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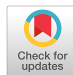

RESEARCH ARTICLE

The triple glass ceiling: FinTech gender inequalities

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Abstract

While FinTech gets promoted as an innovative and progressive solution to meeting financial needs globally, it is afflicted by pervasive gender inequalities, only recently noticed in research. To explore these gender inequalities at the core of FinTech, we use a mixed-methods approach, combining data on 100 leading FinTech firms and 15 interviews with FinTech professionals, collected in the latter half of 2021. We argue that women in FinTech face the 'triple glass ceiling' at the intersection of financial, technological, and entrepreneurial gender inequalities. Our sample shows that women account for only 7.69% of (co-)founders, 18.2% of executive committee members, and merely 4.04% of FinTech companies are led by a woman. Gendered stereotypes and a privileging of masculine performances produce significant barriers to women entering and progressing within FinTech. Discriminatory practices are overt and implicit, everyday and exceptional, micro and acute. Shattering the 'triple glass ceiling' in FinTech represents an immense challenge.

Keywords: entrepreneurship; finance; FinTech; gender inequalities; technology

Introduction

FinTech – 'a set of innovations and an economic sector that focus on the application of recently developed digital technologies to financial services' (Wójcik, 2021a: 567–68) – has undergone explosive growth over the past decade. Kalifa (2021: 2) refers to FinTech as 'a permanent, technological revolution, that is changing the way we do finance'. FinTech commonly gets heralded as the great disruptor: reshaping financial inclusion with unbounded potential (Makina, 2019). At the same time, FinTech is causing minimal disruption to the financial landscape, tending to represent a process of re-intermediation rather than dis-intermediation (Wójcik, 2021b). FinTechs collaborate with or replace incumbents (Hendrikse et al., 2018).

However, claims of FinTech revolutionising finance neglect the significant gender imbalance (Sparks and Eckenrode, 2020). The underrepresentation of women[1] in the industry, particularly among senior positions (Khera et al., 2022), represents an important research opportunity. The recent Kalifa Review of UK FinTech (2021: 2) alleged itself to be a 'holistic' report detailing a 'comprehensive' strategy for the future of UK FinTech. However, there was no reference to the gender inequalities rife within the sector: the terms 'women', 'gender', 'diversity', and 'inequality' were not mentioned.

The few studies on FinTech gender inequalities detail the presence of striking disparities. In the UK, women account for 28% of the FinTech workforce (Kimber, 2023), 17% of senior FinTech roles (Deloitte, n.d.), and only 12.2% of the 3,017 FinTech startups

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in 2019 had at least one woman (co-)founder (Sparks and Eckenrode, 2020). A collective challenge that holds the industry accountable is necessary for (re)developing the FinTech ecosystem to make it a more inclusive, equitable, and attractive environment for individuals. The benefits of greater diversity, both fiscal and societal, are well documented. For example, companies with increased diversity tend to financially outperform their competitors (Hunt et al., 2018). The economic benefit is also evident beyond individual companies: the UK economy could be boosted by as much as £250 billion annually through gaining entrepreneurial gender parity (Rose, 2019). Beyond simply a moral imperative, societal benefits include more inclusive products and services (Kimber, 2023) and greater female empowerment (Rose, 2019).

To investigate gender inequalities within FinTech, we deploy a mixed-methods approach focusing on two questions. First, what is the current state of gender diversity in FinTech? Second, why is female participation in FinTech so low?

To examine gender inequalities within FinTech, we propose the triple glass ceiling concept. The phrase glass ceiling is widely used and describes the barrier of discrimination preventing women from progressing vertically in their careers (Babic and Hansez, 2021). We argue that FinTech gender inequalities result from male dominance in finance, technology and entrepreneurship. The increased gender inequalities within FinTech suggest a multiplier effect is present, given that FinTech lies at the intersection of finance, technology and entrepreneurship. Resilient gender stereotypes that present financial, technological, and entrepreneurial career paths as exclusively male continue to systematically exclude women, beginning with early-age education. Gendered stereotypes and the historical male domination of organisations mean the idea of an abstract worker is structured around a man (Acker, 1990). In other words, men's perspectives and experiences get universalised and positioned as gender-neutral, thereby obscuring the embodied nature of work (Acker, 1990). Masculine performances, i.e., the adoption of traits considered to be masculine such as assertiveness, self-affirmation, and strength, are commonly privileged within the industries of finance and technology and in entrepreneurship (Massey, 1994; McDowell, 1997; Balachandra et al., 2019). As these three areas converge within FinTech, the privileging of masculine performances becomes reinforced. FinTech gender inequalities are exacerbated further by gendered societal expectations bounding women and domestic work, which remains an issue across the workforce (Massey, 1995; Granleese, 2004).

While we are conscious that discrimination within FinTech is an intersectional experience (Crenshaw, 1991), a thorough intersectional analysis is beyond the scope of this paper. While exploratory in nature, our findings have important implications for research and industry. To the best of our knowledge, there exists little or no academic literature focused on examining the gender inequalities within FinTech. We therefore intend for this study to act as a springboard for further study and discussion. Within the industry, we hope this research can serve as an alarm call about the current state of FinTech gender inequalities and offer reasons for this situation. Through such understanding, those within the FinTech ecosystem can recognise the barriers faced by women and make changes at the scale of individual workplaces and throughout the industry as a whole. Given the dynamic and fast-moving pace of FinTech, the industry is not without the potential to drive FinTech and general workplace gender equality (Edwards-Dashti, 2022).

The following section introduces the 'triple glass ceiling' conceptual framework, reviewing literature on gender inequalities in finance, technology, and entrepreneurship. After detailing the research design, we discuss our findings and interpretations. Our conclusion argues for a strengthened engagement with the topic within academia and industry. The innovative potential of FinTech, including the industry's aspiration to reshape financial inclusion, cannot be realised until the triple glass ceilings get shattered.

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Gender inequalities in finance, technology, and entrepreneurship

A glass ceiling remains stubbornly in place within finance. For example, while women comprise 52% of the financial industry workforce in North America, only 27% of C-suite executives are women (Ellingrud et al., 2021). Furthermore, an intersectional perspective of race *and* gender (Crenshaw, 1991) reveals that the 'broken rung' into management-level positions becomes amplified for Global Majority[2] individuals (Kämpfer and Wójcik, 2020; Ellingrud et al., 2021).

