix, Table A5).[12]

Given that there is widespread evidence of discrimination against female experts, likely due to stereotyped beliefs, our findings may be surprising to some. In the introduction we suggested two potential explanations – first, that credentials can undo stereotyped-belief based discrimination by signalling expertise, and may do so more strongly for female experts, and second, that a general belief that women are less confident/more uncertain in expressing an opinion could lend more credibility to female experts' opinions. We are not able to pin down exactly why the female economists in our study are more persuasive, but several pieces of evidence point to the former explanation.

The first piece of evidence is that our findings are consistent with previous studies that find that discrimination against junior experts is reversed at senior levels (Booth et al, 1999; Mengel et al, 2018) and undone by credentials of expertise (Bohren et al, 2019; Ayalew et al, 2021). By contrast, there is evidence that awareness of the gender confidence gap does not affect how people evaluate men and women's self-reported performance (Exley and Neilsen, 2024). This begs the question of why credentials are more likely to prompt Bayesian updating of female experts' credibility, compared to awareness of the gender confidence gap. Exley and Neilsen (2024) suggest that there is an "attention problem" in the latter case, i.e. when they are asked about male/female confidence, people know that there is a gender gap but they do not think about this gap when they evaluate male and female

[12] Although our results are for the US, economics tends to be male-dominated in countries for which there is data, including North and South America, Australia, New Zealand, China, Japan and most of Europe (CSWEP, 2021; Hanspach, Sondergerld and Palka, 2021; Auriol, Friebel, Weinberger and Wilhelm, 2022)

performance. By contrast, in our study, the experts' credentials are present – and salient – when people are shown their opinion.

A second piece of evidence is the finding that the opinions of female experts have greater persuasiveness even when they are "Uncertain" (Appendix, Table A4). The gender confidence gap would tend to imply that women are more likely than men to say that they are Uncertain (Sarsons and Xu, 2021; Sievertsen and Smith, 2022) and therefore that greater credibility likely applies only to a certain opinion, i.e. one of Strongly Agree, Agree, Disagree or Strongly Disagree.

What are some of the implications of our findings? Our finding that senior female economists are more persuasive is not evidence of no discrimination against female expertise. In fact, as argued by Bohren et al (2019), it may be the opposite: The fact that credentials confer greater authority on women may come as a direct consequence of negative discrimination at lower levels.

However, our study suggests a more positive picture of the market for public expertise compared to previous studies. First, we find that economists can persuade the public. Second, we find a positive "authority gap" for senior female economists alongside the negative gender gap in economics expertise in the public sphere. This means that, although women's voices are less likely to be heard in public debate, they are more persuasive. However, this also points to a puzzle. Although the supply-side gap may potentially explain the authority gap, it begs the question of why senior female economists are less confident in giving their opinion if they have at least equal credibility in the eyes of members of the public. This remains an open question.

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Online Appendix

Figure A1: Expert versus public opinion

Sapienza and Zingales (2013) find that expert opinions are "more distant from those of the US population on those topics where economists agree the most among themselves." The figure below plots the measure of *Expert-public distance* used by Sapienza and Zingales (the absolute difference in the proportions of public/experts who agree with the statement) against a measure of *Expert Certainty-weighted Consensus*, equal to the proportion of experts who express an opinion multiplied by the proportion expressing the modal (agree/ disagree) opinion. The line of best fit is upward sloping, lending some support to Sapienza and Zingales' finding. However, the estimated coefficient (0.71) is not statistically significant at conventional levels (p=0.282). There are some issues such as Semi-conductors and, to a lesser extent, Economic Policy, where the experts have a high degree of certainty/consensus in their views, but those views align with the opinions of the public.

