



Understanding the gender gap in financial literacy: The role of culture

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Abstract

Using data from the 2015 China Household Financial Survey (CHFS) this paper examines the effect of culture on the gender gap in financial literacy. We exploit geographical differences in culture in China, comparing outcomes between rural and urban areas and between areas in the east and west (Shanghai and Chongqing). Using the Blinder-Oaxaca decomposition we show that, nationally, the gender gap in financial literacy is entirely the product of differences in the way men and women acquire financial literacy. It is a result consistent with cultural effects. When considering just women in Shanghai and Chongqing we observe a raw financial literacy differential of 13% (favoring Shanghai). This gap is also the product of differences in the way financial literacy is acquired. It provides additional evidence as to the importance of culture when it comes to understanding financial literacy.

KEYWORDS

China, culture, financial literacy, gender equality, gender gap, Oaxaca-Blinder decomposition

1 | INTRODUCTION

Financial literacy may be defined as “...a combination of financial awareness, knowledge, skills, attitudes and behaviours necessary to make sound financial decisions and ultimately achieve

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individual financial well-being” (OECD, 2022, p. 6). Globally, financial literacy is low, with women, on average less financially literate than men (Bottazzi & Lusardi, 2021; Bucher-Koenen et al., 2021; Cupák et al., 2018; Fonseca et al., 2012; Preston & Wright, 2019; Robson & Peetz, 2020; Tinghög et al., 2021). This is a concern, particularly given the increased complexity of financial markets and the complex financial decisions individuals are required to make. The cost of poor financial decisions can be considerable, and in this regard the gender gap matters. Studies show that the gender gap in financial literacy explains, in part, the gender gap in pension savings (Preston & Wright, 2022). Relatedly, the gender gap in financial literacy also explains, in part, the gender gap in stock market participation (Almenberg & Dreber, 2015). Investigations into the source of the gap are therefore warranted. They are central for the design of policy aimed at promoting gender equality and empowering women. Notwithstanding a growing literature documenting the presence of a gender gap in financial literacy, the source of the gap is poorly understood (Bucher-Koenen et al., 2021). Unlike the gender pay gap, gender differences in human capital, demographic (e.g., marital status) and labor market characteristics accounts for only a small share of the financial literacy gender gap (Preston & Wright, 2019). This suggests that the source lies elsewhere.

In this paper data from the 2015 China Household Finance Survey (CHFS) are used to investigate the role that culture plays in explaining the gender gap in financial literacy (hereon after referred to as the gap). By culture we mean social or normative factors such as gender structures, gender norms and gender stereotypes that shape choices, opportunities and returns concerning financial literacy investments (Bottazzi & Lusardi, 2021; Davoli & Rodríguez-Planas, 2022; Driva et al., 2016; Grohmann & Schoofs, 2021; Rink et al., 2021). Culture is a relatively new consideration in studies of the gap. Providing evidence as to the impact of culture on financial literacy is, however, not easy. Culture is not something that is readily measured and the literature is, therefore, scant.

We make two main contributions to the literature. First, we add to the nascent literature on the effects of culture on the financial literacy of women and, therefore, the gender gap. Second, we exploit the CHFS to provide important evidence as to the determinants of financial literacy and source of the gender gap amongst adults in China. The CHFS is a large nationally representative household sample that includes rural and urban respondents. Much of the empirical work examining financial literacy employs data from advanced economies such as Australia, Europe and the US. Cupák et al. (2018), Grohmann and Schoofs (2021) and Rink et al. (2021) are amongst the few to examine the gender gap within a developing context. None consider China.

As will be shown, China, makes for an interesting case study. It is sociologically rich with considerable heterogeneity in terms of culture (Hu & Scott, 2016; Huang et al., 2020). Provinces in the west are less developed than those in the east. Traditional gender role beliefs and norms are also stricter in the west. It is this difference that we exploit in this study. The large sample size means we may investigate the role of culture within the one country and, therefore, the same political and institutional setting.

Our paper is organised as follows. In Section 2 we describe what we mean by gender culture and review previous studies in the area. Section 3 offers a review of the changing gender culture in China. In Section 4 we describe the 2015 CHFS and present descriptive statistics. In section 5 we discuss the empirical approach and findings. Section 6 contains a summary and conclusion.

2 | GENDER, CULTURE AND FINANCIAL LITERACY

2.1 | Gender as a social structure and transformative consumer research

Sex and gender are terms that are used interchangeably but in feminist scholarship they are not the same. At birth individuals are usually assigned a sex (male or female). Gender, however, is a social construct and relates to how individuals behave (e.g., masculine and feminine traits), and how they “do gender”, that is, how they respond to and internalize the expectations of others, including cultural expectations (Risman, 2004; Taylor, 1992). It is widely acknowledged that gender is an enormously important and complex construct. Indeed, as Risman (2004, pp. 430–431) notes, gender is primarily a means to justify sexual stratification; “...unless we see difference, we cannot justify inequality...gender difference is socially constructed and yet is universally used to justify stratification...the creation of difference is the very foundation on which inequality rests.” For a significantly more detailed discussion of gender as a social structure see Risman (2004).

In the marketing and consumer behavior literature scholars engaged with transformative consumer research and concerned with issues such as social justice offer various frameworks aimed at facilitating and encouraging more “...holistic thinking about the multiple, intersecting levels on which gender inequalities and resulting injustices operate ...” (Hein et al., 2016, p. 223) (see, also, Scott et al., 2011; Steinfield et al., 2019a; Steinfield, Coleman, et al., 2019; and Steinfield, 2021). Such frameworks assist researchers move beyond thinking about gender as a simple sex-based (male–female) construct to one that recognizes that gender differences in behavior stems from gendered social structures. Gender is shaped by formal rules (such as legal access to assets and opportunities) and informal rules (such as traditional norms, culture and expectations regarding behavior) (Hopkins, 2007; Risman, 2004). Hein et al.’s (2016) transformative gender justice framework also urges scholars to engage in a dialogic and recursive approach; that is “...move beyond description of inequalities to resolution of injustices” (Hein et al., 2016, p. 227). As with Risman (2004), they draw attention to the fluidity of gender regimes, gender structures and gender norms.

2.2 | Gender gap in financial literacy – prior studies

Notwithstanding the fact that gender entails roles and identities, in the literature, most studies of the gender gap in financial literacy are concerned with male–female differences. Indeed, we are aware of no study of the gender gap in financial literacy that goes beyond a male–female distinction to consider other gender identities. Additionally, the human capital framework is the most commonly employed theoretical framework guiding research in this area. Within this framework gender (male–female) differences in financial literacy are attributed to gender differences in characteristics such as education, age, marital status and personality; that is, factors that affect the costs and benefits of financial literacy investments (Lusardi & Mitchell, 2014; Preston & Wright, 2019; Robson & Peetz, 2020). Relatedly the gap may reflect gender differences in the household division of labor, with the management of the household’s finances considered an important factor (Grohmann & Schoofs, 2021; Hsu, 2016; Rink et al., 2021). A common critique of the human capital approach, however, is that it ignores the historical context and the social construction of women. In other words, it ignores the

factors (gendered structures) giving rise to these gendered outcomes (household roles, education attainment, labor market status, etc.) in the first place.

Culture (capturing gendered structures, norms and stereotypes) is amongst the newer explanations for gender differences in financial literacy (Bottazzi & Lusardi, 2021; Davoli & Rodríguez-Planas, 2022; Driva et al., 2016; Grohmann & Schoofs, 2021; Rink et al., 2021). Rink et al. (2021, p. 131) define culture as “... a system of shared beliefs, values, customs, behaviours and artefacts that the members of a certain society use to interact with their world and with one another”. There are various channels through which culture may impact on financial literacy. It may be direct through formal rules (e.g., access to education) or indirect through expectations regarding behavior and thus incentives to acquire financial literacy. As noted, research typically shows that where women are involved in the management of household finances their financial literacy is higher (Grohmann & Schoofs, 2021; Rink et al., 2021). One exception to this is a study by Fonseca et al. (2012) who, using data for the US, found that within couples, greater responsibility for financial decision-making correlated with higher financial literacy for males but not females.

Parents play an important role (be it explicit or implicit) in the transmission of financial literacy and thus the creation of gender gaps. Bottazzi and Lusardi (2021) for Italy and Preston and Robert (2022a) for Australia show that daughters with mothers in paid employment have significantly higher financial literacy than those whose mothers are not in paid employment. Such outcomes are consistent with differing household cultures and messages regarding gender stereotypes. Relatedly, research from New Zealand shows that the age of first financial discussion in the home is an important predictor of later life financial literacy and that boys had their first financial discussion at an earlier age than females did (Agnew & Cameron-Agnew, 2015). Driva et al.'s (2016) study of German teenagers demonstrates the importance of gender stereotypes when it comes to financial literacy. In their study female financial literacy deteriorated with stereotype intensity while male financial literacy increased.