Foucault's (1979) concept of normalisation (i.e., the policing and reinforcement of an idealised norm of conduct) is evident in the social practices of financial services. Acker (1990: 52) argues that 'the abstract worker is actually a man, and it is the man's body, its sexuality, minimal responsibility in procreation, and conventional control of emotions that pervades work and organisational processes'. Masculinity is the socially sanctioned identity and behaviour dominant within finance (Massey, 1994), maintained through structural practices and self-policing at the microscale of the individual, in what Foucault (1979) terms 'capillary power'. Gender inequalities are also present within the shadow structure of financial services, e.g., the informal networks of employees (McGuire, 2002). Women often receive less network help than men, owing to the expectation and privileging of maleness rooted in the male gendering of the abstract worker (Acker, 1990).

Granleese's (2004) study notes how women bank managers recognise the presence of gender-related pressures within the workplace significantly more than men. Women may navigate the masculinity of financial services by attempting to render their 'difference' invisible, e.g., by adopting a masculine performance (Acker, 1990; McDowell, 1997). However, this reinforces rather than challenges the systematic inequalities present (Kämpfer and Wójcik, 2020). Additionally, the embodied difference causes women to remain out of place (McDowell, 1997). The continual need for resilience can take a toll on women in financial services, pushing them to exit the industry (Edwards-Dashti, 2022).

There is evidence of progress for (white) women over recent years. For example, the share of women in C-suite positions has grown by 50% since 2018 (Ellingrud et al., 2021). This suggests an ongoing rupture of the stereotype within financial services. Powell, Butterfield, and Jiang's (2021) study assessing descriptions of a 'good manager' evidences a decreasing emphasis on masculinity and an increasing valuation of femininity, producing an androgynous managerial profile. While women still face numerous barriers, a lower weighting on masculinity should ease some friction.

In comparison, there is little evidence of progress in technology. Women continue to face a critical underrepresentation, accounting for 25.5% of workers in the UK technology industry (Tech Nation, 2021) and only 5% of leadership positions (Andrews, Hinton, and Ash, 2017). Within technology, deviation from the 'master subject' (Haraway, 1991) – the white, bourgeois, heterosexual male – leads to an 'Othering' (Massey, 1994). Persistent gender inequalities are concurrent with technology becoming an increasingly structural aspect of societies. It is essential to recognise that technology products are *socio*technology products: technologies become imbued with the gender inequalities of the industry (Åsberg and Lykke, 2010).

The highly competitive environment of technology promotes the centrality of work, which can cause domestic labour to be expelled to the periphery, often landing on paid services or an unpaid (typically female) partner (Massey, 1995). Negotiating the work/home boundary for women can be particularly difficult due to the social expectations around unpaid labour (Massey, 1995).

Technology organisations, as well as workplaces more broadly, are often constructed as gender-neutral (Acker, 1990; Kelan, 2009). The post-feminist climate, coupled with the neoliberal mantra of meritocracy, conceals the gendered nature of STEM workplaces (Nash and Moore, 2019). Meritocracy projects performance results on individuals, promoting a problematic relationship between success and effort that neglects the gendered obstacles women navigate (Kämpfer and Wójcik, 2020). Nash and Moore (2019)

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refer to this phenomenon as 'cruel optimism'. Adherence to gender neutrality can be beneficial by allowing women to survive such masculine atmospheres (Nash and Moor, 2019). However, the ideological dilemma women face, recognising gender neutrality *and* discrimination, causes additional *affective* labour, termed 'gender fatigue' (Kelan, 2009).

Improving gender diversity within technology has significant socioeconomic benefits (Andrews et al., 2017). Improved mirroring of social demographics can produce more inclusive technologies, accessing an expanded market. For example, FemTech (an abbreviation of female technology) is a category of technology products focused on supporting women's health needs. Rapidly growing, revolutionising HealthTech, FemTech is expected to become a $41.4 billion market by 2026 (FemTech Analytics, 2021).

The third ceiling concerns entrepreneurship. The venture capital (VC) industry is akin to a 'boys' club': women account for 21.8% of VC employees and 13.7% of senior roles globally (Lee, 2021). Male dominance leads to a tendency to invest in male-led ventures in a show of homophily (Ewens and Townsend, 2020): women-led startups received 2.3% of VC funding in 2020 (Bittner and Lau, 2021).

Through specific practices and behaviours, the market is continually (re)constructed as masculine (Petersson Mclntyre, 2021). VC investors discriminate against feminine performances by male and female entrepreneurs, attributable to two factors (Balachandra et al., 2019). First, because entrepreneurship continues to be overwhelmingly male, the traits of successful entrepreneurs tend to be masculine (Johnson, Stevenson, and Letwin, 2018; Balachandra et al., 2019). Furthermore, Kanze et al. (2017) reveal that male entrepreneurs get asked more promotional questions focused on business potential during pitches, whereas female entrepreneurs receive more preventative questions framed around potential loss. Flipping questions to provide promotional responses is challenging.

Women entrepreneurs may get drawn to alternative funding routes where gender biases can act differently (Johnson et al., 2018). For example, crowdfunding, where a large group of amateur investors each make small investments in a startup, can be advantageous for women (Johnson et al., 2018). Women entrepreneurs are deemed more trustworthy and caring due to feminine-stereotyped traits, which, in connection with investors' lack of expertise and limited relationship with the entrepreneur, lead to women experiencing increased funding success (Johnson et al., 2018).

Entrepreneurial gender inequalities waste substantial economic potential. Reviewing female entrepreneurship, Rose (2019) identified critical opportunities for helping women entrepreneurs: increased funding amounts directed towards women, improved childcare support, and increased support through, e.g., accessible networks. In response, the UK government committed to seven initiatives, including funding support and promoting female uptake of STEM (HM Treasury, 2019). The socioeconomic impacts of the coronavirus pandemic and the current cost-of-living crisis have disrupted these initiatives. However, cultivating female-led entrepreneurship holds promise for supporting the recovery of the UK economy.

Approaching FinTech gender inequalities through the triple glass ceiling conceptualisation is novel within the literature and provides a valuable framework for understanding the gender imbalances of FinTech. In finance, technology and entrepreneurship, women occupy a minority position and face discrimination for deviating from the expected and valued masculine performance, causing a multiplier effect within FinTech. Furthermore, broader societal expectations of women, such as caring responsibilities, make the glass ceilings thicker.