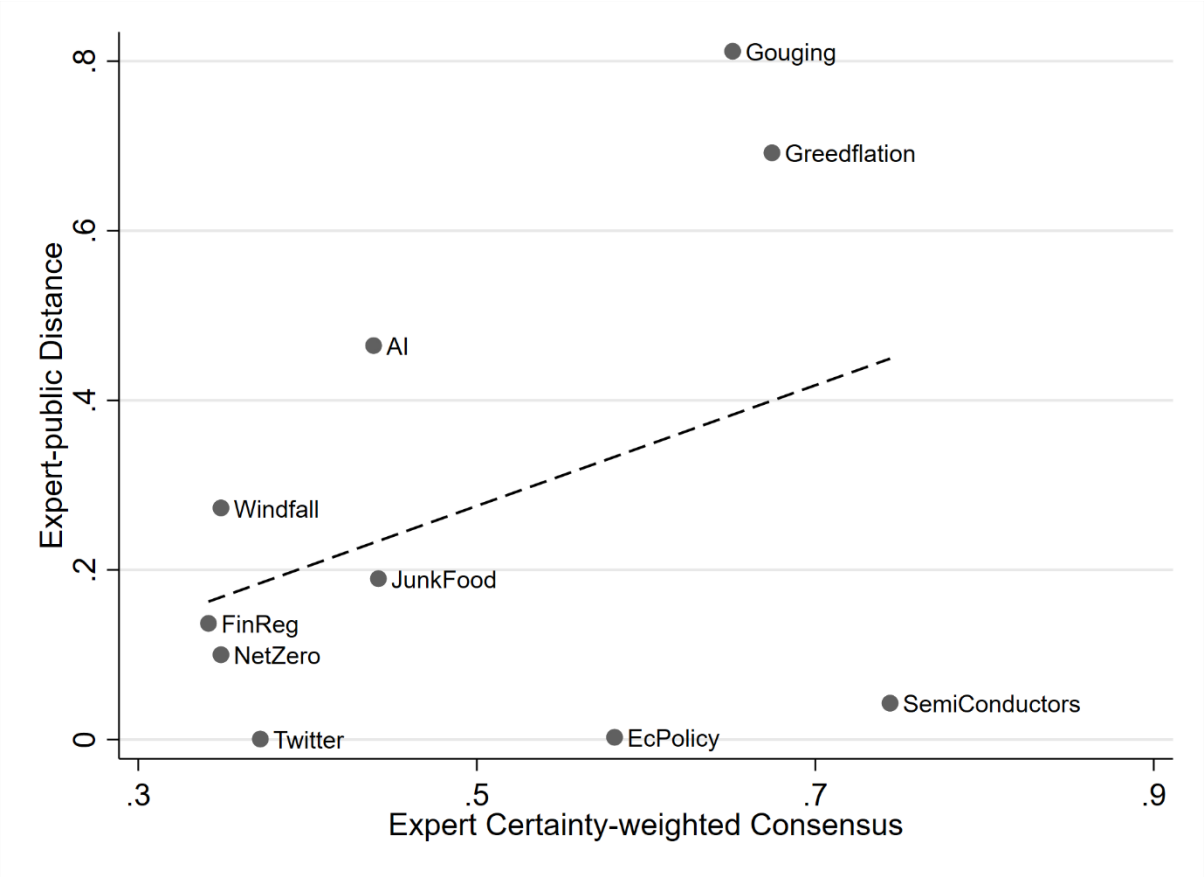
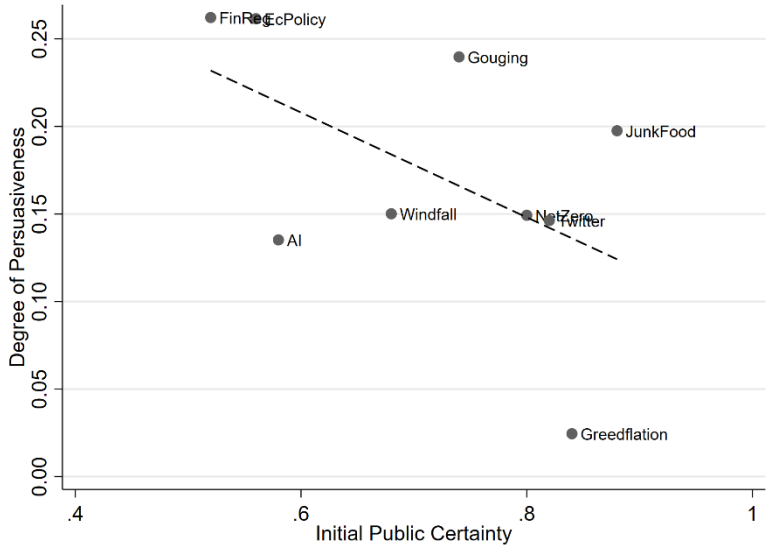