The financial literacy of women and girls is typically higher within cultures that exhibit greater gender equality. Drawing on PISA data for boys and girls (15-year-olds) in Italy, Bottazzi and Lusardi (2021) show that girls who live in regions where there is a stronger gender equality culture have higher financial literacy than boys. Rink et al. (2021) similarly show that in India financial literacy is higher amongst women residing in matrilineal states than it is amongst those in patriarchal states and that the gender gap within matrilineal states is smaller. In matrilineal states institutional rules and norms (e.g., inheritance and the management of household finances) favor women. In other words, the culture creates incentives and opportunities for women to invest in financial literacy when young. For a more detailed discussion of the characteristics of matrilineal societies in India see Rink et al. (2021).

Using a different empirical approach Davoli and Rodríguez-Planas (2022) employ information on the gender gap in financial literacy of country-of-ancestry to study the gender gap in financial literacy of US men and women. Their work shows that the smaller the gender gap in financial literacy in the country-of-ancestry, the higher the financial literacy of women in the US relative to men. From this they conclude that cultural beliefs rooted in ancestry matter in explaining the gender gap. Their results also underscore the importance of intergenerational transmission effects.

Although the literature shows that the gender gap is smaller within environments where the gender equality culture is stronger (e.g., Rink et al., 2021), this is not a stylized fact. Within the OECD, for example, Australia has an above average level of financial literacy and one of the largest gender gaps (Preston & Wright, 2019). A more consistent finding in the literature is that

financial literacy is higher amongst women where the gender equality culture is stronger. This is also confirmed by the findings in this paper.

3 | CHINA'S GENDER CULTURE

Gender regimes may change through actions that affect formal and/or informal rules. The latter, in particular, may be affected by economic development and by changes in consumer cultures. In China the accession to the World Trade Organization (WTO) in 2001 was one such change. As Hopkins (2007) and Xu and Feiner (2007) illustrate, the WHO accession brought with it the development of the beauty economy and beauty pageants in China, plus foreign advertising and media. In short, it created new messages aimed at shaping the tastes and preferences of Chinese women (particularly in urban areas such as Shanghai). Western norms of beauty were (and continue to be) heavily promoted. Outcomes were/are physically expressed through clothing, jewellery and cosmetics (Hopkins, 2007). Consistent with this household expenditures on cosmetics increased from 1.3% in 1999 to 2.9% in 2003 (Ibid., p. 290). More recent data suggests that China is now the world's second largest beauty and personal care product market after the US, that China has 26% of the global prestige beauty industry and that the cosmetics market in China is growing at an annual rate of 13.8% (Ma, 2021). According to Xu and Feiner (2007, p. 309) “*Women are increasingly viewed in terms of what they look like rather than what they can do.*”

In rural and western regions of China, Confucian family values give rise to traditional gender norms (Hu & Scott, 2016). Although Confucian ideology was vilified during the Cultural Revolution (1966–76) and gender equality promoted, since opening-up the economy in the late 1970s and embracing market-oriented economic reforms, social norms have reverted. According to Gao et al. (2012, p. 513), “*The guiding principle of gender relations in Confucianism is ‘male as superior and female as subordinate’ (nan zun nu bei). Sons are more valued than daughters ... men and women are expected to have distinct social roles ... men should ... work to support the family and women should stay at home to be caregivers ... a virtuous woman should ... be subordinate to her father before marriage, to her husband after marriage, and to her son in widowhood.*”

Booth et al. (2018) also note the effect of changing cultural contexts on the behaviors of men and women in China. Via a series of laboratory experiments they show that women who grew up during the Cultural Revolution and who were more exposed to strong gender equality messages are more inclined to engage in competitive behavior than later cohorts of Chinese women. Aside from illustrating that gender differences in behavioral activities (e.g., competing) arise from nurture effects (i.e., gender socialization effects) rather than nature effects (a common explanation given for women's apparent lack of competitive behavior), their study also provides important insights into the changing gender structure in eastern regions of China. A similarly useful account is provided by Hu and Scott (2016). They note that higher education is eroding patrilineal and traditional gender values and that there is an increasing gulf in values between eastern and western regions in China.

Gender as a social construct is, however, as complex in China as it is elsewhere. As noted, it is the product of formal and informal rules and has led to a range of outcomes which disadvantage women. China's One Child Policy combined with China's patriarchy (a preference for sons and the practice of sex-selection abortion) has, for example, had a significant (detrimental) effect on the health and survival of females in China (WEF, 2021, p. 36). It has also contributed to a shortage of women in the marriage market and with it a dramatic increase in bride prices.

TABLE 1 World economic forum global gender gap index – China, select years.

| | Overall rank | Economic participation & opportunity rank | Educational attainment rank | Health and survival rank | Political empowerment rank |
|------|--------------|---|-----------------------------|--------------------------|----------------------------|
| 2006 | 63 | 53 | 78 | 114 | 52 |
| 2010 | 61 | 46 | 88 | 133 | 56 |
| 2015 | 91 | 81 | 78 | 114 | 52 |
| 2021 | 107 | 69 | 103 | 156 | 118 |

Source: WEF, 2021.

Men and families with sons are under increasing pressure to amass financial resources to meet rising bride prices, particularly in rural China where traditional values are more common (Cameron et al., 2017; Wei & Zhang, 2011). The shortage of brides, alongside declining birth rate plus rising male unemployment (particularly since 2007 and the global financial crisis), has given rise to a government sanctioned “women-return-to-the-home” media campaign and a resurgence in patriarchal attitudes favouring traditional gender roles (Xiao & Asadullah, 2020). Unmarried educated professional women over the age of 27 are referred to as leftover women (*sheng nu*) (Fincher, 2014).

Within China, and rural China in particular, women have lower household status than men on account of cultural beliefs (MacPhail & Dong, 2007; Niu et al., 2021). In the labor market women face considerable discrimination and rising treatment disadvantage (e.g., unfair dismissal following marriage or pregnancy, compulsory or early retirement, discrimination in pay, hiring and promotion) (Berik et al., 2007; Nguyen et al., 2020; Xiao & Asadullah, 2020; Zhang & Huang, 2020). Since embracing market-orientated reforms, gender equality in China has deteriorated. The gender gap in labor force participation is rising (from 9.4 percentage points in 1990 to 14.1 percentage points by 2020), with a large share of this gap explained by gender social norms (Xiao & Asadullah, 2020). The deterioration in gender equality is also evident in China's performance in the WEF Global Gender Gap league tables. In 2006 China had an overall rank of 63; by 2021 their rank had fallen to 107 (see Table 1).

4 | DATA, SAMPLE AND DESCRIPTIVE STATISTICS

4.1 | Data and Sample

The empirical analysis in this paper is based on data from the 2015 China Household Financial Survey (CHFS). The CHFS commenced in 2011 and is conducted on a bi-annual basis. Each CHFS respondent is identified by the interviewer as the household member best placed to answer the questions on the family's economic circumstances (CHFS, 2015, p. 7). Accordingly, while the CHFS is, after weighting, nationally representative in terms of geography of households (thus permitting us to make statements about the financial literacy of households in China), it is not necessarily representative of adult men and women in China. The particular advantage of the CHFS data, however, is the large sample size and the inclusion of rural and urban respondents and, importantly, information on the respondent's financial literacy.



In 2015 the CHFS contained 36,599 respondents. After restricting the sample to those with observable age data this reduced to 36,466 persons. Restricting it further to those aged 18 years or more reduced it to 36,311 persons, comprised of 19,099 (53%) men and 17,212 (47%) women.

At the outset it is important to note that we use the term gender to refer to men and women who are socially constructed; that is, we assume that those who identify as males in the data identify as having a male gender and masculine behaviors and those who identify as females identify as having a female gender and feminine behaviors. Such an approach is, as noted, typical in the literature and in quantitative studies of the gender gap. We recognize that observed characteristics (e.g., education levels) are not in themselves gender neutral outcomes and will be reflective of social-structures and associated choice constraints. The CHFS survey did not ask about gender and gender cultures identity per se.

The three questions testing financial literacy in the CHFS are detailed below. Quoting from the English translation of the survey (see CHFS, 2015, pp. 43–44), the questions read as follows:

- Q1 (interest). *Given a 4% interest rate, how much would you have in total after 1 year if you have 100 yuan deposited?* Response options: 1 = under 104; **2 = 104**; 3 = over 104; 4 = Cannot figure out. Respondents could also respond do not know (coded “.d”) or could refuse to answer the question (coded “.r”). [question a4004a].
- Q2 (inflation). *With an interest rate of 5% and an inflation rate of 3%, the stuff you buy with the money you have saved in the bank for 1 year is?* Response options: **1 = More than last year**; 2 = the same as last year; 3 = Less than last year; 4 = Cannot figure out [question a4005a in the survey]. A “do not know” or “refuse” option was also provided (as per the above).
- Q3 (risk). *Which one do you think is more risky, stock or fund?* Response options: **1 = stock**; 2 = fund; 3 = haven’t heard about stock; 4 = haven’t heard about fund; 5 = Neither of them have been heard about [question a4007aa in the survey]. A “do not know” or “refuse” option was also provided.