Data and methods

We use a mixed-methods approach, common in financial geography (Wójcik, 2022), to support a comprehensive investigation into FinTech gender inequalities (Jick, 1979; Bryman, 2012). While quantitative methods provide a picture of FinTech gender diversity,

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interviews allow lived experiences and personal perspectives to be discussed in-depth and in the interviewee's own words (McDowell, 1998; Bryman, 2012).

We take the sample of FinTechs used in our database from the 2019 FinTech100 report (KPMG and H2 Ventures, 2019). This source has global coverage and crosses different growth stages, offering multiple parameters to investigate FinTech gender diversity. For each FinTech, we collect the following: headquarters city and country, CEO name and gender, founder(s) name and gender, year founded, executive committee names and genders, total funding amount, and company size (employees). We also characterise each FinTech as either more finance- or more technology-based. For example, we categorise Atom Bank (a digital challenger bank) as finance but Coinbase (a cryptocurrency exchange platform) as technology.

Crunchbase (a commercial database aggregating information about private and public companies) is the primary data source. The platform is becoming an increasingly popular research tool as its scope and detail expand. We use additional data sources to supplement inaccuracies and gaps within Crunchbase, particularly for executive committee data. Company websites, press releases and LinkedIn are drawn upon to cross-check and provide further data. All data are valid as of October 2021.

A few data points are left blank because it was not possible to attain accurate and reliable data. This problem is common for FinTechs that are part of a larger parent company. It can be challenging to tease out a separate founder(s), CEO and executive committee. Where data is missing, we remove the corresponding FinTech from that specific statistical analysis. Given the limited availability of data on FinTech startups, this represents the most reliable method for carrying out quantitative analyses. The small proportion of women founders, CEOs and executives forces a reliance on descriptive statistics. While potentially viewed as a limitation, it is a finding in itself. The male dominance of FinTech is such that a larger sample size would not have eased this challenge.

The coronavirus pandemic necessitated, both ethically and legally, the use of digital interview methods, which proved advantageous (Roberts, Pavlakis, and Richards, 2021). The associated time and cost efficiencies, removal of geographical constraints, and scheduling flexibility increased our access to elite professionals with minimal disruption to rapport (Harvey, 2011).

We conducted 15 semi-structured interviews: 12 with FinTech professionals (eight women and four men) and three with FinTech investors (two women and one man) (see Appendix 1). We contacted 40 individuals for interviews, 11 men and 29 women. Out of those who were not interviewed, all bar two simply did not respond to our request. All 15 interviews, typically 30–45 minutes, took place throughout August and September 2021. Interviewees are from various geographies, positions and FinTech growth stages. While we had provisionally intended to conduct more interviews, we stopped at fifteen upon reaching data saturation. Everyone is responsible for addressing the gender imbalance within FinTech (Edwards-Dashti, 2022). However, most interviewees were women, as we wanted to amplify their voices in the abjectly male environment of FinTech. Given the predominance of whiteness in the industry, we made our best efforts to include members of the Global Majority (three).

Immediately after each interview, we noted important non-verbal cues that would otherwise become lost. We also transcribed them soon after to achieve thorough and accurate documentation (Longhurst, 2010). We selected broad thematic codes through the literature review and initial impressions following interviews (Braun and Clarke, 2006). We then examined transcripts to identify further 'secondary' codes and coded the transcripts against these. Participants could choose to be anonymous, although only one opted for it.

Only the female author conducted the interviews. Valentine (2002) argues that positionality is initially undefined and gains clarity as the (digital) encounter progresses. The female author was arguably able to build a stronger rapport with female interviewees

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because of the ability to present as an 'insider' able to understand the gender-specific issues discussed (Oakley, 1982). As in McDowell's (1998) experience, two male interviewees occupied a more supportive paternalistic position, while the third tended to be more patronising. Interviews are always mediated by positionality. However, it is very challenging to delineate precisely *how* positionalities shape the interaction (Schoenberger, 1992). Nonetheless, it is essential to acknowledge that the data collected is a product of the interacting positionalities of the interviewer and interviewee.

What is the current state of gender diversity in FinTech?

Within our sample, women held few senior-level and entrepreneurial positions. We found that women held 18.2% of executive committee positions, that 4% of companies had a female CEO, and that 7.7% of founders were women. This is concurrent with the findings of similar studies (Deloitte, n.d.; Sparks and Eckenrode, 2020; Khera et al., 2022). These statistics confirm that FinTech gender inequalities are worse than in the individual sectors of finance, technology and entrepreneurship, as discussed in the literature review. As FinTech lies at the intersection of these three sectors, its comparative under-performance justifies our approach using the triple glass ceiling. All interviewees recognise FinTech as heavily male-dominated: 'It's woeful, you know, it's very pale, male and stale' (Angela Yore, Co-Founder and Managing Director, SkyParlour).

Recognising FinTech in this way is the antithesis of what the industry (self-)purports to be: innovative, exciting and disruptive. On a basic level, how can an industry innovate through homogeneity? Genuine innovation is arguably driven by diverse people with different backgrounds and experiences (Hunt et al., 2018).

The male dominance of FinTech is particularly salient at the senior levels. Only 4.04% of companies in our sample have a female CEO, and women account for, on average, 18.2% of executive committee positions. 27.67% of FinTechs have an entirely male executive committee: 'The gender gap [at] the management level [. . .] makes FinTech like [a] boys' club' (Cağla Gül Senkardes, Co-Founder and Former CEO, MenaPay).

This 'boys' club' culture within the senior levels of FinTech stands as a significant barrier to female progression. The informal social networks among men translate into professional networking, mentorship and promotions. Toxicity, sexist humour and female objectification often accompany boys' club culture (Elting, 2018). Unsurprisingly, women are rarely admitted into such 'club', nor would most want to be.

Women are significantly underrepresented (7.69%) among FinTech founders, with just one company in our sample completely female-founded (PolicyPal, founded by Val Jihsuan Yap). An overwhelming number of FinTechs (87.23%) do not have a single female (co-)founder.

> I may be the only black female founder, certainly in Scotland [. . .], and if there are, they're few and far between. [. . .] This is quite a lonely space. (Tynah Matembe, Founder and CEO of MoneyMatiX)

Tynah speaks to the isolation that female FinTech entrepreneurs, particularly female Global Majority, can experience. Being surrounded by no one of the same gender and/or race as yourself can undoubtedly feel lonely and, as such, be a very unsupportive environment without the informal networks that often exist between similar individuals. It is a difficult place to be, and underrepresented founders must be resilient.

