Awareness of enterprise finance support programmes: The role of networks, gender, and ethnicity

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Abstract

Purpose: This paper investigates how gender, ethnicity, and network membership interact to influence how SME owner-managers become aware of finance support programmes developed by government policy and/ or support schemes advanced by the banking industry.

Methodology: Drawing on Expectation States Theory, we develop eight sets of hypotheses and employ the UK SME Finance Monitor data to test them using Bivariate Probit regression analysis.

Findings: In general, network membership increases awareness, but more so for government programmes. We also find no differences between female and male owner-managers when in networks. However, we identify in-network and out-network differences by ethnicity with minority females seemingly better off than minority males.

Practical/policy implications: Business networks are better for disseminating government programmes than industry-led programmes. For native White women, network membership can enhance policy awareness advantage further, while for minorities, networks significantly offset the big policy awareness deficits minorities inherently face. However, policy and practice need to address intersectional inequalities that remain in access to networks themselves, information access within networks, and the significant out-network deficits in awareness of support programmes afflicting minorities.

Originality: This study provides one of the first large-scale empirical examinations of intersectional mechanisms in awareness of government and industry-led enterprise programmes. Our novel and nuanced findings advance understanding of the ways in which gender and ethnicity interact with network dynamics in entrepreneurship.

Keywords: enterprise policy, networks, gender, ethnicity, finance, awareness

Introduction

Many enterprise support programmes have been deemed 'unfit' for purpose when it comes to engaging women and ethnic minorities (Arshed *et al.,* 2022; Coleman *et al.,* 2019; McAdam *et al.,* 2019; Ram *et al.,* 2012). Specifically, access to finance remains a major barrier women and ethnic minorities face when starting and growing businesses (Kwong *et al.,* 2012; Brush *et al.,* 2018; Carter *et al.,* 2007; Guzman and Kacperczyk, 2019). However, significant literature now dispels the notion that this is due to individual-level deficiencies highlighting, instead, that social norms and structures work differently along gender and ethnicity lines producing uneven access to resources (Coleman *et al.,* 2019; Marlow and McAdam, 2013; Ram *et al.,* 2017; Robb and Watson, 2012). Raising awareness about the financial options open to female entrepreneurs has thus been highlighted as an important role for policy (Kwong *et al.,* 2012).

However, extant literature has yet to fully explore the factors and processes involved in gaining awareness of enterprise finance programmes. In addition, while the co-existence of industry-led self-regulatory schemes and government programmes, especially in finance, is recognised in extant research (DeMarzo *et al.,* 2005; Ma, 2020), little research has investigated the later or both together within the context of entrepreneurship. There are thus three fundamental research gaps that need further examination. First, while a lack of awareness of government policy generally has been highlighted as a barrier to uptake by SMEs (Flynn and Davis, 2016; Curran and Blackburn, 2000; Loader, 2018), there is a lack of quantitative research into rates and drivers of awareness of finance support programmes among SMEs, with even less understanding of potential awareness differences between government-led and industry-led programmes.

Second, while policy reviews identify gaps in SMEs' awareness along gender (Rose, 2019) and ethnicity (Kašperová *et al.,* 2022; Mwaura *et al.,* 2018), there are empirical and theoretical gaps in the understanding of the direct and intersectional effects of gender and ethnicity in the awareness of finance programmes. Third, although the importance of networks in providing access to information and other resources is readily appreciable (Stam *et al.,* 2014), social structures and dynamics within networks have been argued to influence network outcomes (Ahuja *et al.,* 2012; van Burg *et al.,* 2022). Thus, studies establish that gendered and ethnic differences in the composition of business networks, and the relational dynamics therein, may result in gender, ethnic, and intersectional differences in access to information and other resources (Carter *et al.,* 2003; Shaw *et al.,* 2009; Neergaard *et al.,* 2005; Neumeyer *et al.,* 2019). However, there is a lack of nuanced theoretical explication of how network dynamics drive

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these different gender, ethnicity, and intersectional effects on awareness of finance support programmes.

To explore these research gaps, we draw on Expectations States Theory (EST) which stresses that gender and ethnicity are important factors which can influence the benefits, such as policy awareness, that different members draw from networks (Milanov *et al.,* 2015; Saparito *et al.,* 2013). Essentially, EST states that socially significant characteristics, social rewards, and patterns of behaviour influence interactions through group status hierarchies, limiting entrepreneurial opportunities for 'lower' status social categories (Correll and Ridgeway, 2006). Considering enterprise policies frequently position women as underperforming compared to men (Ahl and Nelson, 2015; Coleman *et al.,* 2019), this is a particularly compelling rationale for studying the gendered and ethnic effects of awareness of finance programmes. Building on extant theory and empirical research, eight sets of hypotheses to understand the influence of networks, gender, and ethnicity on awareness of both government finance programmes and industry finance programmes are developed. We empirically examine our hypotheses drawing on the UK SME Finance Monitor data.

Our findings advance gender and ethnicity perspectives on enterprise policy by detailing the important multiplex ways networks influence awareness of different finance support programmes among SMEs. We find no gender disadvantage in awareness of finance support programmes, reinforcing the growing literature contesting the female underperformance hypothesis. We do, however, find significant intersectional differences in the way networks spread awareness of programmes, with minority females disadvantaged relative to White native females but with minority males peculiarly more disadvantaged than females. Overall, this study has significant implications for women's and ethnic minority enterprise policy by providing one of the first largescale empirical examinations of the nuanced nature of policy awareness among various subsets of entrepreneurs.

Background, theory, and hypotheses

Women's enterprise, networks, and access to information and finance

Enterprise policy is typically shaped around historical perceptions of entrepreneurship as masculine, against which women underperform (Ahl and Nelson, 2015). Recent research however discredits this female underperformance hypothesis (Du Rietz and Henrekson, 2000; Brush and Elam, 2023; Marlow and McAdam, 2013; Zolin *et al.,* 2013). Typically, when size,

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risk, and contextual factors are controlled for, gender does not explain firm performance (Robb and Watson, 2012). Indeed, in many cases, gendered performance differences can be explained by socialised perceptions of risk and ambition (Guzman and Kacperczyk, 2019; Martiarena *et al.,* 2022).

Rather than focusing on individual constraints women face, there is thus a need to examine the social structures that position women's entrepreneurship as less legitimate (Marlow and McAdam, 2013). It is particularly pertinent to acknowledge this when looking at policies that facilitate access to finance, where women are historically undercapitalised (Carter and Rosa, 1998; Leitch *et al.,* 2018). Existing literature highlights that women are more likely to highlight access to finance as a prohibitive barrier to entrepreneurship (Kwong *et al.,* 2012), or to start businesses with significantly less capital than men (Brush *et al.,* 2018). Likewise, women are significantly less likely to use bank financing (Carter *et al.,* 2007). Yet given starting resources, female and male-led ventures perform similarly (Guzman and Kacperczyk, 2019; Shaw *et al.,* 2009).

Although 'virtually no evidence' shows that banks discriminate by gender (Carter *et al.,* 2015), there are indications that financing decisions are influenced by gendered social norms (Carter *et al.,* 2007). Other research suggests that lower female uptake of debt finance is attributable to a higher aversion to pursue it (Freel *et al.,* 2012), or a perception of difficulties accessing finance, sometimes out of lack of awareness of options available (Kwong *et al.,* 2012). In sum, the existing literature establishes that acquiring business finance is a complex process influenced by a range of social factors that work differently by gender. Further, dilemmas remain between mainstream "one size fits all" policies and more specialist interventions, with concerns about how women become aware and engage with both policy approaches yet unsettled (Carter *et al.,* 2015).

Indeed, with networks being established channels of information and other resources, several studies have explored the relationship between social capital and accessing finance, with differences between men and women deemed key (Carter *et al.,* 2003; Milanov *et al.,* 2015; Shaw *et al.,* 2009). Even where male and female entrepreneurs are just as likely to be members of business networks, studies find that men have more durable and denser networks with women associated with smaller strong-tie networks often used for matters other than business, including social support (Carter *et al.,* 2003; Neergaard *et al.,* 2005; Neumeyer *et al.,* 2019; Shaw *et al.,* 2010).

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Still, studies maintain that the social processes associated with the undercapitalisation of female-led ventures require greater examination (Carter *et al.,* 2015; Coleman *et al.,* 2019; Shaw *et al.,* 2010). This is particularly important considering women entrepreneurs are not a homogenous group, and their experiences can be better contextualised through an intersectional approach (Forson, 2013; Knight, 2016). Research shows that women positioned at the intersection of gender and race face greater difficulties to their entrepreneurship (Essers *et al.,* 2010; Fielden and Davidson, 2012; Knight, 2016). Intersectionality thus provides a framework that greater represents ethnic minority women and the constraints faced when accessing resources and support (Scott and Hussain, 2019), including within networks (Neumeyer *et al.,* 2019; Neergaard *et al.,* 2005).

Ethnic minority enterprise, networks, and access to information and finance

Despite higher rates of business ownership amongst ethnic minority populations, enterprise policy is critiqued for not placing significant value on developing minority enterprise (Jones *et al.,* 2023). Ram *et al.,* (2017) attribute this to, amongst other factors, ethnic minority owner-managers being detached from the mainstream ecosystem. This results in numerous challenges in relation to access to finance, markets, and networks (Carter *et al.,* 2015; Ram *et al.,* 2012; Ram *et al.,* 2017). Minority enterprises are also more likely to be denied credit and to become discouraged borrowers (Kon and Storey, 2003; Fraser, 2009).

