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Do female experts face an authority gap? Evidence from economics

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ABSTRACT

This paper reports results from a survey experiment comparing the effect of (the same) opinions expressed by visibly senior, female versus male experts. Members of the public were asked for their opinion on topical issues and shown the opinion of either a named male or a named female economist, all professors at leading US universities. There are three findings. First, experts can persuade members of the public – the opinions of individual expert economists affect the opinions expressed by the public. Second, the opinions expressed by visibly senior female economists are more persuasive than the same opinions expressed by male economists. Third, removing credentials (university and professor title) eliminates the gender difference in persuasiveness, suggesting that credentials act as a differential information signal about the credibility of female experts.

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 (Fourcade, 2009) and the opinions expressed by economists 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 Pitkanen, 2016; Jones, 2020). Recent evidence on the supply-side of the market for expertise has shown that senior female economists are less willing, and less confident, to give their opinion than their male counterparts (Sarsons and Xu, 2021; Sievertsen and Smith, 2024). The focus of this paper is on the demand side of the market for expertise and on whether female economists face an authority gap in the eyes of the public.

Experts' ability to persuade members of the public depends critically on their perceived credibility (Della Vigna and Gentzkow, 2010). There is widespread evidence of the credibility of female expertise being discounted and challenged. In many cases, discrimination comes from above, for example in academic reference letters (Baltrunaite et al., 2022; Eberhardt et al., 2023), in hiring decisions (Moss-Rascusin et al., 2012) and in promotion decisions (Sarsons et al., 2021). But there is also discrimination from below,

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for example in teaching evaluations (Boring, 2017; Mengel et al., 2019) and in responses to medical and financial advice (Prince et al., 2006; de Vaan and Stuart. 2022; Sarsons, 2017; Klein et al., 2021). 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., 2014; Hannick, 2023). In economics, a stereotypically male field, it might be expected that female experts are less persuasive.

However, as argued by Bohren et al. (2019), discrimination based on stereotyped beliefs can be undone and even reversed 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 may 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 female managers is undone by education credentials, while Rosette and Tost (2010), and Mengel et al. (2019) find that the discrimination faced by female academics at junior levels is reversed at senior levels. This suggests that visibly senior female economists could be more persuasive.

In this paper, we use an information provision experiment (Haaland, Roth and Wohlfart, 2023) to test whether the opinion about a topical policy issue expressed by a senior female economist is more, or less, persuasive than the same opinion expressed by a senior male economist. We run the same experiment twice – the first time, members of the public are shown credentials of expertise, the second time they are not.

We draw on an existing set of public opinions, expressed by members of the University of Chicago's Clark Centre Forum's Economist Expert Panel ("the panel").[2] The purpose of the panel, which has run since 2011, is to explore economists' views on current policy issues. The panel has a permanent set of 43 US-based members (seven of whom are women) who are invited to be on the panel as "distinguished experts with a keen interest in public policy from the main areas of economics."[3] All panel members are leading academic economists at highly ranked 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 experiments and constructed a sub-sample of the opinions of all female panel members, matched one-to-one by expert-issue to a male "pair" who expressed the same opinion. In our experiments, we surveyed 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. In both experiments, we included the expert's name and their photo from the panel website.[4] In the first experiment, we additionally included their title and their institutional affiliation, i.e. respondents are told that the named economist is a Professor at e.g. Harvard University. In the follow-up experiment, the public only knew the economist's name. Everything else about the two experiments is the same: Respondents were shown the same ten issues in the same order and were presented with a randomly selected opinion from the gender- and opinion-balanced sub-sample.

We first provide evidence that 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, 2016). Exploiting within-topic variation in panel members' opinions, i.e. comparing the effect on public opinion of seeing different expert views on the same topic, we show that the opinions of individual experts affect the views expressed by the public.

Turning to the effect of expert gender identity, the finding of the first experiment (with credentials) is that individual expert opinions are more persuasive when they are expressed by visibly 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, citations 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 Alsan 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.