Figure A2: Persuasiveness versus initial public certainty and expert-public distance

This figure plots the degree of persuasiveness (estimated from equation 2, shown in Figure 2, panel b) against initial public certainty (panel a) and expert-public distance (panel b). Public certainty is equal to the share of the public giving a substantive opinion on each issue in the baseline survey (Table 1, col 3). Distance is measured as the difference in proportions agreeing between the public (baseline, no expert) and the experts (sub-panel), i.e. the distance measure in Table 1, column (10). Persuasiveness is negatively related to the share of the public expressing an opinion at baseline (OLS coefficient = -0.29 [p=0.15]) and to the distance between expert opinion and (average, baseline) public opinion (OLS coefficient = -0.17 [p=0.06]).

Panel a: Initial public certainty



Panel b: Initial distance

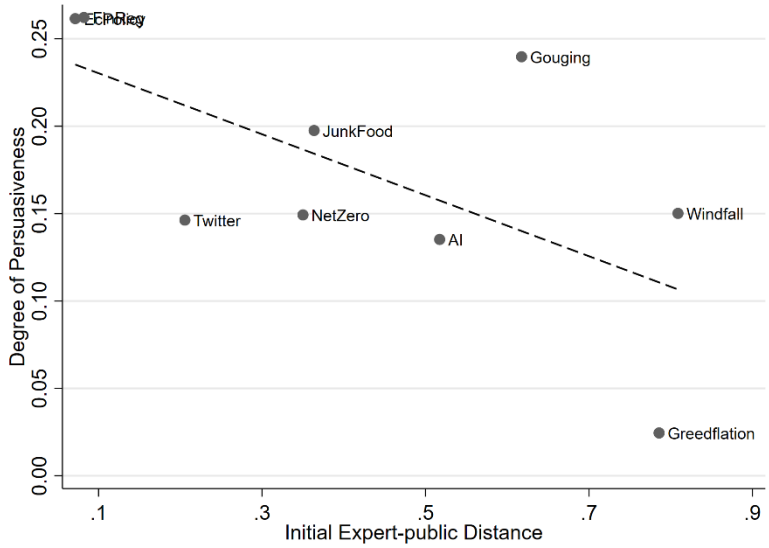
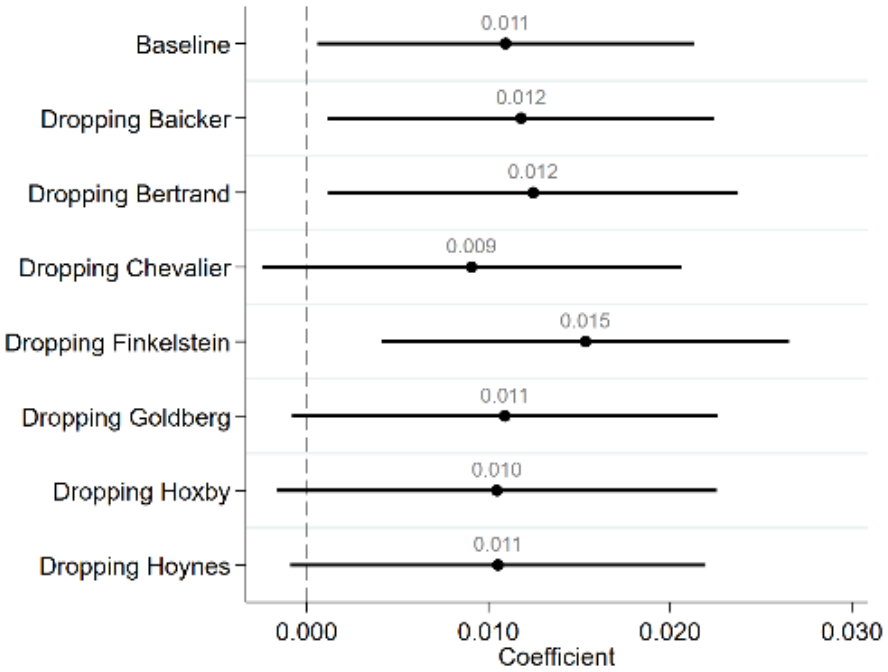
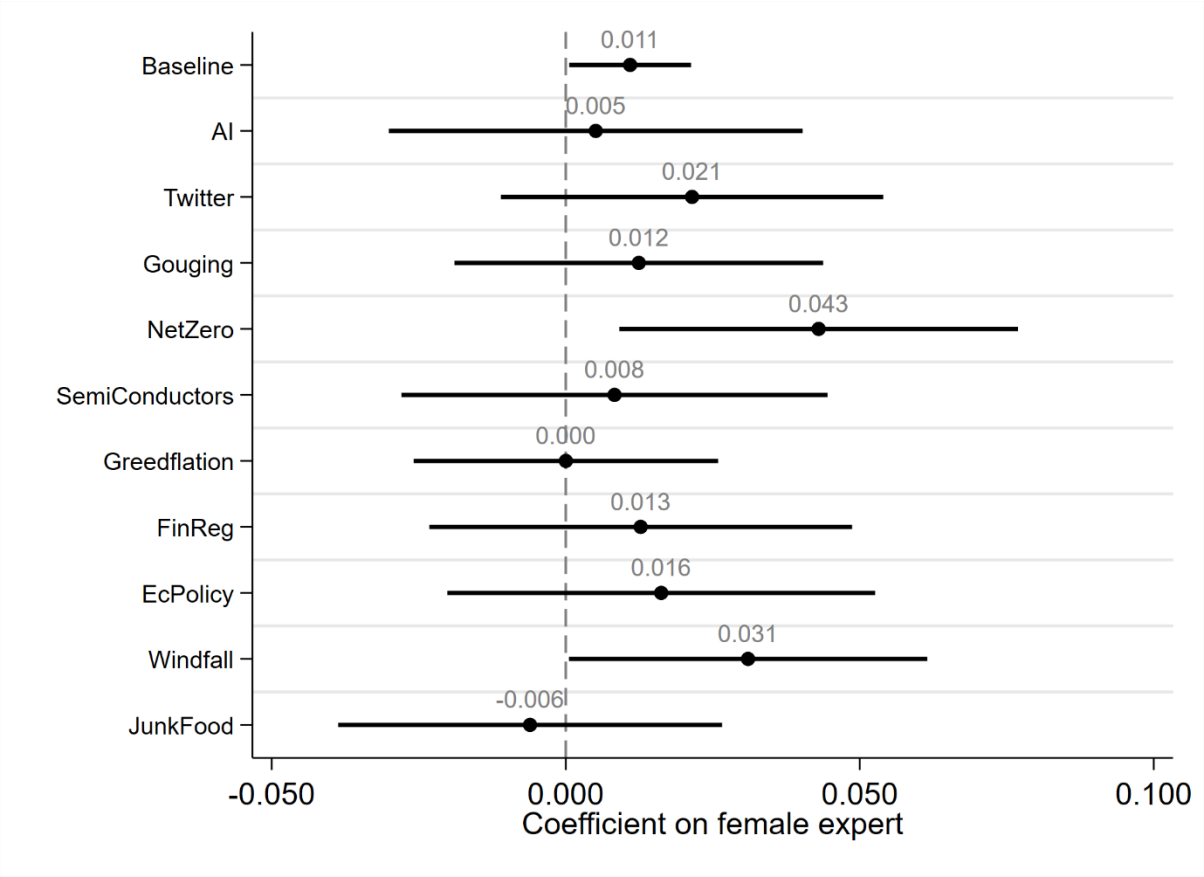