Further, besides relatively unfavourable risk factors, including trading in problematic sectors (Carter *et al.,* 2015), ethnic minority owner-managers also generally rely on strong-tie networks as sources of information and advice (Tata and Prasad, 2015; Ram *et al.,* 2017). This can create challenges, such as liability of outsidership (Aluko *et al.,* 2022), which have ramifications for awareness and perception of public sector support programmes (Fadahunsi *et al.,* 2000). Indeed, the challenges to accessing different sources of capital can be attributed to the social networks and communities that ethnic minority owner-managers are embedded in (Lam *et al.,* 2019).

Extant literature emphasises that the double disadvantage associated with being female and being an ethnic minority disproportionately disadvantages minority women's in access to networks, finance, and mainstream enterprise support programmes (Carter *et al.,* 2015; McAdam *et al.,* 2019; Arshed, *et al.,* 2022; Ram *et al.,* 2017). Indeed, while awareness of mainstream finance policy among ethnic minorities and women has scarcely itself been

investigated statistically, the intersectional challenges that minority women face have been underscored extensively in the literature (e.g., Essers *et al.,* 2010; Carter *et al.,* 2015; Fielden and Davidson, 2012; Knight, 2016).

However, recent research has highlighted that being male does not overcome barriers associated with ethnicity (Giazitzoglu and Korede, 2023). This adds weight to heightened calls for intersectionality studies to build beyond the seminal double disadvantage heuristic, towards examining more complex interactions of social structures, by integrating other theories that may illuminate entrepreneurial inequalities more nuancedly (Martinez Dy and MacNeil, 2023). Accordingly, this paper has identified entrepreneurial inequalities in awareness of enterprise finance programmes and seeks to investigate how gender and ethnicity interact with network dynamics to influence awareness outcomes. Here, Expectation States Theory (EST) could elucidate intersectional inequalities within networks.

Expectation States Theory

EST is appealing to entrepreneurship scholars as it helps explain how gender and ethnicity may influence access to finance, information, and other resources, in either interpersonal or group settings (Milanov *et al.,* 2015; Saparito *et al.,* 2013). The central idea is that status characteristics can shape access to opportunities and affect group status hierarchies (Berger *et al.,* 1972). EST thus helps understand gender, ethnicity, and intersectional hierarchies, including within networks, more nuancedly. It is made up of three distinct processes: socially significant characteristics, social rewards, and patterns of behaviour (Correll and Ridgeway, 2006).

First, status dynamics emerge from societal beliefs and norms that associate both broad and specific social characteristics with an individual's perceived capacity and worth (Berger *et al.,* 1972). Broad status characteristics refer to generalised expectation of competency based on gender, age, or ethnicity. Specific status characteristics refer to inferences on ability to perform specific tasks or functions, such as accounting expertise or business planning (Correll and Ridgeway, 2006). Entrepreneurship research finds female entrepreneurs are perceived as less legitimate or less competent compared to men when dealing with finance providers (Shaw *et al.,* 2010; Carter *et al.,* 2007; Balachandra *et al.,* 2019). Similar perceptions apply for minority entrepreneurs too (Carter *et al.,* 2015). The implication is that less resources are channelled to persons with a perceived lower hierarchy status, like women and minorities.

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Second, EST posits that when social valued rewards (e.g., obtaining a bank loan) are distributed unequally among members of a group (i.e., between female and male entrepreneurs), actors infer performance expectations from the reward differences (Correll and Ridgeway, 2006). Thus, when actors perceive that male entrepreneurs receive more bank finance than women, they assume men must be more competent, thus establishing a hierarchy. This manifests in female and minority entrepreneurs having lower expectations for successfully receiving rewards which can then inhibit applications for financing (Forrester and Neville, 2021; Freel *et al.,* 2012; Kwong *et al.,* 2012; Fraser, 2009; Neville *et al.,* 2018), or generally the pursuit of other resources, like information on finance support programmes.

The final social process influencing performance expectations entails the behaviour patterns that develop between two or more actors (Correll and Ridgeway, 2006). These patterns occur when actors engage in behaviours associated with different statuses. When actors adopt behaviours from a higher perceived status, they are regarded as being more competent. In the literature, this has been found in investor decisions (Balachandra *et al.,* 2019), accelerator selection decisions (Yang *et al.,* 2020), or behaviour within networks (Giazitzoglu and Korede, 2023; Knox et al., 2021). Here, women and minorities require to assimilate white male characteristics, or other associative factors, to navigate disadvantage or receive more favourable evaluations towards accessing resources (Brush and Elam, 2023). All together, these processes make EST an especially insightful theory to examine how gender, ethnicity, and intersectional hierarchies interact with network dynamics to produce variability in entrepreneurs' awareness of finance support programmes.

Awareness of enterprise government and industry finance policy programmes

Extant literature laments the low uptake of various enterprise support programmes attributing it, in part, to low awareness rates (Curran and Blackburn, 2000; Loader, 2018). Indeed, within marketing and diffusion studies, awareness is traditionally established as a primary condition towards adoption of new ideas, products, practices or other items (Katz *et al.,* 1963; Rogers, [1962] 2003). Despite such primacy, however, little research has investigated the drivers of awareness of enterprise policy programmes among SMEs.

Further, much of the extant enterprise policy research focuses on support programmes advanced by governments (Jones *et al.,* 2023; Wapshott and Mallett, 2018). However, self-regulation is well established in the financial industry (DeMarzo *et al.,* 2005; Ma, 2020). In the UK, a pertinent outcome of such self-regulation is the banking industry-led enterprise finance

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programmes set up by the UK Business Finance Taskforce representing the British Bankers' Association. These programmes were developed to ensure that viable SMEs could access the support and finance they needed to contribute to economic recovery and growth following the 2008 financial crisis (BFT, 2010). Research in entrepreneurship has not examined such industry-led programmes. Yet differences in awareness, and indeed uptake and impact, of industry and government programmes would be instructive to investigate.

Elsewhere, existing literature establishes that social networks are generally important sources of information and other resources (Stam *et al.,* 2014). Specifically, business networks, defined as membership in 'formal' business clubs and associations, is especially considered important for accessing knowledge about various entrepreneurial opportunities (Hampton *et al.,* 2011). Extant research however gives little indication as to whether networks disseminate awareness of government versus industry programmes differently. Initial explorations of differences between government and industry programmes can thus only start from a null hypothesis. Therefore, we propose:

> **Hypothesis 1***: network membership is positively associated with awareness of government and industry enterprise finance programmes.*

> **Hypothesis 1a:** *the effect of networks on awareness is the same between government programmes and industry programmes.*

The discussion above has highlighted several gender issues associated with barriers to access to information and other resources among female entrepreneurs. In addition, women entrepreneurs are associated with undervalued and isolated sectors (Carter *et al.,* 2015; Marlow and McAdam, 2013). Furthermore, the literature highlights that the structure and composition of women's networks can be different to men's (Carter *et al.,* 2003; Shaw *et al.,* 2009), including less bridging social capital to wider information sources (Neumeyer *et al.,* 2019). As such, we anticipate:

> **Hypothesis 2:** *women are less likely to be aware of government and industry enterprise finance programmes.*

> **Hypothesis 2a:** *the effect of gender on awareness is the same between government programmes and industry programmes.*

Likewise, as previously discussed, ethnic minority disadvantage in accessing resources is an established concern in entrepreneurship with money, markets and managerial competencies highlighted as key issues (Carter *et al.,* 2015). Minorities may also have limited

embeddedness in local markets, rely on transnational and co-ethnic networks, and are seemingly detached from 'mainstream' business support structures (Ram *et al.,* 2017), partly attributable to liabilities of outsidership (Aluko *et al.,* 2022). Additionally, ethnic minority enterprise policy, like women's enterprise policy, is frequently challenged in the UK context as being largely ineffective (Carter *et al.,* 2015; Ram *et al.,* 2012; Ram *et al.,* 2017; Jones *et al.,* 2023).

Within this context, research on female entrepreneurship has highlighted the importance of intersectionality theory in unpacking inequalities (e.g., Martinez Dy and Agwunobi, 2019). As earlier discussed, this literature highlights that the intersection of gender and ethnicity creates a double disadvantage for minority female entrepreneurs, with relative privilege reserved for white native females (Essers *et al.,* 2010; Fielden and Davidson, 2012; Knight, 2016; Forson, 2013). New research further indicates that for minority men, any gender related advantage is unable to overcome ethnicity-based disadvantage (Giazitzoglu and Korede, 2023). As such, we anticipate that awareness of enterprise finance programmes is likely to be lower for ethnic minorities, to be worse than the gender effect, and to further have intersectional effects:

> **Hypothesis 3:** *ethnic minorities are less likely to be aware of government and industry enterprise finance programmes.*

> **Hypothesis 3a:** *the effect of ethnicity on awareness is the same for both government programmes and industry programmes.*

> **Hypothesis 3b:** *the minority effect is greater than the gender effect for awareness of government and industry enterprise finance programmes.*

> **Hypothesis 4:** *female ethnic minorities are less likely to be aware of government and industry enterprise finance programmes than native males, native females, and minority males.*

> **Hypothesis 4a**: *the joint effect of gender and ethnicity on awareness is the same for government programmes and industry programmes.*

Notwithstanding the efficacy of networks as channels of awareness, EST postulates inequalities in access within networks. Social dynamics within networks are influenced by status characteristics (Farr-Wharton and Brunetto, 2007), which in turn impacts the dissemination of information around a network (Hanson and Blake, 2009). Here, status and associated homophily and assortativity dynamics (Ahuja *et al.,* 2012; van Burg *et al.,* 2022),

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can affect how and to whom information is transmitted within network hierarchies, i.e., people want to interact more with high status individuals (Ridgeway and Smith-Lovin, 1999).