[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] https://www.kentclarkcenter.org/us-economic-experts-panel/ For a selection of research papers drawing on the panel, see Sapienza and Zingales (2013), Gordon and Dahl (2013), Sarsons and Xu (2021), Nordhaus and Rivers (2023) , Sievertsen and Smith (2024).

[3] 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.

[4] 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 (2021) 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).

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

Could the authority gap be explained by experimenter demand effects? In the follow-up experiment we added further questions (after the experiment) asking respondents what they thought the survey was about. Fewer than five per cent mentioned expert gender in their responses. Moreover, the finding from the follow-up experiment (no credentials) is that the gender difference in persuasiveness disappears in the absence of credentials. The (overall) effect of the opinions of individual economists on the views expressed by the public is almost identical in the two experiments, but, when there are no credentials, female economists are no longer more persuasive. This finding provides support for the idea that credentials provide a different information signal about the credibility of female, compared to male, experts.

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 ("the panel"). 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, "Efforts to achieve the goal of reaching net-zero emissions of greenhouse gases by 2050 will be a major drag on global economic growth", 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".[6] All individual responses – and a summary – are made public via the panel website and are occasionally reported on by the 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 institution and, for each question answered, the opinion expressed. We assigned a binary gender identity based on the expert's 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" (years since PhD). We also compiled measures of public impact (the number of times that each expert had appeared in US national newspapers) and academic impact (the number of citations and H-Index from Google Scholar).

We chose ten recent statements to use in the experiment. These were manually selected from among those that had been asked within the past twelve months. We chose statements that covered a broad range of policy areas and a mix of technical/ non-technical issues (Johnston and Ballard, 2016, find that citizens give more weight to expert opinion on more technical issues). We also chose statements for which there was a mix of different responses from the experts, particularly from the female panel members.

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 panel members' opinions on these ten statements is shown in Table 1, cols (1) and (2).

2.1. Expert versus public opinion

We conducted a trial survey 12 days before the first experiment survey. We showed 100 members of the public the same ten statements but without an expert's opinion. This acts as a baseline, providing 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

[6] Panel members are also asked to say how confident they are in the topic (on a scale of 1-10) but, in the interests of increasing the power of our experiment, we chose not to reveal this information to the public. In any case, confidence is closely correlated with the opinion given (experts who strongly agree/ disagree are typically more confident in the topic).

Table 1
Expert versus public opinion.

	Experts: Full panel	Public: Baseline		Distance		Experts: Sub-panel		Public: Experiment		Distance	
	(1) Certain	(2) Agree	(3) Certain	(4) Agree	(5) |2 – 4|	(6) Certain	(7) Agree	(8) Certain	(9) Agree	(10) |7 – 4|	(11) |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
Observations	422	258	1000	712		30,270	21,492	30,270	21,794		

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 panel, 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. Experts: Full panel refers to the responses of all 43 US panel members. Experts: Sub-panel refers to the gender- and opinion-balanced sub-panel. In the Public: Baseline survey, conducted 12 days before the first experiment, respondents were not shown an expert opinion. The Public: Experiment survey refers to first experiment with credentials.

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). Sapienza and Zingales' (2013) conclude that expert opinions are "more distant from those of the US population on topics where economists agree the most among themselves." There is mixed support for this in our study. There is a high level of expert certainty on Gouging and Greedflation, where expert opinion is distant from the public's. However, on Semiconductors, and to a lesser extent Economic Policy, experts are also very certain, but their views are almost identical to those of the public. This is shown graphically in the Appendix, Figure A1.

2.2. Balanced sub-panel

For the experiment, we constructed a gender- and opinion-balanced sub-panel of opinions in the following way: 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 panel 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 selected 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 and Figure A2). 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 panel.[7]

2.3. The first experiment

We conducted the first survey experiment in June-July 2023. We worked with a leading US survey company, Qualtrics, and the participant recruitment service, Prolific. We targeted a gender-balanced sample of 3000 people and achieved 3027 respondents. Looking at other characteristics of respondents, the sample is younger and better-educated than the US population (see Appendix Table 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:

[7] The distance measure in Table 1, col 10 indicates that the opinions of the sub-panel are, on average, slightly further away from baseline public opinion than the opinions of the full panel (0.39 compared to 0.27). However, it is important to note that the opinion of the experts' sub-panel is typically underpinned by the views of a handful of female panel members (between two and six per statement).