Whilst there is a growing awareness of the gender inequities within the industry, there is, conversely, a perceived lack of progress: 'I don't think the numbers are actually [. . .] that much better now' (Raiha Buchanan, Co-Founder and CEO, GigaPay).

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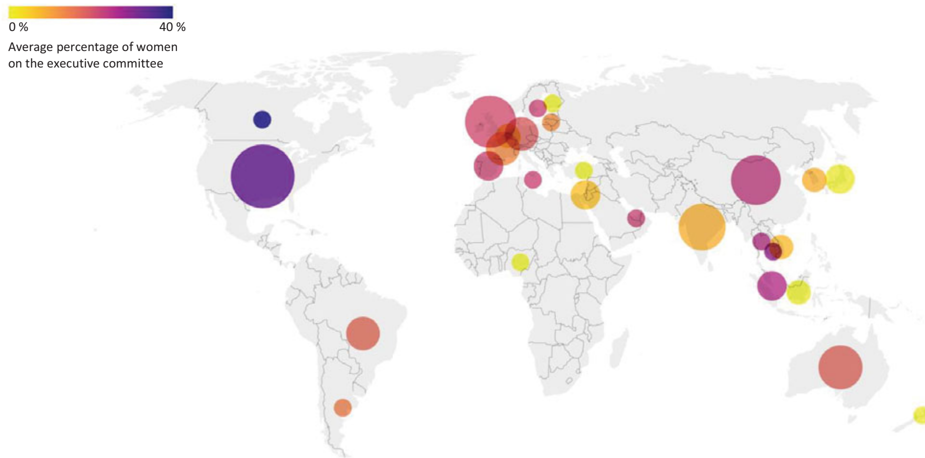

Figure 1. The geography of FinTech executive committee gender inequality (Source: Authors).
Circle size is proportional to the number of FinTech firms in the country and the colour is representative of the average proportion of women on the executive committee.

Given the lack of (longitudinal) quantitative studies on FinTech gender diversity, it is difficult to confidently ascertain if and to what extent change has occurred. What is key is that FinTech still *feels* very male-dominated.

Through aggregating the quantitative data into geographical regions, we achieved a better understanding of FinTech gender diversity. Given that there are so few (four) female CEOs populating the database, it is difficult to identify a pattern. However, when considering founders, North America, Europe and Central Asia, where the most established FinTech centres are, have a notably worse female representation among their entrepreneurs.

> [I]t's interesting, the more international you go, the more diversity you find. [. . .] In some of the emerging countries [. . .] I find almost a higher level of diversity naturally built in than you might find even in Europe or in the US or the UK. (Kerim Derhalli, Founder and CEO, Investr)

Relatedly, when we aggregated the data into country-level income categories (as defined by the World Bank), the highest percentage of female founders is in Lower-Middle-Income Economies (10%), compared with Upper-Middle-Income Economies (7.7%) and High-Income Economies (7.19%). This finding suggests that cultural differences and/or government legislation could influence the ability of women to pursue entrepreneurship and procure funding.

However, the reverse appears true for executive committee gender diversity. North America is the most gender-diverse region (33.95%) (see Figure 1). Latin America and the Caribbean, Europe and Central Asia, and East Asia and Pacific follow in terms of gender diversity, and all cluster around 16%. There are only two FinTechs in Canada but 15 in the US, which suggests US FinTech drives the higher gender diversity. Consequently, we separated the data for the US and the rest of the world. The average percentage of women on the executive committee is 33.54% and 15.29%, respectively (p-value < 0.05).

More technology-focused FinTechs are slightly more male-dominated: 6.52% of founders are female within the technology cluster (8.55% for finance), and an average of 15.88% of executive committees are women (19.93% for finance). While neither

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difference is statistically significant globally, the disparities indicate the importance of the technology/entrepreneurship intersection when considering the gender inequalities within FinTech.

Due to the statistically significant difference between the US's average executive committee composition and the rest of the world's, we further aggregated the finance and technology categories into these geographies. In the US, women account for 35.5% of finance-based and 32.42% of technology-based executive committees, although this difference is statistically insignificant. However, excluding the US, there is a statistically significant difference between finance- and technology-focused FinTechs, 18.31% and 10.36%, respectively (p-value < 0.05). To confirm the impact of higher gender parity in US FinTech, we compared the US and the rest of the world for finance-focused and then technology-focused firms. For both tests, the US exhibits significantly higher gender diversity (p-value < 0.05). Technology-focused FinTechs appear more gender-unequal than finance-focused ones, corroborating studies on women in senior positions in finance (Ellingrud et al., 2021) and technology (Andrews et al., 2017).

Within our sample, the emerging 50 FinTechs exhibit a higher level of gender diversity among founders: 8.81% of founders are women compared to 6.93% in the top 50 FinTechs. However, when considering executive committee gender diversity, the top 50 FinTechs are notably more inclusive. Women fill an average of 24.3% of executive committee positions within the top FinTechs but only 11.65% within emerging FinTechs (p-value < 0.01). Emerging FinTechs seem more diverse at the founding level but are yet to catch up when it comes to the executive level – perhaps the increased diversity among emerging FinTech founders (relative to top FinTechs) will filter up to the executive committee.

Finally, a moderate positive correlation exists between company size and executive committee gender diversity: $R_s = 0.471$ (p-value < 0.01). There are two possible explanations: diverse companies grow more, or growing FinTechs are better able to improve their gender diversity.

It's a man's world: The financial glass ceiling

Finance is bound into FinTech and offers a fundamental route into the sector. Interviewees exemplify this: two in three had their career path influenced by the financial industry. Therefore, the financial sector culture is often unwittingly brought into FinTech. Whilst experience in finance is not required, it arguably raises employability and promotion prospects. All four male interviewees had a background in finance and followed a relatively linear career trajectory into their current position. Significantly more variation existed among female interviewees; several noted the chance nature of their entry into FinTech: 'I fell into FinTech [. . .] because I desperately needed a job' (Nina Mohanty, Co-Founder, Bloom Money).