The questions follow the “Big-3” question set as detailed in Lusardi and Mitchell (2014). The “do not know” and “refuse” options are included to minimize guessing and account for the possibility that the respondent is not familiar with some of the financial terms. Studies show that women are more likely than men to choose the “do not know” option (Bucher-Koenen et al., 2021; Ooi, 2020; Preston & Wright, 2019). The inference or hypothesis is that women are less confident about their ability when having their financial knowledge tested and thus select the do not know option. Tinghög et al. (2021) test this hypothesis using experimental techniques and data (N = 1989) from an online Amazon Mechanical Turk survey. In their experiment some groups have a “do not know” option and others do not. They found that removal of the “do not know” option did not change the magnitude of the gender gap in financial literacy leading them to conclude that gender differences in confidence did not affect the financial literacy score. Their work is, however, at odds with recent research in Bucher-Koenen et al. (2021) who find confidence does matter and does affect the financial literacy scores of males and females. Importantly, in so far as our paper is concerned, Ooi (2020), using the same 2015 CHFS data set as this paper, and employing estimation techniques which account for guessing behavior, found that the incidence of guessing in China was low (from as low as 1%) and below that of many other countries. Ooi (2020) also shows that, in CHFS survey, the question wording performs the same for males and females (i.e., the survey itself does not suffer from gender biases in framing that may affect the scores).

4.2 | Dependent Variables

Figures 1, 2 and 3 show, respectively, the shares of men and women who were able to correctly answer each of the three individual financial literacy questions detailed above. For convenience Q1, Q2 and Q3 are labelled “interest”, “inflation” and “risk”, respectively. The information is also summarized in Table 2. It is apparent from these data that financial literacy (as measured by these three questions) is greater for younger cohorts than it is for older cohorts. This cohort effect is also observed in other Chinese studies of financial literacy (Liao et al., 2017; Xu et al., 2020) and differs from the pattern in advanced economies. There is a particularly poor understanding of interest and inflation concepts amongst men and women in China; only 30% and 25% of responding adult men and women could, respectively, correctly answer the interest rate question. The corresponding shares for the inflation question were 18% and 14%, respectively. For each of the three questions nearly half of the respondents selected the “do not know” or “refused” option. This poor comprehension of key financial literacy concepts such as inflation, together with the high tendency to choose the “do not know” and “refused” options, is also observed in other Chinese based studies such as Gui et al. (2021). The latter attribute it to cultural effects (notably a lack of self-confidence).

In addition to the above there is a highly significant gender difference in the financial literacy of the respondents. At the mean male respondents correctly answered a total of 0.95 (out of three) questions while the corresponding total for female respondents was 0.88. The difference translates to a gender gap in financial literacy of 7.9%. When weighted by question difficulty this gap increases to 13.7% and to 38.5% if the financial literacy measure is defined as the share able to correctly answer all three questions (see Table 3).

In the empirical literature financial literacy is defined and measured in a variety of different ways. A common approach when using a knowledge-based measure of financial literacy is to

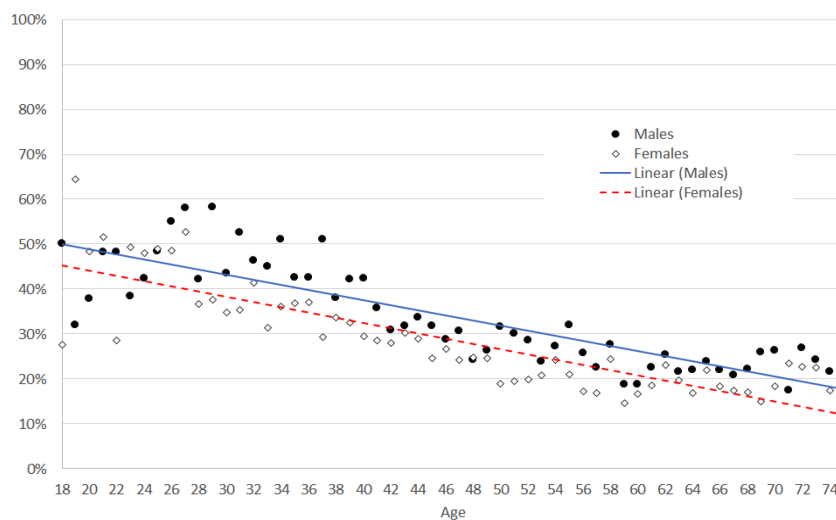


FIGURE 1 Shares (%) able to correctly answer Q1 on interest rates. Source: CHFS, 2015. Adults. Estimates weighted.

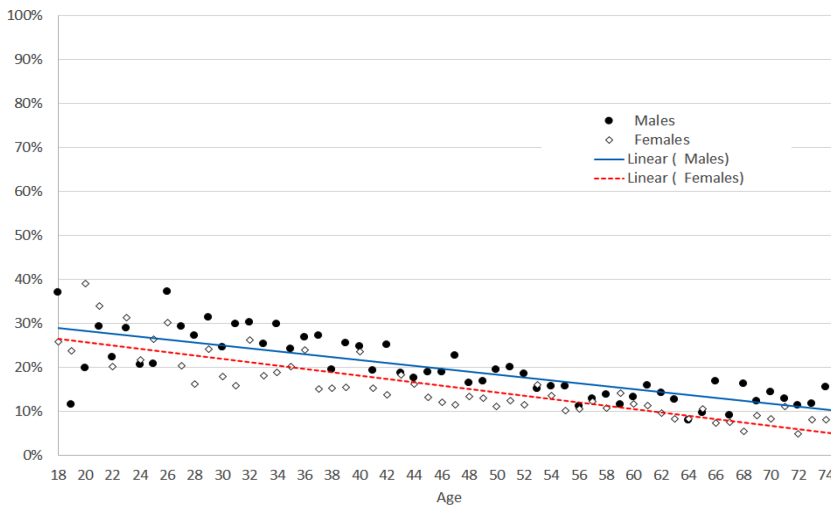


FIGURE 2 Shares (%) able to correctly answer Q2 on inflation. Source: CHFS, 2015. Adults. Estimates weighted.

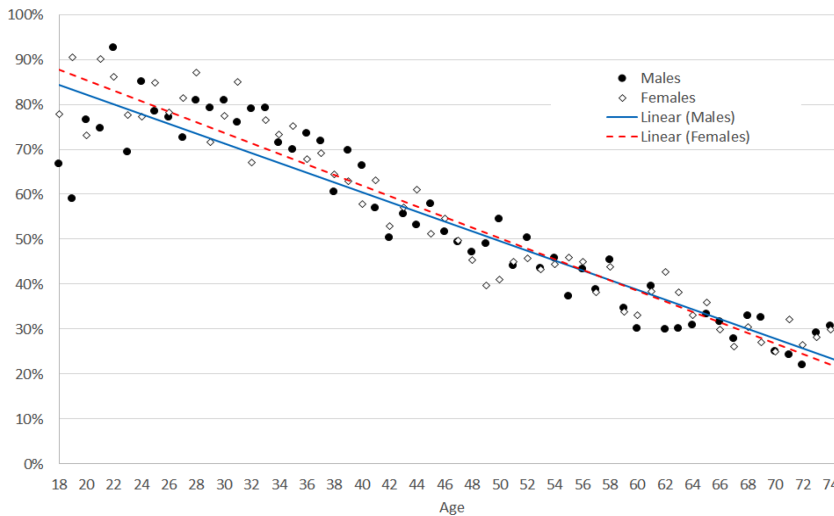


FIGURE 3 Shares (%) able to correctly answer Q3 on risk. Source: CHFS, 2015. Adults. Estimates weighted.

use a count measure (the total number of questions correctly answered) (e.g., Cupák et al., 2018). In studies where this approach is adopted the fraction scoring zero is generally small (fewer than 5% in Preston and Robert's (2019) analysis based on Australian data). This contrasts with the CHFS survey where financial literacy is low and 40% of adult respondents scored zero. In the empirical analysis that follows we, therefore, consider several measures: two count measures, one based on unadjusted data (*NCorrect*) and one where the count is adjusted for question difficulty (*NCorrectAdj*). We also consider a rate measure, equal to one if the respondent answers all three questions correctly (*AllCorrect*); and we separately examine the

TABLE 2 Percentage distribution of responses to three financial literacy questions, persons, males and females, aged 18+, China, 2015.

| Response: | (1) Correct | (2) Incorrect | (3) Do not know | (4) Refused | (5) All |
|---------------------------------|------------------------|--------------------------|----------------------------|------------------------|--------------------|
| (a) Persons (N = 36,111) | | | | | |
| Q1. Interest rate | 27.9% | 22.5% | 49.4% | 0.2% | 100% |
| Q2. Inflation | 15.8% | 37.1% | 46.7% | 0.2% | 100% |
| Q3. Risk | 48.2% | 4.1% | 47.5% | 0.2% | 100% |
| All 3: | 6.3% | 0.9% | 29.2% | 0.01% | - |
| (b) Males (N = 19,099) | | | | | |
| Q1. Interest rate | 30.2% | 23.4% | 46.2% | 0.2% | 100% |
| Q2. Inflation | 17.6% | 38.1% | 44.0% | 0.3% | 100% |
| Q3. Risk | 47.4% | 4.5% | 47.9% | 0.3% | 100% |
| All 3: | 7.2% | 1.1% | 27.6% | 0.01% | - |
| (c) Females (N = 17,212) | | | | | |
| Q1. Interest rate | 25.3% | 21.5% | 53.1% | 0.1% | 100% |
| Q2. Inflation | 13.8% | 36.0% | 50.2% | 0.1% | 100% |
| Q3. Risk | 49.2% | 3.7% | 47.0% | 0.2% | 100% |
| All 3: | 5.2% | 0.7% | 31.1% | <0.01% | - |

Note: Estimates weighted to be geographically representative.