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.[8]

After being asked for background information (gender, age, education, partisan affiliation and self-assessed economics knowledge), respondents were shown the ten statements, 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.

Respondents were asked to give their opinions on each of the statements in the same way as the experts, i.e. on a Likert scale. All respondents saw the ten statements in the same order but, for each statement, the opinion of one expert was randomly selected from the gender- and opinion-balanced sub-panel. Respondents saw the opinion of the expert, together with the expert's name, institutional affiliation and image (see Fig. 1(a)). The images, taken from the panel 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 (Appendix Table A2).

2.4. The follow-up experiment

In September 2024, we ran a follow-up survey experiment to test for a gender gap in the absence of credentials. We used the same platforms (Qualtrics and Prolific) and the same sampling approach to collect responses from 2003 members of the public.[9] Compared to the main survey, we made three changes. First, we removed the credentials of the experts, as shown in Figure 1(b). Second, after the respondents had given their opinions, we asked them "What do you think the researchers are interested in learning from this study?" in an open text question. This was done to ascertain possible experimenter demand effects. Third – and after this question – we asked respondents for their perceptions of male versus female expert. Specifically, we asked "Who do you think is likely to be: [more liberal/ more trustworthy/more confident/more expert]?" where the options were "Definitely male", "Probably male", "Equal, "Probably female", and "Definitely Female". We randomly varied whether the options started at female or male. There was no option for the respondents to go back to earlier questions during the survey.

In the subsequent presentation of results we use data from the main experiment only, unless otherwise stated.

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 respondents who saw an expert opinion). Our formal test of persuasion exploits within-statement variation, i.e. we compare the opinions of members of the public who saw a different expert opinion on the same statement.

We estimate the following specification:

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

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. 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. We estimate this specification using the linear regression in Stata version 18.0 with the command reghdfe (Correia, 2017), clustering the standard errors at the respondent level. The estimated coefficients are plotted in Fig. 2(a). They show that individual experts' opinion affect respondents' opinions. Respondents who see an expert opinion that is (Strongly) Agree or (Strongly) Disagree are more likely themselves to (Strongly) Agree or (Strongly) Disagree. Regression results, together with results from an alternative ordered logit specification, are reported in the Appendix (Table A3), also the full distribution(s) of public responses, by expert opinion, for each statement (Figure A2).

[8] The design of the survey experiments was given ethics approval by the University of Bristol School of Economics ethics committee and was registered with the AEA RCT registry (AEARCTR-0011764 and AEARCTR-0014234). 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.*

[9] The power calculation used to determine this sample size used information from the first experiment.