This disparity may stem from entrenched and gendered societal expectations. FinTech and all the constituent parts – finance, technology, entrepreneurship – are perceived as masculine spaces. The social coding, not the labour itself, (re)constructs a job as masculine or feminine (Acker, 1990). Notably, if many women entered due to chance, numbers would likely rise with more women made aware of and attracted to FinTech.

The masculine coding of FinTech is (re)produced through job descriptions and hiring:

> We are looking for someone to execute on that strategy. We are looking for a hunter; eat what you kill. [. . .] The language of it is absurd sometimes. [. . .] There's such this like, [. . .] very macho masculine. (Nina Mohanty)

Recruitment practices can work to turn women away because many women will likely not identify with this language nor want to work in such an environment (Gaucher et al., 2011).

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The masculine language also indicates that recruiters are looking for characteristics more commonly associated with men (González, Contina, and Rodríguez, 2019). Therefore, more men tend to be attracted to apply and get hired.

Furthermore, societal expectations placing private sphere work on women can translate into discrimination within FinTech recruitment:

> I found this really great candidate that I wanted to hire for my team. And I was talking to my boss, who was a man, and [. . .] he didn't want to go forward with her. One [reason] was because, oh, you know, she's probably going to get married soon and have children, and then you'll have to have the expenses paid, and then you have the parental leave. (Raiha Buchanan)

> One [man] literally said I would not hire pregnant women because they're not going to be reliable. (Lisa Leid)

The woman in Raiha's anecdote was eventually hired, despite the assumption of not being as committed as the male counterpart and viewed as a likely burden to the business. While illegal and ill-informed, it remains a prominent barrier to women entering FinTech.

Relatedly, entry into the public sphere of paid labour does not necessarily mean exit from the private sphere of domestic work. Granleese (2004) recognises that women banking managers experience significantly higher pressures regarding work-life balance than their male counterparts. In the intense, commitment-strong industry of FinTech, the meshing of public/private work can be heightened. Numerous interviewees identify the demands of a career in FinTech to be incompatible with those of family life:

> It could be seven days a week. Sometimes, it could be 12 to 16 to 18 hours. Sometimes you're not sleeping. And also, you're always thinking about it. It takes up a lot of mental space. (Lisa Leid)

> I don't really believe in work-life balance. [. . .] I think that's a false paradigm. [. . .] work is a real priority for me. (Justin Basini, Co-Founder and CEO, ClearScore)

The pressures and long working hours can make navigating the work/home boundary challenging. Work commonly gets taken home. Invading the private sphere is often actively encouraged and viewed as commitment, implicitly read in the above quote from Justin. The structural and societal inequalities that can disproportionately make this impossible for some women get neglected.

> [W]omen naturally drop out as they get older, they have families and, you know, they have to make [. . .] harder choices than men have to make, unfortunately. So, you know, there's that natural attrition that you get, but then it's, it's not helped by [. . .] the attitudes that can exist in some organisations. (Kerim Derhalli)

Kerim is recognising the lack of support afforded to women re-entering FinTech following maternity leave, which affects their reintegration and desire to stay in FinTech – as does the need to remain resilient in this industry.

Networking further exacerbates the scarcity of women entering FinTech and at senior levels. Social connections can leverage career advantages. However, networking is a 'male-dominated game' (Socratous, 2018). Women often experience exclusion from networking opportunities, either through deliberate means or owing to personal circumstances (e.g., caring responsibilities), particularly as networking tends to occur in informal spaces outside of working hours:

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> [T]hey're going for a late-night whiskey or nightcap at an all-guys club, or, you know, late at night, when I have to be home with my children or be a carer for my parents, or whatever. Or I just have a life, and I don't want to spend time with you outside of the workplace, that's fine too, right? But then it's kind of where are these conversations had – on the golf course, smoking a cigar. (Nina Mohanty)

Networking restrictions translate to marginalisation in accessing new roles or promotions within FinTech (McGuire, 2002). Networking reinforces male dominance cyclically:

> [If] men are in senior positions, and they're, you know, bringing in people to work with them, they tend to want to, you know, work with people that they think that they can relate to. And often, they relate better to other men [. . .] coming from the same background. (Angela Yore)

Network homophily is particularly damaging in the industry because of the male domination of FinTech, particularly among the more senior levels. While women face exclusion from networking across various sectors, it is particularly salient to consider this phenomenon within FinTech. Furthermore, the male gendering of the workplace biases recruitment practices towards men (Acker,1990). When new positions or promotions become available, they are often expected to be, and commonly are, filled with men, reinforcing the idealised norm of conduct (Foucault, 1979). As such, women experience systematic exclusion from opportunities within FinTech.

Further discrimination in FinTech occurs at multiple levels: implicit to explicit, microaggressions to acute, and everyday to exceptional (Edwards-Dashti, 2022). Experiences of sexual harassment do not appear to be rare occurrences. Unfortunately, given their sensitive nature and potential repercussions, sexual harassment is not widely reported and represents something of a known unknown. One interviewee knew of sexual harassment against a female worker by a higher-ranking male colleague, culminating in the termination of the female worker's employment. An unsafe and unwelcoming work environment can be produced, which could contribute to why the industry struggles to attract and retain women.

Furthermore, many interviewees reported the normalisation of discriminatory behaviours, particularly those less explicit:

> [T]here would be this passive-aggressive behaviour, [. . .] quite demeaning, quiet. (Stephen Ingledew, Executive Chair, FinTech Scotland)

> [A] big challenge is actually just being heard and listened to because I feel like a lot of the men are speaking the same language to each other. [. . . B]ut when it's a woman, [. . .] they do not listen to you or hear you the same as they would a man. (Lisa Leid)

Because of the often-implicit nature of such practices, it is challenging to produce specific statistics on the issue. Interviewees reported that citing experiences rather than 'hard facts' were not taken as seriously and tended to be dismissed because they lacked proof.