Source: China Household Finance Survey, 2015.

probability of answering each individual question correctly (*Q1Interest*, *Q2Inflation*, *Q3Risk*). The use of alternative measures also serves as an important robustness check. The descriptive statistics associated with these various financial literacy measures are contained in Table 3.

4.3 | Independent Variables

Our choice of independent variables is informed by the literature. Age is a key independent variable and in this paper is employed in a linear form. In choosing this functional form we were informed by the trend data in Figures 1, 2 and 3. Education is controlled for via four dummy variables capturing highest qualification attained. The base case consists of those with primary schooling only. In recognition that financial literacy may differ by marital status two dummy variables capturing marital status are also included in the regression. To capture gender differences in financial literacy that may arise from differing exposure to financial or economic education we also include a dummy variable (*FinCourse*) which is equal to one if the respondent had previously undertaken a course in economics or finance. We note the potential endogeneity problems associated with such a control, however, it is important to note that the main focus of our study is on understanding the gender gap in financial literacy. In this regard we see no reason why *FinCourse* may be more, or less, endogenous for males than females. In addition to the variables previously described, the regressions also control for geography. Specifically, we include a dummy if the respondent is residing in an urban area in one of four municipalities (Beijing, Shanghai,

TABLE 3 Descriptive statistics for financial literacy measures used in regression analysis, persons, males and females aged 18+, China, 2015.

| | | (1) | (2) | (3) | (4) | (5) |
|--------------------|---|---------------|---------------|---------------|-------------|----------------|
| Mnemonic | Definition | Persons | Males | Females | Gap (3–2) | %Gap (3–2)/(2) |
| <i>NCorrect</i> | Number of correct responses | 0.919 (0.916) | 0.952 (0.940) | 0.882 (0.886) | 0.070*** | 7.9% |
| <i>NCorrectAdj</i> | Number of correct responses, weighted by question difficulty | 0.752 (0.882) | 0.796 (0.918) | 0.700 (0.836) | 0.096*** | 13.7% |
| <i>AllCorrect</i> | =1 if correct responses to all three questions; =0 if otherwise | 6.3% | 7.2% | 5.2% | 2.0%-pts*** | 38.5% |
| <i>Q1Interest</i> | =1 if correct response to interest rate question; =0 if otherwise | 27.9% | 30.2% | 25.3% | 4.9%-pts*** | 19.4% |
| <i>Q2Inflation</i> | =1 if correct response to inflation question; =0 if otherwise | 15.8% | 17.6% | 13.8% | 3.8%-pts*** | 27.5% |
| <i>Q3Risk</i> | =1 if correct response to risk question; =0 if otherwise | 48.2% | 47.4% | 49.1% | –1.7%-pts** | –3.5% |
| <i>N</i> | | 36,311 | 19,099 | 17,212 | -- | -- |

Note: 1. Estimates weighted to be geographically representative. 2. Standard deviations in parentheses. 3. Difference is statistically significant at: *** $p < 1\%$; ** $< 5\%$ and * $< 10\%$.

Source: China Household Finance Survey, 2015.

Tianjin and Chongqing) and we incorporate a control for “other-urban” areas. The base case is rural. Table 4 describes the variables and presents associated descriptive statistics, including the gender gaps associated with each of the control variables. Male respondents, for example, are much more likely (41%) to reside in a rural location than female respondents. As will be shown, this difference is important, particularly when it comes to understanding the gender gap in financial literacy.

5 | RESEARCH APPROACH AND RESULTS

5.1 | Research Approach

We begin by estimating a pooled regression where the “dummy variable approach” is used to control for gender and a series of dummy variables used to estimate the impact of geographic location on financial literacy. We acknowledge that this approach sheds no light on the source of the gender gap. Its usefulness lies in providing a summary measure of the extent and pattern of the gender gaps in financial literacy while controlling for other correlates such as age,

TABLE 4 Descriptive statistics for explanatory variables used in regression analysis, persons, males and females aged 18+, China, 2015.

| | | (1) | (2) | (3) | (4) | (5) |
|------------------|--|----------------|--------------|----------------|------------------|-----------------------|
| Mnemonic | Definition | Persons | Males | Females | Gap (3–2) | %Gap (3–2)/(2) |
| <i>Age</i> | =age of respondent in years, 18 to 75+ (top coded at 75 years) | 51.4 (14.4) | 52.4 (14.5) | 50.3 (14.1) | 2.15*** | 4.2% |
| <i>NoSchool</i> | =1 if has had no schooling =0 otherwise | 9.5% | 5.7% | 13.8% | −8.1%-pts*** | −58.7% |
| <i>Primary</i> | =1 if highest level education primary school; =0 otherwise (excluded category) | 23.4% | 24.7% | 21.8% | 2.9%-pts | 13.3% |
| <i>Secondary</i> | =1 if highest level of education high school; =0 otherwise | 49.9% | 51.6% | 47.9% | 3.6%-pts*** | 7.7% |
| <i>College</i> | =1 if highest level of education college/vocation =0 otherwise | 8.4% | 8.7% | 8.2% | 0.5%-pts | 6.1% |
| <i>Degree</i> | =1 if highest level of education degree or higher; =0 otherwise | 8.8% | 9.3% | 8.3% | 1.0%-pts** | 12.0% |
| <i>FinCourse</i> | =1 if have ever taken a course in economics or finance =0 have not taken | 7.1% | 7.7% | 6.4% | 1.2%-pts*** | 20.3% |
| <i>Single</i> | =1 if not married; 0 = otherwise | 5.3% | 6.7% | 3.7% | 3.0%pts*** | 81.1% |
| <i>Married</i> | =1 if married (or cohabiting); 0 = otherwise (excluded category) | 85.8% | 87.5% | 83.8% | 3.8%-pts*** | 4.4% |
| <i>Wsd</i> | =1 if widowed, separated or widowed; 0 = if married | 8.9% | 5.8% | 12.5% | −6.7%-pts*** | 53.6% |
| <i>Rural</i> | =1 if resides in rural location; =0 if resides in urban area (excluded category) | 37.4% | 43.3% | 30.8% | 12.5%-pts**** | 40.6% |

TABLE 4 (Continued)

| Mnemonic | Definition | (1) | (2) | (3) | (4) | (5) |
|------------------|---|---------|--------|---------|---------------|----------------|
| | | Persons | Males | Females | Gap (3–2) | %Gap (3–2)/(2) |
| <i>Shanghai</i> | =1 if resides in Shanghai & urban = 1; =0 if resides rural | 2.2% | 1.9% | 2.6% | –0.7%-pts**** | –26.9% |
| <i>Beijing</i> | =1 if resides in Beijing & urban = 1; =0 if resides rural | 1.7% | 1.4% | 2.1% | –0.7%-pts*** | –33.3% |
| <i>Tianjin</i> | =1 if resides in Tianjin & urban = 1; =0 if resides rural | 1.2% | 0.9% | 1.5% | –0.6%-pts*** | –40.0% |
| <i>Chongqing</i> | =1 if resides in Chongqing & urban = 1; =0 if resides rural | 1.4% | 1.2% | 1.5% | –0.3%-pts** | –20.0% |
| <i>OthUrban</i> | =1 if resides other urban; =0 if resides rural | 56.1% | 51.4% | 61.4% | –10.0%-pts*** | –16.3% |
| <i>N</i> | | 36,311 | 19,099 | 17,212 | -- | -- |

Note: 1. Estimates weighted to be geographically representative. 2. Standard deviations in parentheses. 3. Difference is statistically significant at: **** $p < 1\%$; ** $< 5\%$ and * $< 10\%$.

Source: China Household Finance Survey, 2015.

education, marital status. The pooled regression estimates associated with various financial literacy measures (dependent variables) are presented in Table 5. Our next step is to present the gender-specific regression estimates associated with the various dependent variables (Table 6). The advantage of the latter is that the coefficients on the key correlates are no longer constrained to be the same for males and females thus providing insight into to potential sources of the gap.