Further, given women and minorities are generally less successful in obtaining finance (Guzman and Kacperczyk, 2019; Carter *et al.,* 2015; Fraser, 2009; Bruder *et al.,* 2011), EST would posit that applying for finance could be perceived as a 'male' or 'white native' behaviour. This effect may discourage women and minorities from seeking finance (Forrester and Neville, 2021). We propose that this would also likely reduce their efforts to search for information regarding finance support programmes, further narrowing the associated information bandwidth. Thus, we anticipate:

> **Hypothesis 5:** *the effect of network membership on awareness of government and industry enterprise finance programmes is lower for women.*

> **Hypothesis 5a**: *the joint effect of network membership and gender on awareness is the same for government programmes and industry programmes.*

> **Hypothesis 6**: *the effect of network membership on awareness of government and industry enterprise finance programmes is lower for minorities.*

> **Hypothesis 6a**: *the joint effect of network membership and being a minority on awareness is the same for government programmes and industry programmes.*

> **Hypothesis 7:** *the effect of networks on awareness of government and industry enterprise finance programmes is lower among female minorities compared to native females.*

> **Hypothesis 7a**: *the joint effect of networks and ethnicity on awareness among females is the same between government programmes and industry programmes.*

> **Hypothesis 8:** *the effect of networks on awareness of government and industry enterprise finance programmes is lower among female minorities compared to male minorities.*

> **Hypothesis 8a**: *the joint effect of networks and gender on awareness among minorities is the same between government programmes and industry programmes.*

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Methodology

This study employs data from the SME Finance Monitor (SMEFM). This survey was commissioned by the UK Business Finance Taskforce (BFT, 2010) and is conducted quarterly targeting a weighted sample of at least 4,500 for-profit SMEs with up to 250 employees and a turnover of less than £25 million. The dataset employed contains about 45,000 firms sampled between Quarter 3, 2017 and Quarter 4, 2019 (10 waves) when data on awareness of government and industry programmes, our dependent variables, was collected. Data regarding membership in business networks, gender and ethnicity pertains to the owner, leading/managing partner, principal owner, or majority shareholder. The data, survey questionnaire, and related documentation were retrieved from the UK Data Service - Study Number 6888 (BDRC Continental, 2021).

As the hypotheses above indicate, this study investigates the factors associated with awareness of government and industry enterprise finance support programmes. Government programmes (GOV) include loan guarantee schemes, affordable loans, and other enterprise support schemes under the aegis of the British Business Bank - a government-owned economic development bank established as a one-stop shop for the main UK government enterprise finance support programmes (British Business Bank, 2014). Awareness is coded one where an entrepreneur has knowledge of any of these schemes, otherwise zero. Similarly, awareness of industry programmes (IND) is captured as one (otherwise zero) if an entrepreneur is aware of any of the schemes that were set up by the British Bankers Association through the UK Business Finance Taskforce. Detailed definitions of these variables and their operationalisation is provided in Appendix 1 (supplementary material).

We employ regression analysis to estimate the probability of awareness of these two support programmes as a function of membership in business networks (NETWORK), gender (FEMALE), and ethnicity (MINORITY), along with a set of control variables as defined in Appendix 2. As discussed, awareness is a binary variable, equal to 1 if aware and 0 if not aware. Thus, we specify equations that takes the following general forms:

$$GOV^*_i = \beta_1 \cdot NETWORK_i + \beta_2 \cdot FEMALE_i + \beta_3 \cdot MINORITY_i + \lambda_1 \cdot X_i + \varepsilon_{1i} \qquad (1)$$

$$IND^*_i = \delta_1 \cdot NETWORK_i + \delta_2 \cdot FEMALE_i + \delta_3 \cdot MINORITY_i + \lambda_2 \cdot X_i + \varepsilon_{2i} \qquad (2)$$

Here, i denotes the SME owner-manager, GOV^*_i and IND^*_i are latent variables capturing the probability of awareness of government and industry programmes respectively

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as derived from binary observations (aware =1, not aware = 0), X_i is a vector capturing control variables, $\beta_1, \beta_2, \beta_3, \delta_1, \delta_2, \delta_3$ and λ_1 and λ_2 are the coefficients to be estimated by the model, and ε_{1i} and ε_{2i} are the respective error terms. All variable definitions and descriptive statistics are provided in Appendix 2.

As many owner-managers will be simultaneously aware of both government and industry programmes, we specify equation (3) below estimating (1) and (2) simultaneously. With this specification, we espouse standard Probit assumptions that the error terms are normally distributed with a mean of zero. However, we allow the two error terms to be correlated, such that the rho (ρ) coefficient (estimating the bivariate correlation of the error terms) must be significantly different from zero, otherwise running equations (1) and (2) separately would suffice (Greene, 2014; Wooldridge, 2010).

$$GOV^*_i = \beta_1 \cdot NETWORK_i + \beta_2 \cdot FEMALE_i + \beta_3 \cdot MINORITY_i + \lambda_1 \cdot X_i + \varepsilon_{1i}$$
$$IND^*_i = \delta_1 \cdot NETWORK_i + \delta_2 \cdot FEMALE_i + \delta_3 \cdot MINORITY_i + \lambda_2 \cdot X_i + \varepsilon_{2i} \qquad (3)$$

To generate the estimates, we run a seemingly unrelated bivariate Probit model on STATA, with a robust standard errors specification to correct for any heteroscedasticity. Post estimation, we request calculations of four marginal effects: (1) joint probability of being unaware of both government and industry programmes, (2) probability of being aware of government programmes only, (3) probability of being aware of industry programmes only, and (4) joint probability of being aware of both government and industry programmes. We also test the equality of estimated coefficients between the two equations.

Results

Appendix 2 shows the univariate descriptive statistics for all variables employed, with separate statistics for the full sample, and the sub-samples associated with awareness of government and industry programmes. Pearson's Chi square tests are conducted to test associations between each of the variables and the two programmes separately. We find statistically significant associations between awareness and most of the variables employed in the analysis, thereby substantiating their inclusion as control variables. Crucially, we also find that awareness of government programmes is significantly associated with awareness of industry programmes, supporting the suitability of employing a bivariate Probit model. As shown in Table I, a more

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formal test of this rejects the null hypothesis that awareness of government and industry programmes are unrelated with a correlation coefficient equal zero ($\rho=0$). Instead, we find a highly significant correlation (Wald test $\rho=0$: $X^2 =8664.92***$), thus again verifying the suitability of the bivariate Probit regression approach.

As Table I shows, we find statistically significant but nuanced support for Hypothesis 1. In general, other factors held constant, business networks are positively associated with awareness of government and industry enterprise programmes. Thus, members of business networks are three percentage points less likely to be aware of neither of the two programmes. However, we find that while business networks are associated with a two-percentage point increase in the probability of being aware of government programmes only, they are associated with a one percentage point decrease in the probability of being aware of industry programmes only and a three-percentage point increase in the probability of being aware of both government and industry programmes.

INSERT TABLE I ABOUT HERE

The effect of business networks on awareness is thus seemingly different between government and industry programmes. More formally, testing the equality of estimated coefficients establishes that the effect of business networks is significantly greater for awareness of government programmes (coefficient=0.112) than industry programmes (coefficient=0.047; p-value=0.000). Thus, Hypothesis 1a is rejected. This suggests that while business networks are effective facilitators of awareness of both types of support programmes, jointly and separately, they are seemingly better at driving awareness of government programmes than the programmes initiated by the banking industry. It is likely that government programmes are more established and provide substantive support, such as affordable loans, even as they may require support to navigate. Thus, business networks may feel that their members may have greater interest in government programmes compared to industry programmes which are more orientated towards enhancing customer perceptions and experience of banks.

Hypothesis 2 proposed that female entrepreneurs are less likely to be aware of government and industry programmes. Our analysis rejects this hypothesis, instead affirming that awareness rates are not significantly different between male and female owner-managers.

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In line with Hypothesis 2a, we also find that there are no significant differences between the estimated coefficients for awareness of government and industry programmes. This indicates that women are just as likely as men to be aware of both government and industry programmes.

In contrast, we find strong support for Hypothesis 3 in general but with important granular detail. Other factors equal, ethnic minority owner-managers are 11 percentage points more likely to be aware of neither government nor industry finance programmes. Looking at the two programmes separately, minorities are two percentage points less likely to be aware of government programmes only but actually a percentage point more likely to be aware of industry programmes only. However, minorities are estimated to be 10 percentage points less likely to be aware of both programmes.