Moreover, interviewees commonly reported that women must work harder and push more to procure the same result as their male peers:

> I've had to fight my case extremely, much more aggressively than I would've liked, to [. . .] get further on. [. . . T]hey recognise it in men instantly, how great the job they're doing, and that they deserve more pay and deserve a better promotion; it's actually disgusting and, at first, you're a bit like maybe [. . .] I need to show more that I'm doing a lot or I'm doing amazingly. No, it seems to be proven throughout my

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> career that actually, they're just overlooking [. . .] they think they can get away with it. (Lisa Leid)
>
> I think there are widely accepted differences, for example, in what you might describe [as how] self-promoting women are relative to men. [. . . W]omen are less likely to push themselves forward for opportunities. They are less likely to use superlatives to describe themselves. (Mark Mullen, Co-Founder and CEO, Atom Bank)

It is not the quality of the work produced but the performance of the individual that is more appreciated. In Kimber's (2023) study, 27% of women reported lacking recognition for their contributions. There is an expectation for women to adopt masculine behaviours even where it is uncomfortable. According to interviewees, this can have significant mental well-being implications: second-guessing and questioning oneself, combined with persistent discrimination, can make it hard to be resilient. The gendered differences of self-promotion that Mark refers to are not innate. They result from cultural norms and practices, and FinTech appears to exacerbate them.

Boys' toys: The technology glass ceiling

Technology is the second layer of the triple glass ceiling. Nearly all the interviewees raised the lack of women in technology as a significant barrier to increasing female participation in FinTech.

The technology barrier becomes clear when breaking down FinTechs into their constituent components. The underrepresentation of women in FinTech deepens when considering solely technology positions:

> [W]hen you look at the different parts of the [. . .] FinTech company [. . .] what we find [. . .] typically, and I think this is true of us as well, is that engineering talent is mainly male. [. . .] It's relatively rare that you get to see women programmers [or] developers. (Kerim Derhalli)

In our dataset, women occupy only 1.49% of CTO/CIO (Chief Technology/Information Officer) positions. This proportion jumps to 37.04% when considering the position of CMO (Chief Marketing Officer). This disparity within FinTech indicates a gendered horizontal segregation: women are segregated outside technology roles and into the more stereotypically female positions.

A technology background is not essential to entering FinTech. Only two of our interviewees had this background. However, it is plausible that improving the number of women accessing technology careers would support a more gender-diverse pipeline of talent into the industry and facilitate less segregation within FinTech.

Technology education and careers are male-dominated (Andrews et al., 2017). Girls typically do not engage with STEM subjects to the extent that their male counterparts do, turning them away from technology careers. Structural discrimination means that girls and women are not supported or encouraged to take up STEM subjects because of deep-rooted stereotypes that place technology firmly in a male domain (cf., Ferreira, 2017): 'If you do look down through the educational system, you will see increasingly gender bias decisioning and/or splits across a variety of different subject areas' (Mark Mullen).

The male stereotyping of technology remains undisrupted because women continue to be underrepresented in technology careers. As such, low representation is likely maintaining the gender inequalities within technology because girls and women continue associating technology with maleness:

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> [H]ow do we see the CTO of the company being a woman [when] most of them you see as being occupied by a man [. . .]. Women are not taught to embrace tech roles. This one is definitely a significant barrier. (Anonymous, female FinTech professional)

However, whilst many interviewees noted the need for increased representation within technology and FinTech, there was some friction in achieving this, particularly around the so-called positive discrimination. For example:

> I don't really want to talk about being a woman in FinTech because I don't want to talk about my gender. [. . .] Why should I be on a panel called Women in FinTech, when I could just as easily be talking about the democratisation of finance or tokenisation of payments? [. . . T]he reason I continue to do it through is because it matters. Because someone hopefully is watching that panel and going, Nina can do it, I can do it too. (Nina Mohanty)

The concept of tokenism, which emerges when organisations are highly skewed towards a particular worker identity (Kanter, 1977), is present here. Following Kanter (1997: 209), given the minority of women within FinTech, women occupy the position of 'tokens' and, therefore, are 'often treated as representations of their category, as symbols rather than individuals'. As such, women can often get invited onto panels because of their gender rather than for their expertise, accomplishments, and valuable perspectives. This can be limiting and potentially perpetuate the idea that women's contributions are only valuable in the context of their gender, reducing them to tokens. However, as Nina notes, the flip side is that tokenism can provide visibility and representation for women, possibly inspiring other women and girls to enter the industry and overcome the token status.

Kanter (1977: 209) additionally recognises that eliminating women's token status can be achieved by adopting new recruitment and promotion policies within organisations, which can cultivate a shift in workplace culture. However, amending such policies may still reinforce the impression that female employees procured their positions because of their gender. For example, Lisa was shown an email by a male colleague stating that she was a diversity hire, undermining her expertise and credentials. This can also give rise to the following perspective:

> Ironically, the only gender discrimination that I see is against men. [. . .] Because everybody is so incredibly keen on recruiting women that they definitely get an advantage in the recruitment processes. Now that's a good thing, [. . .] that is what needs to happen. (Justin Basini)

Positive discrimination in the recruitment process is at play here (Birkelund et al., 2022). This can potentially reinforce women's token status within the industry despite increasing the proportion of women, as implicitly read in Justin's articulation that the *only* discrimination present is against men. Therefore, it would, perhaps, be beneficial to identify such recruitment policy updates not as positive discrimination but as simply positive measures attempting to minimise the significant discrimination already experienced by women in FinTech.

Man up! The entrepreneurial glass ceiling

Female entrepreneurs occupy a minority position (only 7.69% of founders in our dataset are women) and receive limited VC funding (Rose, 2019).

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> [Y]ou're not on a level playing field. [. . . W]e'll see all your male counterparts getting thousands, you know, like a 100% more, [. . .] a 1000% more funding. So, that is super frustrating. (Loral Quinn, Co-Founder and CEO, Sustainably)

Our dataset reflects the gender imbalance in accessing capital. FinTechs with female (co-) founders received less funding than FinTechs with male-only founders (p-value < 0.01). Fewer women attempt to access funding, and those who do are less successful than their male counterparts.

Individuals tend to pursue entrepreneurship based on relevant industry experience. FinTech founders typically have a background in financial services, technology, or FinTech itself. These industries are very male-dominated, which immediately reduces the number of female FinTech entrepreneurs attempting to procure funding:

> You've got to think about where do founders come from [. . .]. They're going to come from the finance industry, which tends to be male-dominated, or they're going to come from the technology industry, which tends to be male-dominated. (Kerim Derhalli)

Therefore, women are less likely to have the necessary experience and knowledge of the sectors and products. This limitation has a two-fold effect: comparatively fewer women will change careers to pursue entrepreneurship, and investors may be less willing to back founders without first-hand experience. For example, Charlie Boles (FinTech VC, Speedinvest) noted the importance of 'deep knowledge and expertise'. This valuation neglects the structural barriers preventing women from procuring such FinTech-based experience and knowledge, systematically excluding many women with strong entrepreneurial skills.