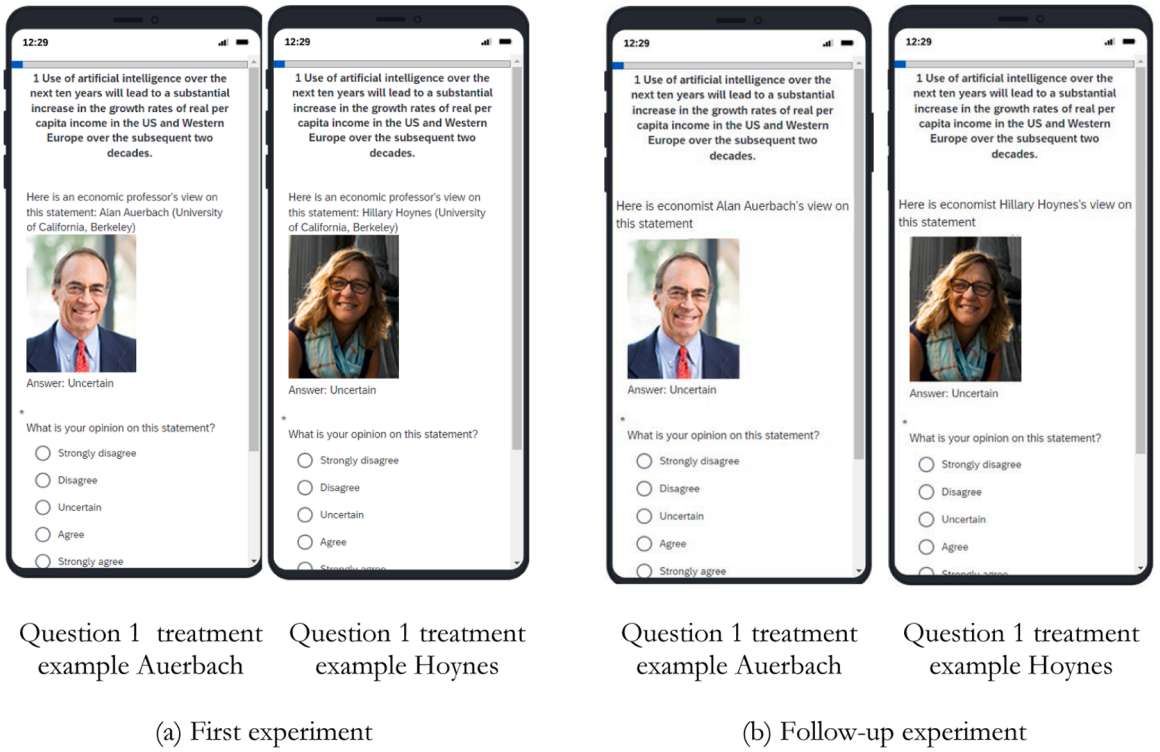


Fig. 1. How the statements and expert opinions were presented in the survey
Notes: These figures show two example treatment variants for statement 1 (out of 10 statements).

We also estimate a linear specification:

$$L_{iq} = \alpha + \gamma XL_{iq} + \varphi_q + u_i + \varepsilon_{iq} \tag{2}$$

where XL_{iq} is the Likert score (between -2, 2) corresponding to the opinion of the expert seen by the respondent for that statement. The benefit of this specification is that estimates of the coefficient γ, which captures the degree of persuasiveness of experts,[10] can be easily compared across different issues and across sub-groups in our sample.

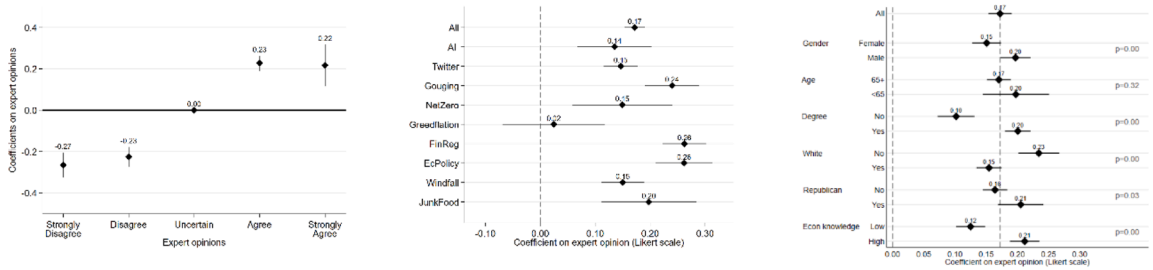
We first pool all responses and then estimate the specification separately for each statement (excluding Semiconductors where there is no variation in expert opinion). On average, a one-point change on the Likert scale in expert opinion is associated with a 0.17 point change in public opinion.[11] Fig. 2(b) shows that there is variation in the degree of persuasiveness (i.e. the estimated coefficients) 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 some 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 A3, panel a). 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 A3, panel b) – this suggests that experts may be perceived as less credible when their views are further out of line with those of the general public.