Rejecting Hypothesis 3a, we also find a statistically significant difference in the estimated coefficients with the disadvantage worse when it comes to awareness of government programmes (coefficient= -0.310) as compared to industry programmes (coefficient= -0.248; p-value=0.000). It would appear that the banking industry is slightly less bad than government with outreach to minorities. However, given the relatively large effect sizes, minorities can be seen to be missing out on awareness of both programmes jointly.

To test Hypothesis 3b, we examined whether differences in estimated margins for Female and Minority for each of the four outcome combinations were significantly different from zero. We find that the minority effect was significantly higher than the gender effect for awareness of neither of the two programmes, and significantly lower for awareness of government programmes only and both. However, our results suggest that there is not a significant difference between the gender effect and the ethnicity effect in terms of awareness of industry programmes only. This again suggests that disadvantage in awareness is more pronounced for minorities when it comes to government programmes.

Table II presents the results estimating intersectional effects as per Hypothesis 4. To observe a direct effect for the intersections, we created a variable observing native (White British/ Irish) males, native females, minority males and minority females as discrete categories. We find no differences between native males and females across the four awareness combinations. We also find scant differences by gender and ethnicity in the awareness of industry programmes only. In line with Table I, disadvantage in awareness is thus clearly mostly a minority disadvantage especially with awareness of government programmes.

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<div style="text-align:center">INSERT TABLE II ABOUT HERE</div>

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Surprisingly, however, the awareness deficit is seemingly worse for minority males than females. Rejecting the double disadvantage hypothesis, we find that while minority females are 10 percentage points more likely to be aware of neither relative to native males (and eight percentage points less likely to be aware of both), minority males are worse off at 12 percentage points more likely to be aware of neither and 11 points less likely to be aware of both. Differences between the estimated marginal effects for minority males and minority female are statistically significant (p-value=0.005 for neither; p-value=0.003 for both).

In testing Hypothesis 4a, however, we find no differences between the effect for native females on awareness of government programmes as compared to industry programmes (p-value=0.790). However, for minority males, the coefficient for government (-0.332) is significantly larger than that for industry (-0.285; p-value=0.011). Similarly, for minority females, the coefficient for government (-0.282), while lower than that estimated for minority males, is yet significantly larger than the coefficient for industry programmes (-0.198; p-value=0.000). Overall, this suggests that minority females may have benefitted from progress made by female entrepreneurs generally towards gender equality, at least on awareness of support programmes, with minority males left behind, particularly with awareness of government programmes.

Hypothesis 5 examined the interaction of gender and networks proposing a lower network effect for female owner-managers. As above, we created discrete categories with combinations of gender and network to help estimate direct marginal effects. Table III reports the results with in-network male as the reference category. Results reject Hypothesis 5 with no statistically significant differences detected between in-network males and females on the effect of network on awareness of government and industry programmes. However, we find that both out-network males and females are significantly less likely to be aware of government and industry programmes than both in-network males and females. Further, there are no significant differences between the estimated awareness margins for out-network males and females. This suggests that there is no additional gender advantage or disadvantage attributable to network membership with both genders benefitting from, or missing out on, the awareness benefits of business networks equally. Nevertheless, a chi-square test established that females are less likely to be members of business networks in the first place.

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INSERT TABLE III ABOUT HERE

We also find support for Hypothesis 5a, with additional nuance. For in-network females as compared to in-network males, the joint effect of gender and networks is the same between government and industry programmes (p-value=0.808). In contrast, for both out-network males and females, the estimated negative coefficients for government programmes are statistically larger than those estimated for awareness of industry programmes. This suggests that the disadvantage associated with not being a member of business networks is greater among both male and female owner-managers in terms of awareness of government programmes than industry programmes. Inference here is that among those outwith business networks, awareness of government programmes is weaker than awareness of industry programmes. In other words, the banking industry has been slightly better than government in raising awareness about their support initiatives to SMEs that are not members of business networks, perhaps because these SMEs have bank accounts providing direct communication channels between banks and SMEs.

Hypothesis 6 proposed that the effect of network membership on awareness of policy programmes is lower for minorities. Results presented in Table IV support this. We find that compared to in-network natives, in-network minorities are five percentage points more likely to be aware of neither, and, correspondingly, four percentage points less likely to be aware of both government and industry programmes. There are no statistically significant differences in the probability of awareness of industry programmes only but there are weak indications of minor disadvantage in awareness of government programmes only. This shows that networks do not confer awareness benefits the same way between native British/ Irish owner-managers and owner-managers of a minority background. A further test also established that minorities are significantly less likely to be members of business networks to start with.

INSERT TABLE IV ABOUT HERE

Among those in business networks, the relatively lower awareness benefits minorities draw from membership are yet not strong enough to give in-network minorities an advantage over out-network natives. We find that while in-network natives are slightly better off than out-

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network natives, in-network minorities remain worse-off compared to out-network natives in terms of awareness of both programmes, or awareness of neither (p-value=0.000 for both tests). However, in-network minorities are significantly better off at a four-percentage point deficit in awareness of both, compared to the 12-percentage point deficit for out-network minorities (p-value=0.000). We find, nevertheless, only rather weak evidence of an advantage for in-network natives over in-network minorities in awareness of government programmes only, and no significant differences between out-network natives and in-network minorities (p-value=0.821). Still, in-network minorities are significantly better off than out-network minorities with large and significant differences in estimated margins.

In fact, as regards to Hypothesis 6a, we find no significant differences in the in-network minority coefficients for government and industry programmes. However, for out-network minorities, the estimated coefficient for government programmes (-0.427) is significantly higher than that for awareness of industry programmes (-0.300; p-value=0.000). The out-network native coefficient for government programmes (-0.073) is also significantly higher than the non-significant effect (-0.012) found for industry programmes. Thus, while business networks strongly drive awareness of both programmes with slightly greater weight on government programmes, in-network minorities get relatively lower awareness benefits compared to in-network natives and out-network natives who arguably have other out-network awareness channels. However, business networks still hugely work to cut the big awareness deficit afflicting minorities in general such that while a gap to in-network natives remains, the in-network gain for minorities relative to out-network minorities is highly significant. The end result is that it is out-network minorities that are seemingly adversely left out of the awareness loop, especially when it comes to government programmes that have a stronger network effect.

Drawing further on intersectionality notions of double disadvantage, Hypotheses 7 and 8 proposed that network benefits would be lower still for minority females within both the female and minority sub-groups. Table V shows estimates testing the joint effects of networks and ethnicity within the female owner-managers sub-sample while Table VI shows the joint effects of networks and gender within the minority sub-sample. In general, results in Table V largely mirror those in Table IV pertaining to the full sample. This is not surprising given that we earlier found no significant gender effect in general but a strong ethnicity effect. Thus, within the female sub-sample, there is a significant minority disadvantage which is worse yet for out-network minority females.

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Still, with tighter estimated margins in the female sub-sample, we find that in-network minority females are now no more likely to be unaware of both as compared to out-network native female (0.027 versus 0.046; p-value = 0.254). This contrasts findings from the full sample that found in-network minorities significantly more likely to be unaware of both (0.019 vs. 0.049; p-value=0.004). It appears that out-network native females do not have the same out-network native effect observed in the full sample. This could indicate a slight out-network native female disadvantage relative to out-network native males. However, in light of earlier findings, there could also be an out-network minority female advantage relative to out-network minority males distorting the overall female effect.

Rejecting Hypothesis 7a, we observe significant differences in the estimated coefficients between government and industry programmes, but mainly for out-network females. Out-network native females have a slight but statistically significant disadvantage in awareness of government programmes but no disadvantage in awareness of industry programmes, hence the significant difference (p-value = 0.014). For out-network minority females, however, the disadvantage in both is more pronounced and more adverse for government programmes (-0.401 vs -0.247 for industry; p-value=0.000), compared to in-network minority females (-0.153 for government vs -0.066 for industry; p-value=0.093). This again shows that even as minorities draw lower awareness benefits from networks relative to natives, business networks are stronger at disseminating awareness of government programmes than banking industry programmes.

INSERT TABLE V ABOUT HERE

Table VI presents results looking within the minority sub-sample. Results at first glance appear similar to those in Table III suggesting that while networks are good for awareness, there are no differences in the effect of networks on awareness between male and female owner-managers within the minority sub-sample, mirroring the full sample. As such, Hypothesis 8 should be rejected. Upon further scrutiny, however, we find that out-network minority males are 10 percentage points more likely to be aware of neither compared to six percentage points for out-network minority females (p-value=0.000). Still, out-network minority females are worse off compared to both in-network minority males and females.

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<div align="center">INSERT TABLE VI ABOUT HERE</div>

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Indeed, within the minority sub-sample, we generally find little difference in the coefficients for government versus industry programmes, thus largely supporting Hypothesis 8a. We nevertheless observe that the negative coefficient for out-network minority females on awareness of industry programmes (-0.107) is slightly lower than that estimated for government programmes (-0.187; p-value=0.087). However, the coefficients for out-network minority males are equally high at -0.282 for government and -0.228 for industry (p-value=0.597). As discussed above, this suggests that while owner-managers outwith business networks do miss out on awareness, out-network minority females yet have a slight advantage over out-network males, at least in the awareness of industry programmes.