To specifically examine the source of the gender gap we follow the approach of Rink et al. (2021) and others in this journal (e.g., Fonseca et al., 2012; Robson & Peetz, 2020) and employ the Oaxaca (1973) and Blinder (1973) (O-B) decomposition technique. As with others, our framework for analysis is the human capital model (with financial literacy being a form of human capital). It is an approach widely used to study “why” and “how” women earn less than men (e.g., Blau & Kahn, 2017) and gender gaps in other outcomes. Xiao and Asadullah (2020), for example, use the O-B decomposition technique to examine the effect of social norms in explaining the gender gap in labor force participation in China.

The O-B approach first requires the separate estimation of male and female financial literacy regressions (as per the regressions at Table 6). We then subtract the results of one group

TABLE 5 Regression estimates of financial literacy equations, persons aged 18+, China, 2015.

| FL Measure: Estimator: | (1) <i>NCorrect</i> OLS | (2) <i>NCorrectAdj</i> OLS | (3) <i>AllCorrect</i> Probit | (4) <i>Q1Interest</i> Probit | (5) <i>Q2Inflation</i> Probit | (6) <i>Q3Risk</i> Probit |
|---------------------------|-------------------------------|----------------------------------|------------------------------------|------------------------------------|-------------------------------------|--------------------------------|
| <i>Male</i> | 0.089*** (0.013) | 0.107*** (0.013) | 0.018*** (0.003) | 0.054*** (0.007) | 0.039*** (0.006) | -0.001 (0.009) |
| <i>Age</i> | -0.010*** (0.001) | -0.008*** (0.001) | -0.001*** (0.000) | -0.002*** (0.000) | -0.002*** (0.000) | -0.008*** (0.000) |
| <i>NoSchool</i> | -0.156*** (0.018) | -0.119*** (0.018) | -0.023** (0.010) | -0.129*** (0.018) | -0.034*** (0.012) | -0.172*** (0.020) |
| <i>Secondary</i> | 0.317*** (0.015) | 0.228*** (0.015) | 0.031*** (0.005) | 0.123*** (0.010) | 0.027*** (0.007) | 0.205*** (0.011) |
| <i>College</i> | 0.648*** (0.029) | 0.500*** (0.031) | 0.057*** (0.006) | 0.226*** (0.015) | 0.068*** (0.012) | 0.390*** (0.019) |
| <i>Degree</i> | 0.849*** (0.029) | 0.764*** (0.031) | 0.086*** (0.006) | 0.298*** (0.015) | 0.146*** (0.012) | 0.395*** (0.020) |
| <i>FinCourse</i> | 0.269*** (0.027) | 0.235*** (0.030) | 0.021*** (0.004) | 0.074*** (0.013) | 0.044*** (0.010) | 0.177*** (0.020) |
| <i>Single</i> | -0.046 (0.034) | -0.054 (0.036) | -0.005 (0.006) | 0.009 (0.017) | -0.034*** (0.013) | -0.036 (0.025) |
| <i>Wsd</i> | -0.078*** (0.019) | -0.056*** (0.018) | -0.005 (0.006) | -0.041*** (0.013) | -0.010 (0.010) | -0.064*** (0.015) |
| <i>OthUrban</i> | 0.283*** (0.014) | 0.191*** (0.014) | 0.032*** (0.004) | 0.091*** (0.009) | 0.013* (0.007) | 0.223*** (0.010) |
| <i>Shanghai</i> | 0.523*** (0.029) | 0.368*** (0.029) | 0.049*** (0.006) | 0.229*** (0.015) | 0.006 (0.012) | 0.332*** (0.020) |
| <i>Beijing</i> | 0.507*** (0.032) | 0.357*** (0.033) | 0.044*** (0.006) | 0.184*** (0.017) | 0.022 (0.013) | 0.364*** (0.023) |
| <i>Tianjin</i> | 0.471*** (0.032) | 0.312*** (0.032) | 0.036*** (0.007) | 0.166*** (0.017) | 0.007 (0.014) | 0.361*** (0.023) |
| <i>Chongqing</i> | 0.290*** (0.038) | 0.181*** (0.040) | 0.034*** (0.008) | 0.077*** (0.021) | 0.005 (0.017) | 0.260*** (0.025) |
| <i>Constant</i> | 0.922*** (0.033) | 0.765*** (0.033) | - - | - - | - - | - - |
| R ² (%) | 26.7% | 18.7% | 14.9% | 10.6% | 4.8% | 21.1% |
| N | 36,311 | 36,311 | 36,311 | 36,311 | 36,311 | 36,311 |

Note: 1. Estimates weighted to be geographically representative. 2. Absolute value of standard errors reported in parentheses. 3. Effect is statistically significant at: *** $p < 1\%$; ** $< 5\%$ and * $< 10\%$. 4. Reported estimates for probit regressions are average marginal effects.

Source: China Household Finance Survey, 2015.



TABLE 6 Regression estimates of financial literacy equations, males and females, aged 18+, China, 2015.