Fig. 2(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 [$p = 0.000$]. 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.

4. Testing for a gender gap

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

[10] This has parallels with the "persuasion rate" defined by Della Vigna and Gentzkow (2010).
[11] In the follow-up experiment, the estimated effect is 0.22.



(a) Overall effects (b) Issue-specific effects (c) Effects by respondent sub-groups

Fig. 2. The effect of expert opinions on the public Outcome = Public Likert response [−2,2]
Notes: The chart shows regression coefficients from an OLS estimation of Eq. (1) (panel a) and Eq. (2) (panel b and c) with 95 % confidence intervals, based on standard errors clustered at the respondent level. Only data from the first experiment is used in these results. 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". Main survey. N = 29,705.

$$Match_{iq} = \alpha + \delta FemX_{iq} + \varphi_q + u_i + \varepsilon_{iq} \tag{3}$$

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.[12]

Results are shown graphically in Fig. 3 (first bar) and summarized in Table 2. The estimated coefficient is +0.011 [$p = 0.038$] 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 these specifications also show a positive effect of seeing the opinion of a female expert compared to a male expert.

Fig. 3 also shows results from estimating Eq. (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 show a stronger positive effect of seeing a female expert for female respondents, but no significant 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 lower among respondents who might be thought of as being more conservative (those aged 65+ and those who align themselves with the Republican party).

Further analysis shows that respondents are more likely to match with the opinion of a female expert across different Likert responses, i.e. 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 A6). 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).

How big is the estimated effect? The match rate among those who see a male expert opinion is 33.5 per cent, against which a 1.1 percentage point increase in match rate seems small. However, this does not take account of coincidental matches who would "match" even if they did not see the expert opinion.[13] The share of coincidental matches is unknown in our case; instead, we compare the degree of persuasiveness between the opinions of male and female experts by including an interaction term ($FemX_XL_{iq}$) in specification (2):

$$L_{iq} = \alpha + \beta_1 XL_{iq} + \beta_2 FemX_XL_{iq} + \beta_3 FemX_{iq} + \varphi_q + u_i + \varepsilon_{iq} \tag{4}$$

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

[12] When everyone receives the message, Della Vigna and Gentzkow (2010)'s persuasion rate $f = \frac{y^T - y^C}{y^0}$ 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 $y^F - y^M$ for groups who see female (F) and male (M) experts. We do not observe y^0 in our study.

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

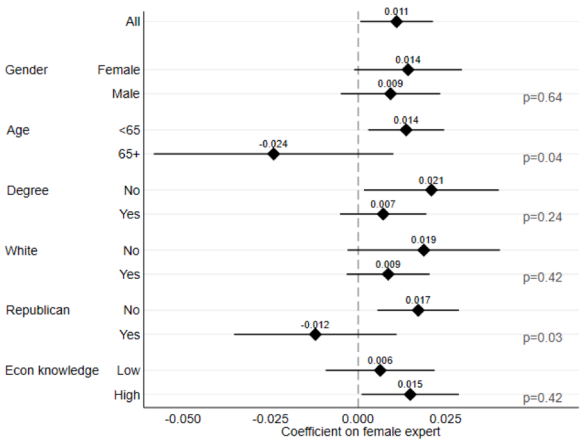


Fig. 3. Differential effects of seeing a female expert's opinion Outcome = Public opinion matches with the expert opinion (0/1)
Notes: The chart shows regression coefficients from an OLS estimation of Eq. (3). Only data from the first experiment is used in these results. The outcome is an exact match (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.

effect of male expert opinion of 0.155. Together these results imply that the degree of persuasiveness of female expert opinions is around 20 per cent higher.[14]

4.1. 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 Fig. 1). Our main finding is robust to including institution fixed effects (Table 2, col 5), i.e. we can rule out that the greater persuasiveness of female experts is attributable to a particular institutional affiliation (Harvard professors being more persuasive than Yale professors, for example).[15] Our results are also robust to including controls for features of the photos (see Appendix, Figure A7 for the images we used). We asked ChatGPT for descriptions of the photo[16] 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 (measured by a Match) remains positive when we control for features of the photos in this way. The gap increases when we control for expert age (post-PhD), 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 and for measures of academic impact (#citations and H-Index)[17] We report these results in Table 2, col 7 and – for the Broad Match and Distance measures – in Tables A5 and A6 of the Appendix.