Discussion

The aim of this paper was to understand how networks, gender, and ethnicity interact to influence awareness of finance support programmes advanced separately by both governments and the finance industry. Hypothesis results, discussed above and summarised in Appendix 3, provide five main contributions to women's and ethnic minority enterprise policy and intersectionality literature in entrepreneurship (Carter *et al.,* 2015; Martinez Dy and MacNeil, 2023; Martinez Dy and Agwunobi, 2019).

Our first contribution regards the finding that networks simultaneously enhance the awareness of both government and industry programmes. This finding provides unique empirical insights on the role of networks in enterprise policy, affirming that business networks are multiplex information channels for entrepreneurs. However, we reveal an important nuance in that networks appear to drive awareness of government programmes more strongly. As the definitions of the variables show, government programmes entail the provision of loan guarantees and reduced interest rates. Arguably, these have more substantive and direct access to finance implications for SMEs. In contrast, financial industry programmes are more orientated towards better customer experience, signposting, and supplementary support than advancing actual funding. Our results indicate that business networks are seemingly keener on enhancing awareness of government enterprise finance programmes that have more direct tangible benefits for SMEs.

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The finding aligns with recent theoretical developments in network studies, suggesting that while network structures have traditionally been thought to shape the nature and amount of content being transmitted, the nature of content can itself impact aspects of network structures, varying the transmission bandwidth according to the type of content (Ahuja *et al.,* 2012; van Burg *et al.,* 2022). In our case, we see that awareness of the more readily substantive government finance programmes has a significantly greater bandwidth within networks. This may result from the greater benefits of such awareness leading networks structures to expand the transmission of such information relative to the less tangibly beneficial information on customer service improvement programmes advanced by the banking industry. This further aligns the informational dynamics of business networks with theory that suggests that firms may favour investments in "network capital", defined as calculative relations that enhance access to knowledge with expected economic returns, as differentiable from classic social capital, where trust and other normative social value are the primary outcomes of interest (Huggins, 2010).

Second, our findings on the under-researched question of awareness of enterprise support programmes add to growing evidence that dispels the female underperformance hypothesis (Du Rietz and Henrekson, 2000; Brush and Elam, 2023; Marlow and McAdam, 2013; Zolin *et al.,* 2013). We find no overt evidence of direct female disadvantage in awareness of finance support programmes. Further, in contrast to the existing literature on EST and access to finance (Milanov *et al.,* 2015; Saparito *et al.,* 2013), we find no female disadvantage either within networks with no significant differences between in-network females and in-network males in awareness. However, while networks afford significant awareness transmission benefits, women are slightly less likely to be members in such networks in the first place. This aligns with the existing gendered network literature that highlights that to enhance access to entrepreneurial resources, women need to penetrate networks previously seen as "men's clubs" (Arshed *et al.,* 2022; Hampton *et al.,* 2009).

Third, in line with EST, our results indicate that there are significant ethnicity effects within networks, including among females. This implies that although the gender effect has seemingly been neutralised, with longstanding and concerted female advancement initiatives perhaps starting to bear fruit at least when it comes to general awareness of finance programmes and access to knowledge within networks, minority females remain disadvantaged relative to native White females. By drawing on EST, this finding extends the intersectionality literature and debates on post-feminism within entrepreneurship (Lewis, 2014; Nadin *et al.,* 2020),

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elucidating how hierarchy dynamics within networks may yet insidiously leave minority women relatively disadvantaged despite placement within a key transmission channel.

Fourth, beyond the ethnicity hierarchy within networks, we further reveal that networks have different outcomes by ethnicity. For natives, networks appear to advance advantage, while for minorities, networks instead work to decrease the inherent minority disadvantage. Our findings thus contribute to the debate on the compensatory and complementary effects of networks in entrepreneurship (Semrau and Hopp, 2016), by demonstrating the mechanisms through which network effects interact with ethnicity to simultaneously attenuate and reproduce ethnicity-based inequalities in access to entrepreneurial resources.

Finally, this paper has uncovered a novel finding pertaining to the hitherto forlorn minority male entrepreneur that appears to be even more disadvantaged than minority female entrepreneurs, especially among those outwith networks. Masculinity has traditionally been seen as proffering advantage in entrepreneurship (Ogbor, 2000). Indeed, while rarely studied, relative disadvantage among minority males has been attributed to ethnicity-based barriers being so high that the masculine advantage is unable to overcome them (Giazitzoglu and Korede, 2023). However, our findings suggest that the masculinity associated with minority males could itself be an additional disadvantage, and therefore that masculinity is not only intersectional but is itself multi-dimensional. In line with Ogbor (2000), much of entrepreneurship research subscribes to the notion of masculine hegemony. Our findings contrast such theory, highlighting instead that masculinity has some liabilities too with the form of masculinity associated with minority males appearing to exacerbate, not attenuate, the minority disadvantage. This leaves minority males in a worse position relative to minority females and other social groups.

Notwithstanding this, it is also likely that the relative minority male disadvantage could have resulted from minority females having benefitted from recent female advancement programmes that have likely worked better than the more ineffectual minority enterprise policy (Jones *et al.,* 2023), thereby leaving minority males behind. While further research is needed to unpack the dynamics here, this finding contributes to recent research that has called for scholars to elucidate other dimensions of intersectionality in seeking to understand various entrepreneurial inequalities more fully (Martinez Dy and MacNeil, 2023).

Conclusions

Uptake and effectiveness of enterprise programmes, in general and among female and minority entrepreneurs, has been a well-documented concern in entrepreneurship research (Jones *et al.,* 2023; Wapshott and Mallett, 2018), government policy reviews (Rose, 2019; Kašperová *et al.,* 2022; Mwaura *et al.,* 2018), and industry-led initiatives (BFT, 2010). This paper has investigated the less researched but foremost issue of how entrepreneurs become aware of such support programmes in the first place, and in particular how membership in business networks interacts with intersectional gender and ethnicity effects in influencing such awareness. Beyond entrepreneurship theory, these findings have specific implications for entrepreneurship policy and practice.

First, with business networks found to be a significant awareness channel, it follows that policymakers and change agents concerned about the low uptake of policy programmes should work together with business networks to increase programme awareness and enhance take up. Second, we find that networks afford significant compensatory benefits to women and minorities that are traditionally disadvantaged in terms of access to mainstream enterprise support (McAdam *et al.,* 2019; Ram *et al.,* 2017). However, membership in business networks is lower among female and minority entrepreneurs. To advance these network benefits more equitably, there is therefore a need for policy and the leadership of business networks to fix the structures that inhibit network membership by women and minorities, by for example engaging in concerted outreach to these under-represented groups.

Third, within networks, we find that there are significant social hierarchies that limit awareness transmission to minorities, although gender effects on their own are not significant. Thus, joining business networks does not afford equal access to network benefits for female and male ethnic minority entrepreneurs. Research finds that minority entrepreneurs feel compelled to undertake significant identity work, through efforts to veil their ethnicity and accentuate symbolic whiteness, to gain legitimacy in business networks (Giazitzoglu and Korede, 2023). While many entrepreneurs will elect to do this, it behoves the networks themselves to more purposefully take steps to enhance diversity, equity, inclusion, and belonging within their structures, to ensure that network benefits are shared more equitably.

Fourth, networks notwithstanding, we find that minorities significantly trail native White British and Irish entrepreneurs in their likelihood of awareness of policy programmes. In fact, out-network natives remain better off relative to in-network minorities, with out-

network minorities vastly disadvantaged. This suggests that, even after accounting for a variety of factors, residual ethnicity-based disadvantage remains leaving minority entrepreneurs yet worse off in access to awareness, especially for minority males. In line with recent recommendations on how policy can better support ethnic minority businesses (Kašperová *et al.,* 2022), our findings echo the need for critical engagement between minority entrepreneurs, researchers, and policy-makers to better identify structural barriers and explore opportunities for more actionable and effectual change (Jones *et al.,* 2023).

This study is however not without limitations. Firstly, while we observe minority ethnicity as one category that includes everyone not of a White British or Irish background, we acknowledge the vast diversity among minorities. Future research thus requires to more granularly unpack ethnicity effects. The data comprises categorical variables hence captures broad characteristics with much nuance thus lost. In addition, cross-sectional data may be undermined by simultaneity and other biases, and results may in effect only be correlations that may not prove causal. Longitudinal approaches, including both quantitative and qualitative, could help illuminate pertinent mechanisms more nuancedly.

We believe, nevertheless, that we have only but scratched the surface on the gender and ethnicity influences on awareness of policy programmes. Building on the role of networks, other means of extending knowledge and support, such as mentors, can be explored to elucidate the conditions that enhance greater policy awareness among social groups. Furthermore, understanding the relationship between awareness of enterprise finance support programmes and actual pursuit of such financing can provide a deeper understanding into the yet unresolved gender and ethnicity-based finance gaps.