| FL | (1) | | (2) | | (3) | | (4) | | (5) | | (6) | | (7) | | (8) | | (9) | | (10) | | (11) | | (12) | |
|--------------------------|-----------|-----------|--------------------|--------------------|-------------------|-------------------|-------------------|-------------------|--------------------|--------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| | Males | Females | Males | Females | Males | Females | Males | Females | Males | Females | Males | Females | Males | Females | Males | Females | Males | Females | Males | Females | Males | Females | Males | Females |
| Measure: <i>NCorrect</i> | OLS | OLS | <i>NCorrectAdj</i> | <i>NCorrectAdj</i> | <i>AllCorrect</i> | <i>AllCorrect</i> | <i>Q1Interest</i> | <i>Q1Interest</i> | <i>Q2Inflation</i> | <i>Q2Inflation</i> | <i>Q3Risk</i> | <i>Q3Risk</i> | <i>Q3Risk</i> | <i>Q3Risk</i> | <i>Q3Risk</i> | <i>Q3Risk</i> | <i>Q3Risk</i> | <i>Q3Risk</i> | <i>Q3Risk</i> | <i>Q3Risk</i> | <i>Q3Risk</i> | <i>Q3Risk</i> | <i>Q3Risk</i> | <i>Q3Risk</i> |
| Estimator: | OLS | OLS | OLS | OLS | Probit | Probit | Probit | Probit | Probit | Probit | Probit | Probit | Probit | Probit | Probit | Probit | Probit | Probit | Probit | Probit | Probit | Probit | Probit | Probit |
| <i>Age</i> | -0.011*** | -0.009*** | -0.009*** | -0.007*** | -0.001*** | -0.001*** | -0.002*** | -0.001*** | -0.002*** | -0.001*** | -0.002*** | -0.002*** | -0.002*** | -0.002*** | -0.002*** | -0.002*** | -0.002*** | -0.002*** | -0.002*** | -0.002*** | -0.002*** | -0.002*** | -0.002*** | -0.007*** |
| | (0.001) | (0.001) | (0.001) | (0.001) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.001) |
| <i>NoSchool</i> | -0.151*** | -0.162*** | -0.125*** | -0.129*** | -0.013 | -0.030*** | -0.100*** | -0.139*** | -0.046** | -0.139*** | -0.046** | -0.046** | -0.046** | -0.046** | -0.046** | -0.046** | -0.046** | -0.046** | -0.046** | -0.046** | -0.046** | -0.046** | -0.046** | -0.169*** |
| | (0.032) | (0.022) | (0.032) | (0.022) | (0.019) | (0.010) | (0.031) | (0.021) | (0.022) | (0.021) | (0.022) | (0.022) | (0.022) | (0.022) | (0.022) | (0.022) | (0.022) | (0.022) | (0.022) | (0.022) | (0.022) | (0.022) | (0.022) | (0.025) |
| <i>Secondary</i> | 0.292*** | 0.350*** | 0.215*** | 0.246*** | 0.037*** | 0.025*** | 0.123*** | 0.121*** | 0.030*** | 0.123*** | 0.030*** | 0.030*** | 0.030*** | 0.030*** | 0.030*** | 0.030*** | 0.030*** | 0.030*** | 0.030*** | 0.030*** | 0.030*** | 0.030*** | 0.030*** | 0.226*** |
| | (0.021) | (0.023) | (0.020) | (0.021) | (0.007) | (0.006) | (0.013) | (0.014) | (0.011) | (0.013) | (0.011) | (0.011) | (0.011) | (0.011) | (0.011) | (0.011) | (0.011) | (0.011) | (0.011) | (0.011) | (0.011) | (0.011) | (0.011) | (0.016) |
| <i>College</i> | 0.626*** | 0.678*** | 0.506*** | 0.495*** | 0.063*** | 0.049*** | 0.227*** | 0.225*** | 0.087*** | 0.227*** | 0.087*** | 0.087*** | 0.087*** | 0.087*** | 0.087*** | 0.087*** | 0.087*** | 0.087*** | 0.087*** | 0.087*** | 0.087*** | 0.087*** | 0.087*** | 0.433*** |
| | (0.042) | (0.040) | (0.045) | (0.042) | (0.010) | (0.008) | (0.022) | (0.021) | (0.018) | (0.022) | (0.018) | (0.018) | (0.018) | (0.018) | (0.018) | (0.018) | (0.018) | (0.018) | (0.018) | (0.018) | (0.018) | (0.018) | (0.018) | (0.028) |
| <i>Degree</i> | 0.850*** | 0.845*** | 0.811*** | 0.698*** | 0.100*** | 0.070*** | 0.309*** | 0.286*** | 0.184*** | 0.309*** | 0.184*** | 0.184*** | 0.184*** | 0.184*** | 0.184*** | 0.184*** | 0.184*** | 0.184*** | 0.184*** | 0.184*** | 0.184*** | 0.184*** | 0.184*** | 0.464*** |
| | (0.040) | (0.042) | (0.043) | (0.046) | (0.009) | (0.008) | (0.021) | (0.022) | (0.016) | (0.021) | (0.016) | (0.016) | (0.016) | (0.016) | (0.016) | (0.016) | (0.016) | (0.016) | (0.016) | (0.016) | (0.016) | (0.016) | (0.016) | (0.029) |
| <i>FinCourse</i> | 0.260*** | 0.279*** | 0.224*** | 0.244*** | 0.026*** | 0.015*** | 0.063*** | 0.086*** | 0.046*** | 0.063*** | 0.046*** | 0.046*** | 0.046*** | 0.046*** | 0.046*** | 0.046*** | 0.046*** | 0.046*** | 0.046*** | 0.046*** | 0.046*** | 0.046*** | 0.046*** | 0.185*** |
| | (0.038) | (0.037) | (0.041) | (0.042) | (0.006) | (0.005) | (0.019) | (0.019) | (0.014) | (0.019) | (0.014) | (0.014) | (0.014) | (0.014) | (0.014) | (0.014) | (0.014) | (0.014) | (0.014) | (0.014) | (0.014) | (0.014) | (0.014) | (0.029) |
| <i>Single</i> | -0.088** | 0.028 | -0.103** | 0.044 | -0.016* | 0.008 | -0.000 | 0.020 | -0.055*** | 0.002 | -0.055*** | 0.002 | -0.055*** | 0.002 | -0.055*** | 0.002 | -0.055*** | 0.002 | -0.055*** | 0.002 | -0.055*** | 0.002 | -0.055*** | -0.017 |
| | (0.043) | (0.056) | (0.044) | (0.063) | (0.009) | (0.008) | (0.023) | (0.024) | (0.018) | (0.023) | (0.018) | (0.018) | (0.018) | (0.018) | (0.018) | (0.018) | (0.018) | (0.018) | (0.018) | (0.018) | (0.018) | (0.018) | (0.018) | (0.041) |
| <i>Wsd</i> | -0.114*** | -0.064*** | -0.099*** | -0.037* | -0.018 | 0.002 | -0.053** | -0.035** | -0.026 | -0.053** | -0.026 | -0.026 | -0.026 | -0.026 | -0.026 | -0.026 | -0.026 | -0.026 | -0.026 | -0.026 | -0.026 | -0.026 | -0.026 | -0.067*** |
| | (0.033) | (0.023) | (0.032) | (0.023) | (0.011) | (0.006) | (0.021) | (0.015) | (0.017) | (0.021) | (0.017) | (0.017) | (0.017) | (0.017) | (0.017) | (0.017) | (0.017) | (0.017) | (0.017) | (0.017) | (0.017) | (0.017) | (0.017) | (0.018) |
| <i>OldUrban</i> | 0.295*** | 0.258*** | 0.210*** | 0.156*** | 0.041*** | 0.020*** | 0.093*** | 0.089*** | 0.024** | 0.093*** | 0.024** | 0.024** | 0.024** | 0.024** | 0.024** | 0.024** | 0.024** | 0.024** | 0.024** | 0.024** | 0.024** | 0.024** | 0.024** | 0.240*** |
| | (0.020) | (0.020) | (0.020) | (0.019) | (0.006) | (0.005) | (0.012) | (0.013) | (0.009) | (0.012) | (0.009) | (0.009) | (0.009) | (0.009) | (0.009) | (0.009) | (0.009) | (0.009) | (0.009) | (0.009) | (0.009) | (0.009) | (0.009) | (0.016) |
| <i>Shanghai</i> | 0.593*** | 0.449*** | 0.422*** | 0.304*** | 0.060*** | 0.035*** | 0.254*** | 0.205*** | 0.016 | 0.254*** | 0.016 | 0.016 | 0.016 | 0.016 | 0.016 | 0.016 | 0.016 | 0.016 | 0.016 | 0.016 | 0.016 | 0.016 | 0.016 | 0.314*** |
| | (0.043) | (0.040) | (0.043) | (0.039) | (0.009) | (0.008) | (0.023) | (0.021) | (0.018) | (0.023) | (0.018) | (0.018) | (0.018) | (0.018) | (0.018) | (0.018) | (0.018) | (0.018) | (0.018) | (0.018) | (0.018) | (0.018) | (0.018) | (0.028) |
| <i>Beijing</i> | 0.491*** | 0.499*** | 0.380*** | 0.321*** | 0.059*** | 0.028*** | 0.189*** | 0.174*** | 0.046** | 0.189*** | 0.046** | 0.046** | 0.046** | 0.046** | 0.046** | 0.046** | 0.046** | 0.046** | 0.046** | 0.046** | 0.046** | 0.046** | 0.046** | 0.431*** |
| | (0.043) | (0.040) | (0.043) | (0.039) | (0.009) | (0.008) | (0.023) | (0.021) | (0.018) | (0.023) | (0.018) | (0.018) | (0.018) | (0.018) | (0.018) | (0.018) | (0.018) | (0.018) | (0.018) | (0.018) | (0.018) | (0.018) | (0.018) | (0.028) |

(Continues)

TABLE 6 (Continued)

| FL | (1) | | (2) | | (3) Males | | (4) Females | | (5) Males | | (6) Females | | (7) Males | | (8) Females | | (9) Males | | (10) Females | | (11) Males | | (12) Females | | | | | | |
|-------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|----------------------|---------------------|---------------------|---------------------|------------------|------------------|------------------|-------------------|-------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|--------------|--------|
| | Males | Females | OLS | NCorrect | NCorrectAdj | NCorrectAdj | AllCorrect | AllCorrect | AllCorrect | Q1Interest | Q1Interest | Q1Interest | Q2Inflation | Q2Inflation | Q2Inflation | Q3Risk | Q3Risk | Q3Risk | Q3Risk | Q3Risk | Q3Risk | Q3Risk | Q3Risk | Q3Risk | Q3Risk | | | | |
| <i>Tianjin</i> | 0.498*** (0.052) | 0.432*** (0.040) | 0.345*** (0.054) | 0.266*** (0.041) | 0.055*** (0.009) | 0.016* (0.008) | 0.161*** (0.026) | 0.162*** (0.021) | 0.162*** (0.021) | 0.027 (0.020) | 0.027 (0.020) | 0.027 (0.020) | -0.015 (0.017) | -0.015 (0.017) | 0.367*** (0.035) | 0.367*** (0.035) | 0.367*** (0.035) | 0.367*** (0.035) | 0.367*** (0.035) | 0.367*** (0.035) | 0.367*** (0.035) | 0.367*** (0.035) | 0.367*** (0.035) | 0.367*** (0.035) | 0.367*** (0.035) | 0.367*** (0.035) | 0.367*** (0.035) | | |
| <i>Chongqing</i> | 0.292*** (0.052) | 0.274*** (0.041) | 0.176*** (0.055) | 0.168*** (0.040) | 0.045*** (0.010) | 0.021* (0.009) | 0.063*** (0.027) | 0.089*** (0.022) | 0.089*** (0.022) | 0.005 (0.022) | 0.005 (0.022) | 0.005 (0.022) | -0.002 (0.019) | -0.002 (0.019) | 0.277*** (0.034) | 0.277*** (0.034) | 0.277*** (0.034) | 0.277*** (0.034) | 0.277*** (0.034) | 0.277*** (0.034) | 0.277*** (0.034) | 0.277*** (0.034) | 0.277*** (0.034) | 0.277*** (0.034) | 0.277*** (0.034) | 0.277*** (0.034) | 0.277*** (0.034) | | |
| <i>Constant</i> | 1.067*** (0.056) | 0.861*** (0.053) | 0.899*** (0.061) | 0.743*** (0.053) | - (0.013) | -0.001*** (0.030) | - (0.030) | - (0.028) | - (0.028) | - (0.025) | - (0.025) | - (0.025) | - (0.022) | - (0.022) | - (0.033) | - (0.033) | - (0.033) | - (0.033) | - (0.033) | - (0.033) | - (0.033) | - (0.033) | - (0.033) | - (0.033) | - (0.033) | - (0.033) | - (0.033) | - (0.033) | |
| <i>R²(%)</i> | 25.5% | 28.3% | 18.5% | 18.7% | 14.9% | 14.4% | 9.4% | 11.8% | 11.8% | 5.4% | 5.4% | 3.7% | 3.7% | 16.6% | 16.6% | 16.6% | 16.6% | 16.6% | 16.6% | 16.6% | 16.6% | 16.6% | 16.6% | 16.6% | 16.6% | 16.6% | 16.6% | 16.6% | |
| <i>N</i> | 19,099 | 17,212 | 19,099 | 17,212 | 19,099 | 17,212 | 19,099 | 17,212 | 17,212 | 19,099 | 19,099 | 17,212 | 17,212 | 19,099 | 19,099 | 19,099 | 19,099 | 19,099 | 19,099 | 19,099 | 19,099 | 19,099 | 19,099 | 19,099 | 19,099 | 19,099 | 19,099 | 19,099 | 19,099 |

Note: 1. Estimates weighted to be geographically representative. 2. Absolute value of standard errors reported in parentheses. 3. Effect is statistically significant at: *** $p < 1\%$, ** $p < 5\%$ and * $p < 10\%$. 4. Reported estimates for probit regressions are average marginal effects.