Figure A3: Leave-one-expert out results



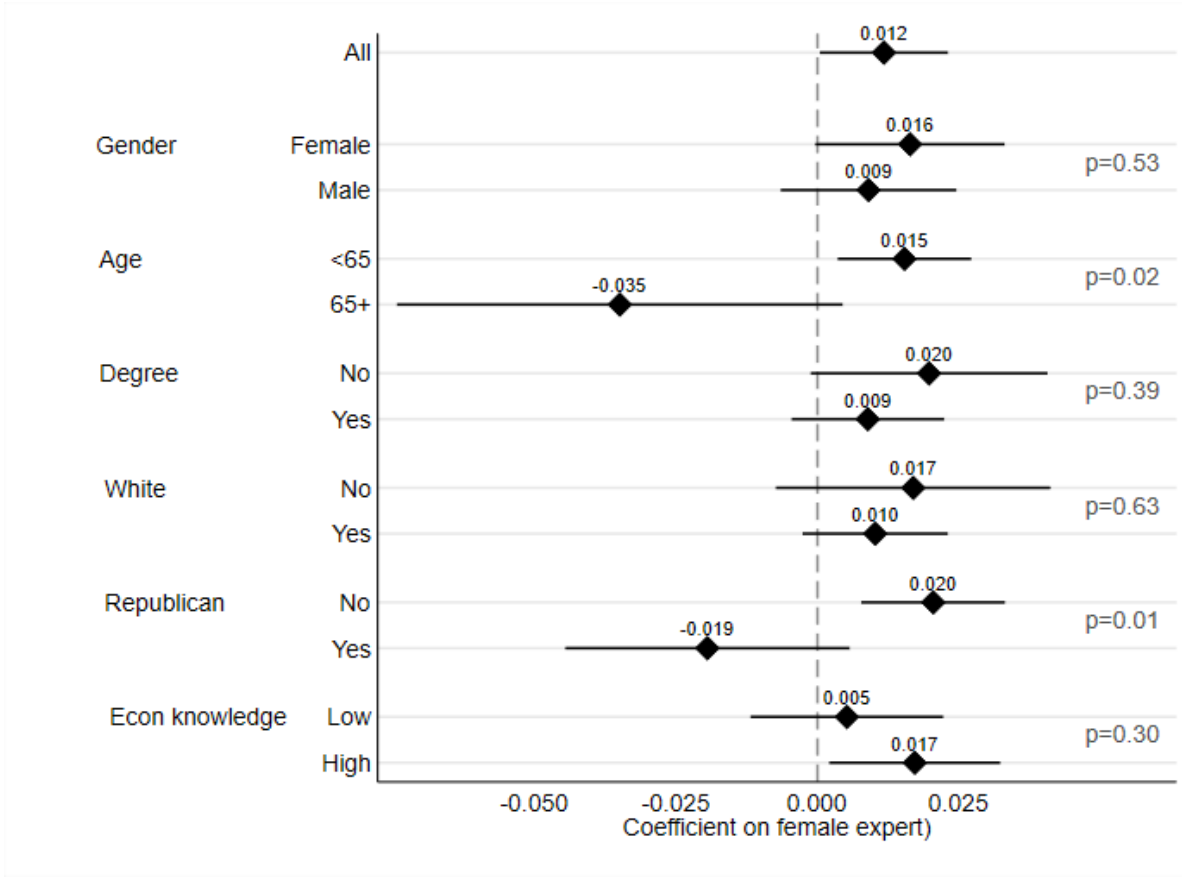
Notes: The chart shows regression coefficients from an OLS estimation of equation (3). When dropping a given female expert we randomly drop a male expert with a matching opinion and question combination, to maintain a balanced sample. The lines show standard errors clustered at the respondent level.

Figure A4: Leave-one-statement out



Notes: The chart shows regression coefficients from an OLS estimation of equation (3). The lines show standard errors clustered at the respondent level.