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Tables

Table I: Business networks, gender, and ethnicity effects

	(1)	(2)	(3)	(4)
VARIABLES	Neither	Gov only	Ind only	Both
Business networks	-0.033***	0.016***	-0.009***	0.027***
	(0.005)	(0.003)	(0.002)	(0.005)
Female	-0.001	-0.001	0.001	0.001
	(0.005)	(0.003)	(0.002)	(0.004)
Minority	0.111***	-0.022***	0.006**	-0.095***
	(0.005)	(0.003)	(0.002)	(0.004)
Strategy controls	YES	YES	YES	YES
Financial mgt controls	YES	YES	YES	YES
Business Xtics	YES	YES	YES	YES
Region dummies	YES	YES	YES	YES
Wave dummies	YES	YES	YES	YES

Reports average marginal effects (dydx) following bivariate probit regression.
Robust standard errors in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$;
Observations: 45,006; Wald X^2 = 4924.57***; Wald test $\rho=0$: X^2 =8664.92***

Table II: Intersectional gender and ethnicity effects

	(1)	(2)	(3)	(4)
VARIABLES	Neither	Gov only	Ind only	Both
Native (White British/ Irish) male (Reference category)				
Native female	0.006	0.001	-0.001	-0.006
	(0.005)	(0.004)	(0.002)	(0.005)
Minority male	0.122***	-0.020***	0.003	-0.105***
	(0.006)	(0.004)	(0.003)	(0.005)
Minority female	0.096***	-0.025***	0.010**	-0.082***
	(0.008)	(0.005)	(0.004)	(0.007)
Business networks	-0.033***	0.016***	-0.009***	0.027***
	(0.005)	(0.003)	(0.002)	(0.005)
Strategy controls	YES	YES	YES	YES
Financial mgt controls	YES	YES	YES	YES
Business Xtics	YES	YES	YES	YES
Region dummies	YES	YES	YES	YES
Wave dummies	YES	YES	YES	YES

Reports average marginal effects (dydx) following bivariate probit regression.
Robust standard errors in parentheses.*** $p<0.01$, ** $p<0.05$, * $p<0.1$;
Observations: 45,006; Wald X^2 = 4938.43***;Wald test $\rho=0$: X^2 =8661.91***

Table III: The joint effect of networks and gender

VARIABLES	(1) Neither	(2) Gov only	(3) Ind only	(4) Both
In-network male (Reference category)				
Out-network male	0.037***	-0.015***	0.008***	-0.031***
	(0.006)	(0.004)	(0.003)	(0.006)
Out-network female	0.033***	-0.016***	0.010***	-0.027***
	(0.007)	(0.005)	(0.003)	(0.007)
In-network female	0.006	0.001	-0.001	-0.006
	(0.008)	(0.006)	(0.004)	(0.008)
Minority	0.111***	-0.022***	0.006**	-0.095***
	(0.005)	(0.003)	(0.002)	(0.004)
Strategy controls	YES	YES	YES	YES
Financial mgt controls	YES	YES	YES	YES
Business Xtics	YES	YES	YES	YES
Region dummies	YES	YES	YES	YES
Wave dummies	YES	YES	YES	YES

Reports average marginal effects (dydx) following bivariate probit regression..
Robust standard errors in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$;
Observations: 45,006; Wald X^2 = 4925.64***; Wald test $\rho=0$: X^2 =8664.62***

Table IV: The joint effect of networks and ethnicity

VARIABLES	(1) Neither	(2) Gov only	(3) Ind only	(4) Both
In-network native White British/ Irish (Reference category)				
Out-network native	0.019***	-0.014***	0.009***	-0.014***
	(0.005)	(0.004)	(0.002)	(0.005)
Out-network minority	0.147***	-0.039***	0.014***	-0.121***
	(0.007)	(0.004)	(0.003)	(0.006)
In-network minority	0.049***	-0.013*	0.006	-0.043***
	(0.011)	(0.007)	(0.005)	(0.010)
Female	-0.001	-0.001	0.001	0.001
	(0.005)	(0.003)	(0.002)	(0.004)
Strategy controls	YES	YES	YES	YES
Financial mgt controls	YES	YES	YES	YES
Business Xtics	YES	YES	YES	YES
Region dummies	YES	YES	YES	YES
Wave dummies	YES	YES	YES	YES

Reports average marginal effects (dydx) following bivariate probit regression.
Robust standard errors in parentheses.*** $p<0.01$, ** $p<0.05$, * $p<0.1$;
Observations: 45,006; Wald X^2 = 4965.30***; Wald test $\rho=0$: X^2 =8651.65***

Table V: The joint effect of networks and ethnicity for females only

VARIABLES	(1) Neither	(2) Gov only	(3) Ind only	(4) Both
In-network native (White British/ Irish) female (Reference category)				
Non-net native female	0.027***	-0.016***	0.009**	-0.020**
	(0.008)	(0.006)	(0.004)	(0.008)
Non-net minority female	0.133***	-0.046***	0.017***	-0.104***
	(0.011)	(0.007)	(0.005)	(0.009)
In-net minority female	0.046***	-0.023**	0.012	-0.036**
	(0.018)	(0.011)	(0.008)	(0.016)
Strategy controls	YES	YES	YES	YES
Financial mgt controls	YES	YES	YES	YES
Business Xtics	YES	YES	YES	YES
Region dummies	YES	YES	YES	YES
Wave dummies	YES	YES	YES	YES

Reports average marginal effects (dydx) following bivariate probit regression.
Robust standard errors in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$;
Observations: 17,557; Wald X^2 = 1993.92***; Wald test ρ=0: X^2 =3165.53***

Table VI: The joint effect of networks and gender for minorities only

VARIABLES	(1) Neither	(2) Gov only	(3) Ind only	(4) Both
In-network male (Reference category)				
Out-network male	0.101***	-0.022**	0.003	-0.082***
	(0.014)	(0.009)	(0.006)	(0.013)
Out-network female	0.060***	-0.022**	0.010	-0.047***
	(0.016)	(0.010)	(0.007)	(0.014)
In-network female	-0.010	-0.006	0.005	0.011
	(0.021)	(0.013)	(0.009)	(0.019)
Strategy controls	YES	YES	YES	YES
Financial mgt controls	YES	YES	YES	YES
Business Xtics	YES	YES	YES	YES
Region dummies	YES	YES	YES	YES
Wave dummies	YES	YES	YES	YES

Reports average marginal effects (dydx) following bivariate probit regression.
Robust standard errors in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$;
Observations: 10,919; Wald X^2 = 1264.63***; Wald test ρ=0: X^2 =2106.55***

Supplementary materials file for 'Awareness of enterprise finance support programmes: The role of networks, gender, and ethnicity'
Appendix 1: Main variables

The dependent variables are binary (aware = 1, otherwise = 0). To operationalise these, we utilised multicode responses to three questions in the SME Finance Monitor questionnaire.

1. Which of the following are you aware of…
   A. Enterprise Finance Guarantee Scheme
   B. BGF, that is the Business Growth Fund
   C. The British Business Bank
   D. Start Up Loans
   E. Funding Circle

2. Next, actions the major banks are taking to improve customer relationships
   A. A network of business mentors across the UK
   B. The Standards of Lending Practice, which set out the levels of service banks provide to businesses with a turnover up to £6.5m
   C. An independently monitored appeals process within some banks for customer finance applications which are declined
   D. If have a loan, bank initiated discussions of re-financing needs 12 months' ahead of term loans coming to an end.
   E. A scheme where if a bank is unable to agree to your borrowing request they will offer to refer you to other providers, sometimes via on online portal.

3. Next, ways of improving information and understanding
   A. The Better Business Finance (BBF) programme, and its dedicated website, BetterBusinessFinance.co.uk, which draws together and link useful sources of information to help business
   B. The Business Finance Guide published by the ICAEW and the British Business Bank

From these, 1A, C and D were categorised as government programmes as they all fall under the aegis of the British Business Bank which is a government-owned economic development bank established to be a one stop shop bringing together government enterprise finance and other enterprise support schemes together (British Business Bank, 2014). Thus, awareness of any of the three was coded one, and zero otherwise. A Cronbach Alpha test was also undertaken to objectively test that these were consistently capturing the same latent construct. This returned an alpha coefficient of 0.610 which is acceptable as per standard rules

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of thumb (Hair et al., 2019), even as the rationale for including them together is straightforward. The unstandardised scale (the mean of the items) had a mean of 0.259. Creating a dummy variable with this as the cut off generated the same variable as one for awareness of any of the three programmes and zero otherwise as awareness of one of the three had a mean of 0.333 anyway.

To capture industry programmes, awareness of 1B, 2A, B, C, E and 3A was coded as one, and zero otherwise. These are all schemes that were set up by UK Business Finance Taskforce, made up of the six largest UK banks and UK Finance – the trade association for the UK banking and finance sector (formerly the British Banker' Association) as part of their commitment to restore confidence in the financial sector and ensure that viable businesses get the support and finance they need to thrive and grow (BFT, 2010). Strictly speaking, therefore, we only capture banking industry initiatives as opposed to industry schemes more widely. 1E was thus left out as the Funding Circle is a private business and not a government or banking industry-led programme, even as it is a partner in enterprise financing more widely. 3B was also left out as it is led by the Institute of Chartered Accountants in England and Wales (ICAEW) and is not part of the original UK Business Finance Taskforce initiatives. Also, although the British Business Bank partners with ICAEW to publish the guide, it is not an initiative by the bank itself. 2D was also not included even as it is part of the UK Business Finance Taskforce initiatives. This is because in the way the questionnaire is filtered, this question was only posed to a very small sub-section of the sample (i.e. respondents with a loan) and not the full sample. The response is thus biased by this selectivity.