Source: China Household Finance Survey, 2015.

(women) from the other group (men) and decompose the difference (the raw gap) into a portion due to group differences in human capital characteristics (e.g., age, education, marital status) and a portion due to group differences in coefficients (environmental factors). In the linear case the O-B decomposition of the gender gap in financial literacy may be written as follows:

$$\overline{FL_M} - \overline{FL_F} = (\overline{X_M} - \overline{X_F})\widehat{\beta}_M + \overline{X_F}(\widehat{\beta}_M - \widehat{\beta}_F) + (\widehat{\alpha}_M - \widehat{\alpha}_F) \quad (1)$$

Where “*FL*” denotes financial literacy, “*M*” denote males, “*F*” denote females, “*X*” denotes the vector of variables thought to predict financial literacy, and “*α*” is the constant to be estimated from the regressions. The term on the left-hand-side of equation (1) shows the difference in the mean financial literacy of men and women (i.e., the gender gap at the mean). The first term on the right-hand-side shows the share of the gap that arises from gender differences in characteristics (‘*X*’ or independent variables in the regressions). The last two terms of equation (1) measure the unexplained gap; that is, the gap that arises due to gender differences in the estimated coefficients. It is reasonable to attribute the coefficient differences to cultural effects, especially when the sample is confined to women. A similar interpretation is that it reflects differences in the way group members (e.g., men and women) acquire or produce financial literacy (Fonseca et al., 2012).

The logic of the model enables within-country, cross-regional comparisons and its value lies in being able to isolate the model parameters that generate similarities and differences in financial literacy between groups (or across regions within groups) to conjecture on the role played by human capital forces and environmental factors under different cultural contexts. A particularly useful aspect of the O-B approach is that it is policy relevant. Indeed, part of the growing interest in financial literacy stems from the fact that financial literacy is suitable for policy implementation (Karakurum-Ozdemir et al., 2019). If the gender gap in financial literacy does largely relate to gender differences in characteristics (the *X*s), then interventions to equalize the characteristics of males and females could remove the gap. However, if the gap largely derives from gender differences in the coefficients then policies to equalize characteristics will not suffice to close the gender gap in financial literacy.

5.2 | The Determinants of Financial Literacy - Regression Results

Table 5 presents the regression results associated with the estimation of the pooled male and female regressions with a dummy variable summarizing the extent and pattern of the gender gaps in financial literacy. Table 6 shows the results disaggregated by gender. The estimates in Table 5 show that, with the exception of question 3 on risk (column 6), males, on average, have higher financial literacy than females. Column (1), for example, shows that when financial literacy is measured using the number of questions correctly answered (with no adjustment for question difficulty [for the latter see column (2)]), the gender gap is equal to 0.089 points, *ceteris paribus*. In columns (3) to (6) the dependent variables are binary measure, equal to 1 if the respondent correctly answered the question(s) and zero (0) if they did not. The coefficients are marginal effects and on the male dummy variable they show that there is a gender gap of around 5.4% in the ability to answer the interest rate question. This falls to around 3.9% for the inflation question.

In Table 6 the coefficients show that financial literacy declines with age (as given by the highly significant and negative coefficients). It is a cohort effect and derives from the significant economic and social reforms that have occurred in China over recent decades. It differs from the pattern observed within developed economies (Lusardi & Mitchell, 2014; Preston & Wright, 2019) and developing countries such as India (Rink et al., 2021) and Rwanda (Grohmann & Schoofs, 2021), where the relationship with age is typically an inverse U-shaped. We also observe important schooling effects. As might be expected, those with no schooling are significantly less financially literate than their more educated counterparts.

The marital status effects are interesting and point to gender differences in acquisition effects. The negative and significant coefficients on the “*Single*” dummy variable in the male regressions (e.g., Table 6, columns, 1, 3, 5, etc.) show that, relative to men who are married, single men have significantly lower levels of financial literacy. This is consistent with a financial specialisation effect on marriage (i.e., men taking on responsibility for household finances and increasing their financial knowledge as a result). In the case of women, we observe no such difference. It is worth remembering that each CHFS respondent is identified by the interviewer as the household member best placed to answer questions on the family’s economic circumstances. The absence of a marriage effect for women would seem to align with evidence in Fonseca et al. (2012) who observed a positive correlation between responsibility for household finances and financial literacy, but only for men.

Table 6 also shows important and significant differences in financial literacy by geography. The base case is rural. The highly significant and positive coefficients on the five geographic controls show that those residing in urban areas of China have significantly higher levels of financial literacy than their rural counterparts. The estimates also show that financial literacy is lower in urban Chongqing (a western municipality) than it is in the urban eastern municipalities of Shanghai, Beijing and Tianjin. This effect holds across men and women (e.g., see columns (1) and (2)). Potential explanations include local socialization effects such as greater learning opportunities in urban areas, particularly in Shanghai and Beijing. Relatedly, the rural/urban gap could be underpinned by differences in access to financial products and by differences in the quality of education (Cucinelli et al., 2019; Hanewald et al., 2021; Liao et al., 2017). The education controls in our regressions, for example, only control for quantity (not quality) effects. The gap might also derive from urban/rural differences in the cost of housing and the savings required to purchase a house (Wei & Zhang, 2011); that is, differing incentives to invest in the acquisition of financial literacy between rural and urban areas. Finally, it may also relate to cultural effects.

5.3 | The Gender Gap in Financial Literacy - Decomposition Results

The Oaxaca-Blinder decomposition results are summarized in Table 7. In columns (1) and (2) the estimator is OLS and the decomposition undertaken in Stata using Jann’s (2008) “Oaxaca” command. In columns (3) to (6) the estimator is Probit and the non-linear Oaxaca-Blinder decomposition undertaken using Fairlie’s (2005) approach which, in Stata, is available via Jann’s (2006) “fairlie” command. We begin by focusing on column (1) where the dependent variable is an unadjusted count measure. The mean value for males is 0.952 and for females 0.882. The difference translates to a gender gap of 7.9%. After adjusting for gender

TABLE 7 Decomposition of the male–female financial literacy gap, adults 18+, China, 2015.

| FL Measure: Estimator: | (1) NCorrect OLS | (2) NCorrectAdj OLS | (3) AllCorrect Probit | (4) Q1Interest Probit | (5) Q2Inflation Probit | (6) Q3Risk Probit |
|---|---------------------------------|------------------------------------|--------------------------------------|--------------------------------------|---------------------------------------|----------------------------------|
| (1) Mean value males | 0.952 | 0.796 | 0.072 | 0.302 | 0.176 | 0.474 |
| (2) Mean value females | 0.882 | 0.700 | 0.052 | 0.253 | 0.138 | 0.491 |
| (3) Gap (1–2) | 0.070*** (0.014) | 0.096*** (0.014) | 0.021*** (0.004) | 0.049*** (0.007) | 0.038*** (0.006) | –0.018** (0.008) |
| (4) %Raw Gap (3/2•100) | 7.9% | 13.7% | 40.3% | 19.6% | 27.9% | –3.6% |
| (5) Explained component (characteristics) | –0.022** (0.009) | –0.013 (0.008) | –0.004 | –0.005 | –0.001 | –0.019 |
| (6) Unexplained component (coefficients) | 0.092*** (0.013) | 0.109*** (0.013) | 0.025 | 0.054 | 0.039 | 0.001 |
| (7) Gap (5 + 6) | 0.070 | 0.096 | 0.021 | 0.049 | 0.038 | –0.018 |
| (8) % of Gap explained | –32.0% | –13.5% | –19.2% | –2.8% | –1.1% | 106.4% |
| (9) % of Gap unexplained | 132.0% | 113.5% | 119.2% | 102.8% | 101.0% | –6.4% |
| (10) Total (8 + 9) | 100% | 100% | 100% | 100% | 100% | 100% |
| (11) %Adjusted GenderGap (6/2•100) | 10.5% | 15.6% | 48.0% | 20.1% | 28.2% | 0.2% |
| Panel B. Explained component details: | | | | | | |
| <i>Age</i> | –0.024*** (0.003) | –0.019*** (0.003) | –0.003*** (0.001) | –0.005*** (0.001) | –0.005*** (0.001) | –0.014*** (0.001) |
| <i>Education</i> | 0.035*** (0.005) | 0.029*** (0.005) | 0.003*** (0.000) | 0.013*** (0.001) | 0.006*** (0.001) | 0.017*** (0.001) |
| <i>FinCourse</i> | 0.003*** (0.001) | 0.003*** (0.001) | 0.001*** (0.000) | 0.001*** (0.000) | 0.001*** (0.000) | 0.002*** (0.000) |
| <i>Marital status</i> | 0.005** (0.002) | 0.004 (0.002) | 0.000 (0.000) | 0.003** (0.001) | –0.000 (0.001) | 0.002 (0.001) |
| <i>Geography</i> | –0.042*** (0.003) | –0.030*** (0.008) | –0.004*** (0.001) | –0.012*** (0.001) | –0.003*** (0.001) | –0.025*** (0.001) |
| Coefficient total (as per row (5)) | –0.022 | –0.013 | –0.004 | –0.005 | –0.001 | –0.019 |