5. What explains the gender gap?

5.1. Experimenter demand effects

Could the finding of a gender gap be driven by experimenter demand effects? In our follow-up survey we asked respondents what they thought we were trying to learn from the survey experiment. The responses were open-ended. We first manually coded them (see Fig. 4(a)). Fewer than five per cent of respondents specifically mentioned that they thought we were trying to learn something about expert gender and how the expert gender might affect their opinion. Note that many of the responses that mentioned gender

[14] We show the full set of results for "Broad Match" and "Distance" in Appendix Tables A6 and A7.

[15] 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.

[16] Two examples of ChatGpT responses: *"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."* And *"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."*

[17] 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. #citations and H-index information comes from Google Scholar.

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

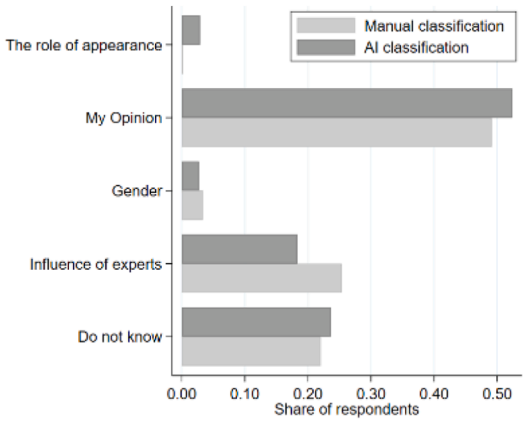
Dependent variable =	(1) Match	(2) Broad Match	(3) Distance	(4) Public Likert	(5) Match	(6) Match	(7) Match	(8) Match
Female Exp.	0.011**	0.014**	−0.025**	−0.011	0.019***	0.015***	0.030***	0.032**
	(0.005)	(0.006)	(0.011)	(0.013)	(0.006)	(0.005)	(0.009)	(0.016)
Expert Likert				0.155***				
				(0.011)				
Female Exp. X Exp. Likert				0.033***				
				(0.013)				
Cheerful Expression (0/1)						0.008	0.018*	
						(0.008)	(0.009)	
Professional Photo (0/1)						−0.015*	−0.012	
						(0.009)	(0.009)	
(Expert post-PhD age) / 10							0.002	
							(0.005)	
(# Newspaper cites) / 100							0.007*	
							(0.004)	
# academic cites / 10,000							−0.004***	
							(0.001)	
H-index/10							0.006***	
							(0.002)	
Female Exp. X Male								−0.008
								(0.011)
Female Exp. X Age 65+								−0.035*
								(0.019)
Female Exp. X Degree								−0.016
								(0.012)
Female Exp. X High Econ								0.017
								(0.011)
Female Exp. X White								−0.006
								(0.013)
Female Exp. X Republican								−0.032**
								(0.013)
Constant	0.336***	0.446***	1.075***	0.388***	0.332***	0.341***	0.294***	0.336***
	(0.003)	(0.003)	(0.005)	(0.007)	(0.003)	(0.010)	(0.024)	(0.003)
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
Observations	29,705	29,705	29,705	29,705	29,705	29,705	29,705	29,043

Notes: The table shows regression coefficients from an OLS estimation of Eq. (3), except column (3) which shows results from estimating Eq. (4). Only data from the first experiment is used in this table. 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 * $p < 0.1$ ** $p < 0.05$ *** $p < 0.01$. A full set of regression results (including controls) for outcomes Broad Match and Distance are reported in the Appendix, Tables A4 and A5.