As above, we conducted a Cronbach Alpha test to check that the six items included (i.e. 1B, 2A, B, C, E and 3A) were consistently approximating our industry programmes construct. This returned an alpha of 0.718 which satisfies generally accepted thresholds (Hair et al., 2019). We could also have created a dummy variable using the mean of the scale from the alpha test as the cut off. The mean here was 0.150 and awareness of only one of the six schemes would have generated a scale of 0.167. Thus, using the mean of the scale as the cut off made no difference in generating the awareness of industry programmes variable.

For the network variable, we coded one for a "Yes" response to whether the owner-manager, any of the partners, or the majority shareholder belonged to any business groups or industry bodies, and zero otherwise. Similarly, gender pertained to the owner-manager, leading partner, or principal owner, depending on size and legal status of the business. For ethnicity, the reference category was the ethnic background of the owner, the partners or majority of the

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partners, or the majority shareholder being White – British or White – Irish. Thus, "minority" captured everyone not of a White British or Irish background.

Control variables included in the study capture: business strategy aspects (including whether business has a business mentor, a business plan, export activity, import activity, product innovation, process innovation, intellectual property, employs workers from the EU/ Rest of the World, the firm's growth plans); financial management (risk-rating, finance professional, business account, previously denied finance, used any external finance over the last five years); business characteristics (size (employees), size (turnover), sector, legal status, age); region (UK International Territorial Level 1/ NUTS1); and data wave dummies. Summary definitions and descriptive statistics for the full set of variables are provided in *Appendix 3*.

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Appendix 2: Descriptive statistics

Variable name	Definition	% in full sample	% in Gov=1	% in Gov=0	Chi-sq (p-value)	% in Ind=1	% in Ind=0	Chi-sq (p-value)
Gov	1 if aware of any (of three) government enterprise finance support programmes; 0 otherwise	48.3%				79.2%	26.3%	0.000
Ind	1 if aware of any (of six) banking industry-led enterprise finance support programmes; 0 otherwise	41.6%	68.2%	16.8%	0.000			
Business networks	1 if owner-manager is a member of business groups or industry bodies; 0 otherwise	26.3%	29.6%	23.3%	0.000	29.1%	24.3%	0.000
Female	1 if 50% or more of the firm is owned by women; 0 otherwise	39.0%	38.5%	39.5%	0.019	37.0%	40.4%	0.000
Minority	1 if owner-manager, majority of partners or majority shareholder is not White British or Irish; 0 otherwise	24.3%	19.8%	28.4%	0.000	20.0%	27.3%	0.000
Mentor	1 if the business has a mentor who provides help and advice; 0 otherwise	15.0%	17.4%	12.7%	0.000	18.6%	12.4%	0.000
Business Plan	1 if have a formal business plan; 0 otherwise	45.1%	50.3%	40.3%	0.000	53.4%	39.2%	0.000
Exporter	1 if business sell goods or services abroad; 0 otherwise	12.5%	13.6%	11.4%	0.000	14.4%	11.1%	0.000
Importer	1 if business buys goods or services from abroad; 0 otherwise	15.4%	16.7%	14.2%	0.000	17.5%	13.9%	0.000
Product Innovation	1 if have developed a new product or service in the past 3 years; 0 otherwise	19.7%	21.3%	18.1%	0.000	23.6%	16.8%	0.000
Process Innovation	1 if have significantly improved an aspect of the business in the past 3 years; 0 otherwise	38.1%	40.6%	35.8%	0.000	42.2%	35.2%	0.000
IPR	1 if the business holds intellectual property or other knowledge assets on its balance sheet; 0 otherwise	12.5%	14.2%	11.0%	0.000	15.3%	10.5%	0.000
EU workers	1 if the business employs workers who are non-British EU nationals; 0 otherwise	20.8%	21.7%	20.0%	0.000	22.5%	19.6%	0.000
ROW workers	1 if the business employs workers who are from countries outside the EU; 0 otherwise	7.0%	7.5%	6.5%	0.000	7.9%	6.3%	0.000
Growth plans: Substantial	1 if plan to grow by more than 20% over the next year; 0 otherwise	16.4%	17.3%	15.7%	0.000	18.1%	15.2%	0.000

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Growth plans: Moderate	1 if plan to grow but by less than 20% over the next year; 0 otherwise	42.7%	47.3%	38.4%	0.000	48.6%	38.5%	0.000
Growth plans: Stay same	1 if plan to stay the same size over the next year; 0 otherwise	35.3%	30.2%	40.1%	0.000	28.5%	40.2%	0.000
Growth plans: Reduce	1 if plan to become smaller over the next year; 0 otherwise	2.7%	2.5%	2.9%	0.013	2.3%	3.0%	0.000
Growth plans: Close/Transfer	1 if plan to sell, pass on or close the business over the next year; 0 otherwise	2.8%	2.7%	2.9%	0.208	2.5%	3.1%	0.001
Risk rating - Minimum	1 if business risk rating on record (with Dun & Bradstreet and Experian) = Minimum; 0 otherwise	17.6%	18.1%	17.0%	0.002	19.1%	16.5%	0.000
Risk rating - Low	1 if business risk rating on record (with Dun & Bradstreet and Experian)= Low; 0 otherwise	29.9%	30.3%	29.6%	0.159	31.6%	28.7%	0.000
Risk rating - Average	1 if business risk rating on record (with Dun & Bradstreet and Experian) = Average; 0 otherwise	22.8%	22.5%	23.0%	0.192	22.1%	23.3%	0.003
Risk rating - Above Av.	1 if business risk rating on record (with Dun & Bradstreet and Experian)= Above Average; 0 otherwise	21.3%	20.5%	22.1%	0.000	19.2%	22.8%	0.000
Risk rating - Not Known	1 if business risk rating on record (with Dun & Bradstreet and Experian)= Unknown; 0 otherwise	8.4%	8.6%	8.2%	0.100	8.0%	8.7%	0.007
Regular mgt accounts	1 if produces regular monthly or quarterly management accounts; 0 otherwise	56.2%	59.7%	52.9%	0.000	60.2%	53.3%	0.000
Finance professional	1 if person in charge of the financial management has finance qualifications or training; 0 otherwise	39.8%	42.6%	37.2%	0.000	44.5%	36.5%	0.000
Business Account	1 if main current account is a business account; 0 if uses a personal account for business	94.8%	95.5%	94.1%	0.000	95.9%	94.0%	0.000
Previously Declined Finance	1 if the business has ever had either an application for a loan or overdraft, or a more informal request for flexibility on a facility, turned down by their bank; 0 otherwise	3.0%	3.5%	2.6%	0.000	3.7%	2.5%	0.000
Used any external Finance in last 5 years	1 if the business has used any any form of external finance (such as an overdraft, loan, invoice finance, leasing, new equity finance etc) in the past 5 years; 0 otherwise	57.1%	64.2%	50.4%	0.000	66.1%	50.6%	0.000
Size: self-employed only	1 if only the owner-manager works in the business; 0 otherwise	20.0%	19.6%	20.3%	0.063	18.1%	21.4%	0.000

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Size: up to 10 workers	1 if 2-10 people, including the owner-manager, works in the business; 0 otherwise	32.2%	30.1%	34.2%	0.000	28.1%	35.2%	0.000
Size: up to 50 workers	1 if 11-50 people works in the business; 0 otherwise	32.2%	32.3%	32.2%	0.802	34.4%	30.6%	0.000
Size: up to 100 workers	1 if 51 - 100 people work in the business; 0 otherwise	10.7%	12.5%	9.0%	0.000	13.4%	8.7%	0.000
Size: above 100 workers	1 if over 100 people work in the business; 0 otherwise	4.9%	5.5%	4.3%	0.000	6.1%	4.1%	0.000
Revenues: up to £25,000	1 if turnover is less than £25,000; 0 otherwise	7.1%	6.8%	7.4%	0.016	6.1%	7.9%	0.000
Revenues: up to £50,000	1 if turnover is £25,000 - £49,999; 0 otherwise	7.8%	8.3%	7.4%	0.001	8.5%	7.4%	0.000
Revenues: up to £75,000	1 if turnover is £50,000 - £74,999; 0 otherwise	5.2%	5.4%	5.0%	0.027	5.1%	5.3%	0.487
Revenues: up to £100,000	1 if turnover is £75,000 - £99,999; 0 otherwise	4.4%	4.4%	4.5%	0.696	4.3%	4.5%	0.314
Revenues: up to £250,000	1 if turnover is £100,000 - £249,999; 0 otherwise	7.7%	7.5%	7.8%	0.274	7.6%	7.7%	0.711
Revenues: up to £500,000	1 if turnover is £250,000 - £499,999; 0 otherwise	6.2%	6.1%	6.3%	0.383	6.4%	6.1%	0.246
Revenues: up to £1 Million	1 if turnover is £500,000 - £999,999; 0 otherwise	8.4%	8.5%	8.4%	0.689	9.3%	7.8%	0.000
Revenues: up to £2 Million	1 if turnover is £1m - £1.9m; 0 otherwise	12.2%	12.9%	11.6%	0.000	14.1%	10.9%	0.000
Revenues: up to £5 Million	1 if turnover is £2m-4.9m; 0 otherwise	6.7%	8.0%	5.5%	0.000	8.7%	5.2%	0.000
Revenues: up to £10 Million	1 if turnover is £5m - £9.9m; 0 otherwise	3.5%	4.4%	2.7%	0.000	4.7%	2.6%	0.000
Revenues: up to £15 Million	1 if turnover is £10m - £14.9m; 0 otherwise	1.9%	2.3%	1.5%	0.000	2.8%	1.3%	0.000
Revenues: up to £25 Million	1 if turnover is £15m-24.9m; 0 otherwise	2.1%	2.6%	1.7%	0.000	2.9%	1.6%	0.000
Revenues: Don't know	1 if turnover is unknown; 0 otherwise	13.8%	12.3%	15.2%	0.000	10.4%	16.2%	0.000