Figure A5: Only consider the first time an individual expert is observed



Notes: The chart shows regression coefficients from an OLS estimation of equation (3). The sample is restricted to the first time a respondent sees a particular individual expert (eg if one of the experts re-appears, that observation and all subsequent observations for that individual are dropped). P-values are for the nul hypothesis that the effect is the same cross groups, based on, based on standard errors clustered at the respondent level. N= 24,949.

Figure A6: Expert photos (from EEP website)

Acemoglu		Edlin		Kashyap	
Altonji		Eichengreen		Levin	
Auerbach		Fair		Maskin	
Autor		Finkelstein		Nordhaus	
Baicker		Goldberg		Saez	
Banerjee		Greenstone		Samuelson	
Bertrand		Hart		Schmalensee	
Brunnermeier		Holmstrom		Shapiro	
Chevalier		Hoxby		Shimer	
Deaton		Hoynes		Stock	
Duffie		Judd		Thaler	

Table A1: Expert opinions in the gender- and opinion-balanced sub-panel

	Strongly Disagree	Disagree	Uncertain	Agree	Strongly Agree	N
AI			Auerbach Fair Goldberg Hoxby Hoynes Kashap	Altonji Bertrand Brunnermeier Chevalier		10
Twitter		Chevalier Judd			Deaton Hoxby	4
Gouging		Autor Baicker Chevalier Holmstrom Hoxby Maskin	Eichengreen Goldberg	Bertrand Duffie		10
NetZero		Bannerjee Chevalier Edlin Finkelstein	Hoynes Levin			6
SemiConductors				Bertrand Goldberg Holmstrom Hoynes Nordhaus Schmalensee		6
Greedflation	Hoxby Shimer	Finkelstein Goldberg Saez Saez				6
Fin Reg		Chevalier Samuelson	Goldberg Shapiro	Bertrand Schmalensee		6
Economic Policy			Chevalier Greenstone Hart Hoynes	Acemoglu Bertrand Eichengreen Goldberg		8
Windfall	Hoxby Thaler		Auerbach Hoynes			4
JunkFood			Baicker Finkelstein Hoxby Levin Shimer Stock	Acemoglu Bertrand Brunnermeister Goldberg Hoynes Samuelson		12
N	4	18	24	24	2	72

Notes: The female panel members are Baicker, Bertrand, Chevalier, Finkelstein, Goldberg, Hoynes and Hoxby. Note that Saez' name deliberately appears twice for Greedflation – he was randomly selected from potential matches for both Finkelstein and Goldberg. For further details on all the panellists see: Panelists - Clark Center Forum (kentclarkcenter.org)

Table A2: Balance tests

	(1) Female Expert (0/1)	(2) Expert Likert [-2,2]	(3) Female (0,1)	(4) Age 65+ (0,1)	(5) Degree (0,1)	(6) White (0,1)	(7) Republican (0,1)	(8) Econ Knowl (1,10)
Full sample	0.50	[0.43]	[0.23]	[0.50]	[0.53]	[0.65]	[0.01]	[0.68]
By question								
AI	0.49	[0.79]	[0.63]	[0.51]	[0.00]	[0.93]	[0.83]	[0.79]
Twitter	0.51	[0.89]	[0.56]	[0.43]	[0.36]	[0.95]	[0.31]	[0.80]
Gouging	0.52	[0.90]	[0.53]	[0.96]	[0.08]	[0.56]	[0.02]	[0.33]
NetZero	0.49	[0.63]	[0.09]	[0.48]	[0.53]	[0.26]	[0.04]	[0.35]
SemiConductors	0.51	[1.00]	[0.53]	[0.53]	[0.84]	[0.54]	[0.62]	[0.17]
Greedflation	0.50	[0.80]	[0.12]	[0.88]	[0.65]	[0.09]	[0.95]	[0.04]
Financial reg	0.51	[0.88]	[0.80]	[0.81]	[0.97]	[0.99]	[0.39]	[0.76]
EconomicPolicy	0.51	[0.25]	[0.07]	[0.44]	[0.81]	[0.36]	[0.08]	[0.84]
WindfallTax	0.51	[0.46]	[0.19]	[0.10]	[0.66]	[0.24]	[0.71]	[0.88]
JunkFood	0.49	[0.03]	[0.18]	[0.29]	[0.07]	[0.93]	[0.22]	[0.64]
Sample means		-.05	0.50	0.07	0.71	0.77	0.20	5.43
US population means		-	0.49	0.17	0.45	0.71	0.29	-
N	3027	3027	3027	3027	3027	3027	3027	3027