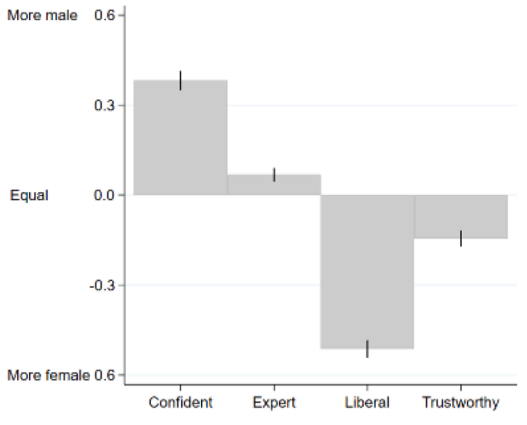
additionally mentioned other visible characteristics, such as race. A further one-quarter thought that we were interested in whether their opinions would be affected by the views of the experts, but there was no mention of gender or other visible characteristics. Around five per cent of respondents mentioned the photos and thought that we were interested in whether their opinion would be affected by the appearance of the expert. The most common response (around 50 per cent) was that respondents thought that we were interested in knowing their opinions and in looking at how opinions varied across the population - this is in line with what they were told at the start of the survey. As a check on our manual classification, we also asked ChatGPT to classify the answers into the same categories – with similar results. These responses suggest that experimenter demand effects are unlikely to explain the gender gap.

5.2. *Perceived differences between male and female experts*

To what extent do members of the public perceive other, relevant differences between male and female economists that might affect the expert's persuasiveness? At the end of the follow-up survey, we asked respondents to give their views on who was likely to be more liberal/more trustworthy/more confident/more expert – with options of "Definitely male", "Probably male", "Equal, "Probably female", and "Definitely Female". The responses, summarized in Fig. 4(b), reveal gender differences in how economists are perceived: male economists are perceived to be more confident and more expert, while female economists are perceived to be more liberal and also more trustworthy. It is plausible that these differences in perceptions may underlie the gender gap: Female economists may be more persuasive because they are seen by members of the public as more trustworthy, while the fact that they are perceived to be more liberal could explain why the gender gap reverses among those who align with the Republicans. However, in the next section we provide evidence that credentials also play a role in the female gap in the main survey.



(a) What do respondents think the survey is about?



(b) Are female or male economists more likely to be …

Fig. 4. Survey responses, follow-up survey
Notes: (a) shows the distribution of what the survey participants thought we were trying to learn based on two different ways to classify the open-ended answers. We first manually coded the answers into five categories and we then asked ChatGPT to code the answers using the same five categories. N = 2003. (b) shows the average response to the question "Who is most likely to be…" on a scale where definitely male economist is 2 and definitely female economist is −2 (equal is 0). N = 2003.

5.3. Credentials

Previous studies have shown that credentials and seniority can undo, or even reverse, stereotyped discrimination against women (Bohren et al., 2019; Rosette and Tost, 2010; and Mengel et al., 2019; Ayalew et al., 2021). In our first, main experiment, respondents saw experts' credentials (title and institution). Thus, the presence of credentials is a plausible candidate explanation for why these visibly senior female economists are more persuasive than their male counterparts. In our second, follow-up experiment, we remove these credentials. The right chart in Fig. 5 replicates Fig. 3 using data from the follow-up experiment only.[18] Compared to the main experiment (results replicated in the left chart of Fig. 5 for comparison), the results are clearly shifted to the left. The overall effect of female expert on the probability of matching opinion drops from 0.011 in the main experiment to 0.0002 in the follow-up. This suggests that, in the first experiment, credentials provided an information signal that favoured senior female experts. Removing that signal in the follow-up experiment eliminates the gender difference.

6. Discussion

Our study has three empirical findings. First, that expert economists are able to persuade the members of the public on a range of topical issues. Second, that the opinions of visibly senior female experts are more persuasive, compared to the same opinions being expressed by male experts. Third, that the positive gender difference in persuasiveness in favour of female experts disappears in the absence of credentials.