There are widely acknowledged differences in the attitudes and behaviours of men and women. These become socially (re)constructed through, for example, cultural norms and gender stereotyping. In entrepreneurship, these coalesce around confidence level, risk aversion, and pitching style. This influences the lack of women entering entrepreneurship and the gendered funding gap:

> [M]en will just be like, I'm starting a company, and they'll just [. . .] incorporate. I thought about Bloom for a year before I incorporated a business, and I think I even was kind of like, oh, I don't actually know if I'm capable of doing. I really second-guessed myself a lot. (Nina Mohanty)

Consequently, women tend to be less willing to pursue entrepreneurship because of the high risk. While it can come across as a lack of confidence, several interviewees reconceptualise this attitude as better business management: '[it] gets interpreted as [. . .] risk aversion and it's not [. . .], it's risk management and [. . .] when you understand that, it completely turns this on its head' (Jackie Waring).

Caution might be perceived positively, but Zuckerberg's mantra of 'move fast and break things' has been taken up within FinTech, where caution is not praised but instead viewed as problematic. Investment institutions intensify this by requiring high levels of growth (Baldridge and Curry, 2023). However, there has recently been resistance to the 'move fast and break things' ideal (Taneja, 2019). Perhaps this will support an increase in the number of female FinTech founders.

The privileging of masculine performances in investment pitches becomes exacerbated through gendered questioning. Women typically underplay or are more realistic in their business prospects and tend to be asked more prevention-style questions concerned with defending their startup rather than promoting the potential (Kanze et al., 2017):

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> [F]emales are all asked prevention questions, which is like 'what are the risks involved', blah, blah, blah. Whereas men are all asked promotion questions such as, like 'how big could this get?' (Loral Quinn)

The bias, unconscious or otherwise, appears ingrained in investment culture. Responses to this bias tend to be around reinterpreting the question, i.e., repositioning a prevention question into a promotional one in the response. However, not only is this potentially challenging, but it also places the impetus for change on female entrepreneurs. Investors need to understand the oft-unconscious biases taking place and work to remove these, which would improve their decision-making and portfolios.

An association between masculine behaviours and successful entrepreneurs develops (Balachandra et al., 2019), which can influence investors' decision-making against displays of femininity:

> [S]ome investors have a very sort of a male-orientated approach, really. And believe that a certain type of style, i.e., being very hard and direct and ruthless, is the only way to be. (Stephen Ingledew)

> [Investors] want people that they can relate to, that they feel are like themselves. They see that as what success looks like. (Angela Yore)

> [T]here's, disproportionately, these boot camps, and whatever to like get people ready to pitch, but all they're teaching us to do is come off as a white male. [. . . I]t was said to me, if you like the product so much, why don't you be the Chief Product Officer and bring a white guy on to be the CEO [because] it would be more palatable to venture capitalists. (Nina Mohanty)

Women are expected to 'play the game' of entrepreneurship and adopt masculine performances to overcome their 'Othering'. There is no challenge to the male dominance of entrepreneurship or the masculinised image of a successful entrepreneur. Instead, it reinforces inequalities within FinTech entrepreneurship. In requiring entrepreneurs to fit the white male mould, diversity of thought and ideas within FinTech shrinks. Furthermore, even when women adopt masculine behaviours, they remain penalised due to their embodied differences (Balchandra et al., 2019).

The male dominance of the investment industry promotes investment-entrepreneurship homophily (Ewens and Townsend, 2020; Lee, 2021). It is perhaps hardly surprising that entrepreneurs fit the same mould as those providing investment:

> [I]f you want to get money from a valley firm that's white and male, well, you probably will, if you're white and male because you're already in their networks. (Amy Nauiokas, Co-Founder and CEO, Anthemis)

> [T]he investment community, whether it be VC, LP, institutional, is run by men. It is even more dominated than the business or profession that I work in. [. . .] It's not because women haven't got great ideas. It's not because they are any less adept at selling, it's that the people they're selling to are men. [. . .] It's not an entrepreneurial gap, it's actually an investment gap. (Mark Mullen)

Male investors will likely have their networks and links dominated by other men, improving their access to funding circles. Because people tend to relate more to individuals similar to themselves, male investors are likely to be attracted to businesses based on a more masculine lifestyle. The male stereotyping of entrepreneurship works in tandem with the homophily bias, placing significant barriers in the path of women entrepreneurs.

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To permeate such barriers, interviewees commonly identified the need for increasing the proportion of women in the investment industry: 'There's something called the echo effect. [. . . A]s you increase the level of female investors, you get proportionate increase in the level of investment going to female-founded companies' (Jackie Waring).

Raising female representation in the investment industry can offset the bias against entrepreneurs. However, when discussing her company, Investing Women (an investment syndicate of female angel investors), Jackie noted the difficulty of getting women into investing: women tend not to have the financial education, are not encouraged to pursue such professions, and/or do not recognise that they could be an angel investor.

> [F]inancial education for men is largely orientated around how do you invest [. . .] or how do you accumulate wealth. [. . .] whereas financial education for women is often around how do you save. (Charlie Boles)

As Charlie illustrates, the financial education of investment is more commonly afforded to boys and men, advantaging them when entering investment. Therefore, countering the male dominance within investment requires re-examining financial education.

Investment firms need to make a concerted effort to transform their employee base and portfolio. Amy co-founded and built Anthemis on a fundamental belief of diversity and inclusion, reporting Anthemis as 53% female and 38% Global Majority. Anthemis is currently one of the most successful FinTech VCs (Howat, 2021), highlighting the important role of investment firms in taking charge and diversifying their portfolio, and the associated economic benefits.

Undoing discrimination in the investment industry is a long-term project, but education, awareness, and accountability among investment firms can support diversity. Interviewees also highlighted the need for female-specific initiatives, including investment funding reserved for women.

Conclusion

Women in FinTech experience discrimination across the three intersecting axes of finance, technology and entrepreneurship. The gender inequalities of these separate sectors are brought into FinTech, significantly inhibiting women's participation and progression. Therefore, we recognise the presence of a triple glass ceiling in FinTech. Through adopting a mixed-methods approach – quantitative database analysis and semi-structured interviews – we have detailed the 'what' and 'why' of FinTech gender inequalities.