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Revenues: Refused	1 if refused to report turnover; 0 otherwise	12.8%	10.4%	15.1%	0.000	9.0%	15.6%	0.000
Sector: Agriculture	1 if the principal activity of the business is agriculture; 0 otherwise	6.7%	6.3%	7.0%	0.004	6.3%	6.9%	0.007
Sector: Manufacturing	1 if the principal activity of the business is manufacturing; 0 otherwise	8.3%	8.6%	8.1%	0.045	8.8%	8.0%	0.002
Sector: Construction	1 if the principal activity of the business is construction; 0 otherwise	17.8%	17.2%	18.3%	0.004	16.9%	18.4%	0.000
Sector: Wholesale/ Retail	1 if the principal activity of the business is wholesale/ retail; 0 otherwise	10.0%	9.7%	10.2%	0.074	9.8%	10.1%	0.214
Sector: Hotel and Restaurants	1 if the principal activity of the business is hotel and restaurants; 0 otherwise	6.7%	6.3%	7.0%	0.003	6.4%	6.9%	0.028
Sector: Transport, Storage and communications	1 if the principal activity of the business is transport, storage and communications; 0 otherwise	11.1%	10.6%	11.6%	0.001	10.5%	11.5%	0.001
Sector: Real estate and Professional services	1 if the principal activity of the business is real estate/ other professional services; 0 otherwise	20.0%	21.5%	18.6%	0.000	21.6%	18.9%	0.000
Sector: Health and social services	1 if the principal activity of the business is health and social services; 0 otherwise	8.3%	8.6%	8.1%	0.053	8.7%	8.1%	0.016
Sector: Other services	1 if the principal activity of the business is other services; 0 otherwise	11.1%	11.1%	11.1%	0.962	11.0%	11.2%	0.600
Status: Sole proprietor	1 if the legal status of the business is sole proprietor; 0 otherwise	24.7%	23.6%	25.7%	0.000	21.1%	27.3%	0.000
Status: Partnership	1 if the legal status of the business is partnership; 0 otherwise	7.2%	6.8%	7.6%	0.001	6.3%	7.8%	0.000
Status: Ltd partnership	1 if the legal status of the business is limited partnership; 0 otherwise	3.7%	3.4%	4.0%	0.000	3.9%	3.6%	0.065
Status: Ltd Company	1 if the legal status of the business is Limited Liability Company ; 0 otherwise	64.4%	66.3%	62.7%	0.000	68.7%	61.3%	0.000
Age: Under 2 years	1 if business age is under 2 years; 0 otherwise	10.1%	11.8%	8.6%	0.000	11.4%	9.3%	0.000

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Age: 2-5 years	1 if business age is 2 - 5 years; 0 otherwise	9.3%	8.8%	9.7%	0.001	8.3%	10.0%	0.000
Age: 6-9 years	1 if business age is 6-9 years; 0 otherwise	11.4%	10.8%	12.0%	0.000	11.0%	11.7%	0.031
Age: 10 – 15 years	1 if business age is 10 - 15 years; 0 otherwise	16.6%	16.2%	16.9%	0.032	16.8%	16.4%	0.318
Age: Over 16 years	1 if business age over 15 years; 0 otherwise	52.6%	52.3%	52.8%	0.305	52.5%	52.7%	0.741
Region: London	1 if business postcode is in London; 0 otherwise	12.2%	12.2%	12.2%	0.954	12.0%	12.4%	0.177
Region: South East	1 if business postcode is in the South East region; 0 otherwise	12.2%	12.3%	12.1%	0.585	12.1%	12.3%	0.570
Region: South West	1 if business postcode is in South West region; 0 otherwise	8.9%	9.1%	8.7%	0.098	9.1%	8.7%	0.137
Region: East of England	1 if business postcode is in the East of England region; 0 otherwise	8.9%	8.8%	9.0%	0.454	8.7%	9.0%	0.211
Region: East Midlands	1 if business postcode is in East Midlands region; 0 otherwise	7.2%	7.0%	7.4%	0.070	7.1%	7.3%	0.593
Region: West Midlands	1 if business postcode is in the West Midlands region; 0 otherwise	8.3%	8.5%	8.2%	0.175	8.7%	8.1%	0.023
Region: Yorks and Humber	1 if business postcode is in the Yorkshire and Humber region; 0 otherwise	7.8%	7.7%	7.8%	0.610	7.8%	7.8%	0.988
Region: North East	1 if business postcode is in the North East of England region; 0 otherwise	5.3%	5.5%	5.1%	0.058	5.6%	5.2%	0.058
Region: North West	1 if business postcode is in the North West of England; 0 otherwise	8.9%	9.0%	8.8%	0.621	9.0%	8.8%	0.653
Region: Wales	1 if business postcode is in Wales; 0 otherwise	6.2%	6.2%	6.3%	0.580	6.1%	6.3%	0.475
Region: Scotland	1 if business postcode is in Scotland; 0 otherwise	8.4%	8.5%	8.4%	0.931	8.6%	8.4%	0.460
Region: Northern Ireland	1 if business postcode is in Norther Ireland; 0 otherwise	5.6%	5.2%	5.8%	0.005	5.3%	5.8%	0.024
Wave: Q3 2017	1 if data wave is Q3 2017; 0 otherwise	10.0%	9.6%	10.4%	0.004	9.6%	10.3%	0.026
Wave: Q4 2017	1 if data wave is Q4 2017; 0 otherwise	10.0%	9.4%	10.6%	0.000	9.8%	10.1%	0.238
Wave: Q1 2018	1 if data wave is Q1 2018; 0 otherwise	10.0%	9.3%	10.7%	0.000	9.2%	10.6%	0.000

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Wave: Q2 2018	1 if data wave is Q2 2018; 0 otherwise	10.0%	8.6%	11.3%	0.000	9.0%	10.7%	0.000
Wave: Q3 2018	1 if data wave is Q3 2018; 0 otherwise	10.0%	9.7%	10.3%	0.060	10.0%	10.0%	0.920
Wave: Q4 2018	1 if data wave is Q4 2018; 0 otherwise	10.0%	10.4%	9.6%	0.009	10.7%	9.5%	0.000
Wave: Q1 2019	1 if data wave is Q1 2019; 0 otherwise	10.0%	10.1%	9.9%	0.311	10.3%	9.8%	0.045
Wave: Q2 2019	1 if data wave is Q2 2019; 0 otherwise	10.0%	11.1%	9.0%	0.000	10.1%	9.9%	0.679
Wave: Q3 2019	1 if data wave is Q3 2019; 0 otherwise	10.0%	10.9%	9.2%	0.000	10.5%	9.7%	0.006
Wave: Q4 2019	1 if data wave is Q4 2019; 0 otherwise	10.0%	10.9%	9.2%	0.000	10.8%	9.4%	0.000

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Appendix 3: Summary of findings

No.	Hypothesis	Finding
H1	*Network membership is positively associated with awareness of government and industry enterprise finance programmes.*	Supported
H1a	*The effect of networks on awareness is the same between government programmes and industry programmes.*	Rejected
H2	*Women are less likely to be aware of government and industry enterprise finance programmes.*	Rejected
H2a	*The effect of gender on awareness is the same between government programmes and industry programmes.*	Supported
H3	*Ethnic minorities are less likely to be aware of government and industry enterprise finance programmes.*	Supported
H3a	*The effect of ethnicity on awareness is the same for both government programmes and industry programmes.*	Rejected
H3b	The *minority effect is greater than the gender effect for awareness of government and industry enterprise finance programmes.*	Nuanced support
H4	*Female ethnic minorities are less likely to be aware of government and industry enterprise finance programmes than native males, native females, and minority males.*	Nuanced rejection
H4a	*The joint effect of gender and ethnicity on awareness is the same for government programmes and industry programmes.*	Nuanced rejection
H5	*The effect of network membership on awareness of government and industry enterprise finance programmes is lower for women.*	Rejected
H5a	*The joint effect of network membership and gender on awareness is the same for government programmes and industry programmes.*	Nuanced support
H6	*The effect of network membership on awareness of government and industry enterprise finance programmes is lower for minorities.*	Supported
H6a	*The joint effect of network membership and being a minority on awareness is the same for government programmes and industry programmes.*	Nuanced rejection
H7	*The effect of networks on awareness of government and industry enterprise finance programmes is lower among female minorities compared to native females.*	Nuanced support
H7a	*The joint effect of networks and ethnicity on awareness among females is the same between government programmes and industry programmes.*	Rejected
H8	*The effect of networks on awareness of government and industry enterprise finance programmes is lower among female minorities compared to male minorities.*	Nuanced rejection
H8a	*The joint effect of networks and gender on awareness among minorities is the same between government programmes and industry programmes.*	Nuanced support

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