Notes:

Column (1). Female expert = Proportion of respondents who saw the opinion of a female expert. Columns (2) – (8). P-values for test for difference in means across respondents who saw a female/ male expert.

US population means taken from US Census Bureau except for political alignment (The 2020 electorate by party, race, age, education, religion: Key things to know | Pew Research Center).

Table A3: Can experts persuade the public?

Dependent variable = Likert response by public respondents (-2 to 2).

	(1) OLS	(2) OLS	(3) Ordered Logit
XStrDis	-0.266	-0.274	-0.416
	(0.031)	(0.033)	(0.057)
XDis	-0.226	-0.220	-0.386
	(0.025)	(0.024)	(0.040)
XAgr	0.227	0.231	0.406
	(0.019)	(0.018)	(0.029)
XStrAgr	0.216	0.219	0.505
	(0.052)	(0.052)	(0.096)
_cons	0.381	0.378	
	(0.012)	(0.013)	
Statement FE	Yes	Yes	Yes
Respondent FE	Yes	No	No
N	29705	29705	29705

Notes: The table shows regression coefficients from an OLS estimation of equation (1) (columns (1) and (2) and an ordered logit (column (3)). Coefficients from column (1) are plotted in Figure 2, panel a. The dependent variable is the public response on a scale from -2 to 2 and the treatment is the expert response as a categorical variable. -2 is for "Strongly Disagree" and 2 is for "Strongly Agree". The parentheses show standard errors clustered at the respondent level.

Table A4: Differential effect of seeing a female expert's opinion, by opinion response

Dependent variable = Public opinion matches with the expert opinion (0/1)

	Expert Disagrees/ Strongly Disagrees	Expert Uncertain	Expert Agrees/ Strongly Agrees	Expert Agrees/ Disagrees	Expert Strongly Agrees/ Strongly Disagrees
Female Expert	0.015	0.018	0.009	0.011	0.019
	(0.008)	(0.010)	(0.010)	(0.007)	(0.012)
_cons	0.223	0.368	0.424	0.357	0.165
	(0.006)	(0.007)	(0.007)	(0.005)	(0.008)
N	10815	8713	10177	16998	3994

Notes: The table shows regression coefficients from an OLS estimation of equation (3). We select sub-samples by the type of opinion of the expert. Strongly Agree and Strongly Disagree are pooled with other opinions because of small sample sizes. The parentheses show standard errors clustered at the respondent level.

Table A5: Weighted regressions

Dependent variable = Public opinion matches with the expert opinion (0/1).

	(1)	(2)	(3)	(4)	(5)
Female Expert	0.011	0.007	0.015	0.008	0.011
	(0.005)	(0.005)	(0.006)	(0.005)	(0.005)
Constant	0.336	0.335	0.328	0.335	0.338
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Mean Age65+	0.071	0.071	0.071	0.071	0.071
Mean Age65+ Weighted		0.170	0.071	0.074	0.068
Mean Degree	0.714	0.714	0.714	0.714	0.714
Mean Degree Weighted		0.715	0.450	0.710	0.717
Mean Republican	0.201	0.201	0.201	0.201	0.201
Mean Republican Weighted		0.208	0.213	0.290	0.195
Mean White	0.772	0.772	0.772	0.772	0.772
Mean White Weighted		0.787	0.784	0.783	0.710
Weighted by	None	Age65+	Degree	Republican	White

Notes: The chart shows regression coefficients from an OLS estimation of equation (3). The parentheses show standard errors clustered at the respondent level. In columns (2) to (5) we reweight the sample to match the population levels of respectively Old, Degree, Republican and White.