The quantification of the current state of FinTech gender diversity confirmed the expected: there is a significant void of women across FinTech founders, CEOs and other executive committee positions. Beyond these macro-scale headlines, there are important nuances. The proportion of women founders is notably low in North America, Europe, and (other) high-income economies. However, the representation of women among executive committees is notably better in the same geographies, pointing to the relevance of geographical context when discussing FinTech gender inequalities. Cultural practices and government policy are likely conducive to differing strengths of the intersecting glass ceilings (Rose, 2019). Women not only face vertical segregation into lower-level positions but horizontal segregation away from technology-focused positions, alluding to the particularly impermeable nature of the technology glass ceiling.

Common threads of gender discrimination run through finance, technology, and entrepreneurship, which knot together within FinTech. These stem from entrenched gender stereotypes and the associated societal expectations, including educational and career choices and childcare responsibilities. Representation furthers this gender bias:

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girls and young women do not see themselves represented and, thus, are less likely to pursue such careers (Andrews et al., 2017). Women also face a systematic exclusion from networking, reducing career progression and/or funding opportunities (McGuire, 2002; Socratous, 2018). Furthermore, stereotypically masculine performances get more highly valorised within the FinTech ecosystem. Women remain penalised even when adopting masculine behaviours due to embodied differences (McDowell, 1997). For the industry to progress (for example, by providing greater financial inclusivity), women should not be encouraged to be more like men; FinTech should remove hegemonic masculinity as the benchmark.

There is an economic imperative to improve gender diversity for individual companies, not just societal benefits. Gender-diverse teams perform better (Hunt et al., 2018). Drawing from a larger talent pool and increasing diversity of thought and experience promotes more innovative and inclusive solutions. There is a prime benefit for individual FinTechs to diversify their workforce; it makes business sense.

The persistent gender inequality in FinTech, with its triple glass ceiling, has ramifications for FinTech's potential to improve women's access to finance and gender equality in general. Loko and Yang (2022) demonstrate that FinTech can improve the ratio of female employees in the workforce and mitigate the financial constraints of female-headed firms; however, the positive impact requires good governance and good internet access, so it works mainly in advanced economies. Chen et al. (2023) show that women are significantly less likely than men to use FinTech products. They explain it with women being less willing to adopt new technology, more concerned about data security, and more risk-averse, which all calls for more effort on FinTech's side to design products and services targeting women. Siosan and Kim (2019) argue that FinTech holds promise for women's access to finance, although more financial education is needed. In tackling these broader issues, the industry and its regulators need to address the problem within FinTech, as a strongly male-dominated industry cannot be expected to improve how it caters for women's financial needs.

The limitations of this research predominantly concern the methodology. The tiny number of female CEOs means that it is not possible to extract statistical relationships. Some associations uncovered are either insignificant or weak because of the lack of women among founders and executive committees. However, these represent findings in their own right. There are also biases implicit in the positionality of the author who conducted the interviews and that of the interviewees, who presumably agreed to an interview because of an appreciation for gender diversity. This comes from our experience conducting the interviews. As with all qualitative research, there must be caution in generalising the interview findings. However, recognising the exploratory remit of this research and triangulation with quantitative methods reduces this limitation. We strongly advocate for an expanded quantification of FinTech gender inequalities, involving more FinTechs and a longitudinal approach.

A tension runs through the paper: the intersection of gender *and* race (Crenshaw, 1991). Whilst we have attempted to remain vigilant of this intersection, we were not able to discuss it in much depth due to logistical constraints and our positionalities. Global Majority women almost certainly face differential barriers within FinTech. It is vital not to homogenise women's experiences (Kämpfer and Wójcik, 2020). Building upon our study to incorporate an analysis of race and the intersection of race and gender is a critical area of future research.

The innovative potential of FinTech cannot go unchecked because this elides the gender discrimination that gives rise to pervasive inequalities. Critical discussions and holding FinTech accountable from outside and within are essential to challenging and overcoming gender inequalities. A positive feedback mechanism needs to be kick-started by getting women into FinTech and increasing representation. This can begin to change the culture

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within FinTech (and investment), fracturing the dominant masculinity so that it becomes a more desirable career path.

Women in FinTech continue to face implicit and explicit discrimination. While these practices and the consequential gender inequalities remain, the societal and fiscal potential of FinTech will not be realised. However challenging, the objective is simple: shatter the glass ceilings.

Notes

1. Throughout this article, when we use the terms 'women', 'woman', 'female', 'men', 'man', and 'male', we are referring to everyone who identifies as such.
2. We use the term Global Majority to recognise non-white individuals. The term is part of decolonisation efforts because it recognises that non-white individuals account for over 80% the world's population, disrupting the assumption that non-white people occupy a minority position (Campbell-Stephens, 2020).

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Appendix

Interviewee	Gender	Role	Location
Amy Nauiokas	Female	Co-Founder and CEO of Anthemis	New York, USA
Angela Yore	Female	Co-Founder and Managing Director of SkyParlour	Manchester, UK
Cagla Gül Senkardes	Female	Co-Founder and Former CEEO of MenaPay (Current Founder and CEO of Durugörü)	Istabul, Turkey
Charlie Boles	Male	FinTech Venture Capitalist at Speedinvest	London, UK
Jackie Waring	Female	Founder and CEO of Investing Women and AccelerateHER	Edinburgh, UK
Justin Basini	Male	Co-Founder and CEO of ClearScore	Bristol, UK
Kerim Derhalli	Male	Founder and CEO of Investr	London, UK
Lisa Leid	Female	Head of Communications at Lean Technologies (Freelance Head of Communication at the time of interview)	London, UK
Loral Quinn	Female	Co-Founder and CEO of Sustainably	Edinburgh, UK
Mark Mullen	Male	Co-Founder and CEO of Atom Bank	Durham, UK
Nina Mohanty	Female	Co-Founder and CEO of Bloom Money	London, UK
Raiha Buchanan	Female	Co-Founder and CEO of GigaPay	Stockholm, Sweden
Stephen Ingledew	Male	Executive Chair of FinTech Scotland	Edinburgh, UK
Tynah Matembe	Female	Founder and CEO of MoneyMatix	Edinburgh, UK
Anonymous	Female	FinTech Professional	Dublin, Ireland

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