To what extent can we generalise these findings? We have no reason to believe that the additional persuasive effect of visibly senior female experts would be reversed in the wider US 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 A7).[19]

Given widespread evidence of discrimination against female experts, the fact that we find a positive authority gap for visibly senior female experts may be surprising to some. In the introduction we suggested a potential explanation. If discrimination is due to stereotyped beliefs, then credentials can undo discrimination by signalling expertise and may do so more strongly for female experts. The main result from our follow-up survey is consistent with that explanation.

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.

[18] See Appendix Figure A8 for a replication of Fig. 2 on the follow-up experiment. See also Table A8 for balance tests for the follow-up experiment.
[19] 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).

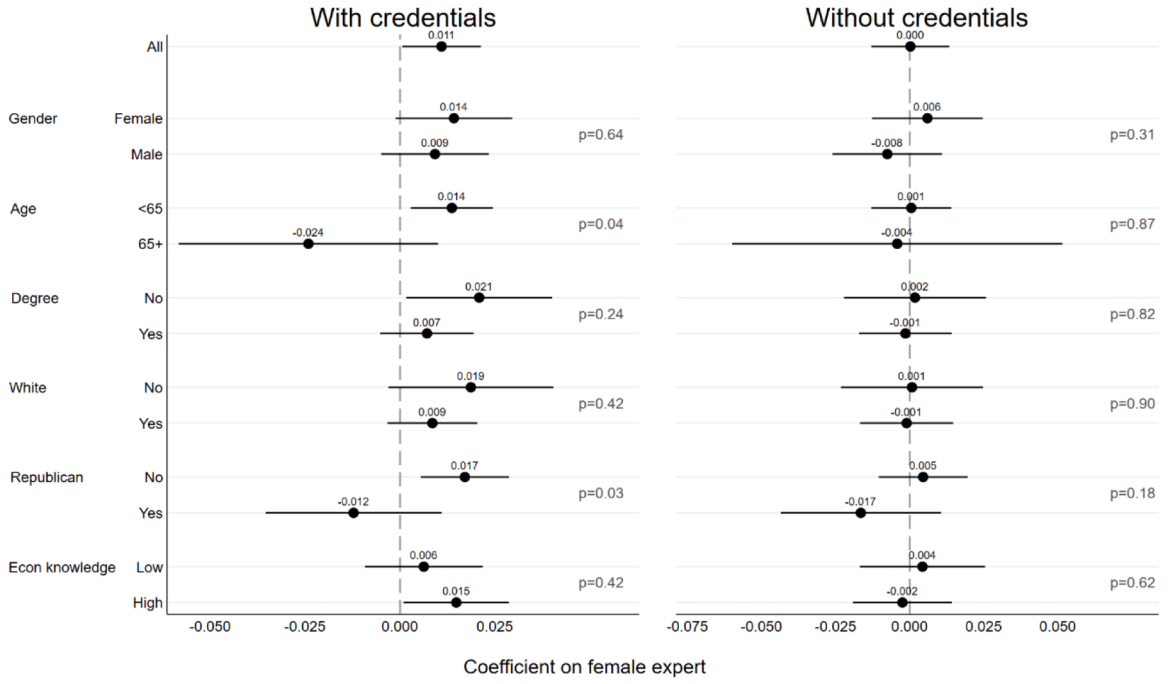


Fig. 5. Differential effect of seeing a female expert, with and without credentials
Notes: The chart shows regression coefficients from an OLS etimation of Eq. (3). The outcome is an exact match (0/1) on a 5 point Likert scale between the opinion of the respondent and the expert's opinion. The chart on the left repeats Fig. 3 for comparison, while the chart on the right shows results from the follow-up survey in which credentials are removed (N = 20,030).

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 – if senior female economists have greater credibility in the eyes of the public, then why are they less confident in giving their opinion. This remains an open question.

Declaration of competing interest

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

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.jebo.2025.106912.

Data availability

A complete replication package is available here: https://github.com/hhsievertsen/replication_files_authority_gap_paper.

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