Note: 1. Estimates weighted to be geographically representative. 2. Absolute value of standard errors reported in parentheses. 3. Components/estimates statistically significant at: *** $p < 1\%$; ** $< 5\%$ and * $< 10\%$. 4. Standard errors (and therefore significance levels) not available for rows (5) and (6) and columns (3) to (7). 5. Estimates may not sum due to rounding.

Source: China Household Finance Survey, 2015, $N = 36,311$.

differences in characteristics, including gender differences in exposure to financial education, we observe a statistically significant unexplained component (i.e., coefficient effect) of 0.092 (row 6). A convenient summary measure of the unexplained component is to express it as a share (%) of the mean value of the dependent variable for females (row (2)). Adopting this approach, row (11), column (1), shows that net of gender differences in characteristics the gender gap in financial literacy (nationally) is equal to 10.5%. When the measure is a binary measure (equal to 1 if all three questions are correctly answered) the gender gap is equal to 48% (row (11), column (3)).

A comparison of the estimates at rows (4) and (11) (for the “raw” and “adjusted” gaps, respectively) show that if women in China had the same observable characteristics as men their predicted mean levels of financial literacy would actually be *lower* and the gender gap would, therefore, be *wider* (i.e., larger). Column (1) estimates, for example, show a raw gender gap of 7.9% and an adjusted gender gap of 10.5%. To understand why this occurs it is instructive to look behind the aggregate data. The lower panel (Panel B) of Table 7 disaggregates the “explained” component at row (5). The positive coefficient on the education variables (grouped) shows that men, on average, are more educated than women. From column (1) we see that around half (50%) of the raw gender gap in financial literacy derives from gender differences in schooling (i.e., 0.035/0.070). This result is perhaps not unsurprising. If asked to predict why a gender gap in financial literacy might be observed in China an obvious response might be gender differences in educational attainment. It suggests that interventions to improve the education of women could be expected to narrow the gender gap. However, the negative signs on the age and geography controls show that if women had the same age structure as men or same geographic distribution as men the gender gap in financial literacy would be wider. In the case of the latter the gender gap in financial literacy would widen by 60% ($-0.042/0.070$) (column (1)). This reflects the fact that women are disproportionately located in urban areas where financial literacy is higher and their financial literacy better.

It is not normally the case that the adjusted gender gap is larger than the raw gender gap, although it has been observed in other developing contexts (Cupák et al., 2018; Longobardi et al., 2018). A more typical finding (in developed contexts) is that a small share of the gender gap in financial literacy (around 16% to 25%) stems from gender differences in human capital characteristics (Cupák et al., 2018; Fonseca et al., 2012; Preston & Wright, 2019). The sizeable unexplained gaps (coefficient effects) in the Chinese context points to an important role for environmental factors (e.g., culture) in driving the gap.

There are several channels through which culture may impact differently on men and women when it comes to the acquisition of financial literacy. The most obvious is through different household roles, particularly with respect to financial responsibilities. In patriarchal China few women are the economic and financial household managers, particularly in rural China and western regions where the traditional gender culture is stronger. The opportunities and incentives to acquire financial literacy therefore differ. Additionally, the preference for sons and lower parental expectations placed on girls is a barrier to gender equality in education (again, particularly in rural areas) (Niu et al., 2021). This, of course, is reflected in gender differences in education attainment (controlled for in the regression), however, it may also impact on parameter values (i.e., the coefficients) through affecting unobserved characteristics such as confidence and ambitions. Cultural practices, such as the pressure to amass financial resources to meet bride prices might also explain why men in rural areas are, on average, more financially literate than women in rural

areas. Gender differences in peer-networks, access to social media and interest in economic affairs – all of which may be culturally driven – may also be contributing to the gap. We explore some of these potential channels (namely an interest in economic affairs) below.

5.4 | Analysis by Sub-Groups

Table 8 summarizes the adjusted gender gaps in financial literacy across select sub-groups. The results also show that there are sizeable gender gaps in financial literacy, even within relatively homogeneous groups. Our reporting is with respect to ‘*NCorrect*’, that is, the number of questions correctly answered with no adjustment for question difficulty. The findings for various sub-groups are summarised below.

5.4.1 | Interest in economics and financial matters

We begin by exploiting a question in the CHFS that asks participants to rate their concern (interest) in economic and financial matters (1 extremely interested; 5 not at all). Analysis in Brown and Graf (2013) (using data from a Swiss household survey) observed no difference in the gender gap after taking into account interest in financial matters. (Note, financial engagement was not included as a covariate in the regressions as it is likely to be endogenous with respect to financial literacy). On separating the respondents into two groups (those who are very / extremely interested in economic affairs (around 33% of sample) and the remainder) we see, as expected, that mean financial literacy rates are higher amongst the sample that is interested in financial matters. For example, males who are interested in financial matters correctly answered 1.3 questions compared to the 0.7 amongst males not interested in financial matters. The raw gender gap in financial literacy amongst those who express an interest in financial matters is 1.4%. However, once we adjust for gender differences in characteristics within the groups, the adjusted gender gap amongst those who are financially engaged is 8.2% (column 4). The corresponding adjusted gender gap amongst those not as financially engaged is lower at 5.9%. The larger adjusted gender gap suggests that the financial literacy acquisition process is different for men and women, even amongst those interested in financial matters. It may be a confidence (i.e., cultural) effect.

5.4.2 | Employed vis-à-vis retired

In rows (4) and (5) the focus is, respectively, on those in employment and those who are retired. The employed group is of particular interest as this provides an important peer group network with potential financial knowledge spill-over effects. Our results show that the adjusted gender gap (%) (column (4)) is larger amongst those employed (11%) than it is amongst retirees (8.8%). This pattern holds across all measures of financial literacy (except column (6)). The larger gap amongst the employed is again suggestive of a role for environmental considerations (e.g., culture, networks, opportunity) in driving the gender gap.

TABLE 8 Adjusted gap (%) estimates of the male–female financial literacy gap by select characteristics, adults 18+, China, 2015.

| FL Measure | N.Correct Mean Score | | | Adjusted Gender Gap (%) | | | | | | | | |
|--|----------------------|----------------|-------------------|-------------------------|-------|--------|-------------|--------|--------|------------|--------|--------|
| | Raw | | | NCorrect | | | NCorrectAdj | | | AllCorrect | | |
| | Males (1) | Females (2) | Gender Gap (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
| Estimator | - | - | - | OLS | OLS | Probit | Probit | Probit | Probit | Probit | Probit | Probit |
| 1 Baseline (All) | 0.952 | 0.882 | 7.9% | 10.5% | 15.6% | 48.0% | 20.1% | 28.2% | 28.2% | 0.2% | 0.2% | 0.2% |
| 2 Sample: <i>FinEngage</i> = 1 (N = 11,921) | 1.324 | 1.306 | 1.4% | 8.2% | 14.3% | 48.5% | 15.1% | 32.2% | 32.2% | -2.7% | -2.7% | -2.7% |
| 3 Sample: <i>FinEngage</i> = 0 (N = 24,390) | 0.721 | 0.722 | -0.1% | 5.9% | 9.0% | 25.4% | 17.4% | 13.3% | 13.3% | -2.3% | -2.3% | -2.3% |
| 4 Employed (N = 21,998) | 0.992 | 0.956 | 3.8% | 11.0% | 16.2% | 51.0% | 19.4% | 29.5% | 29.5% | 0.6% | 0.6% | 0.6% |
| 5 Retired (N = 3500) | 0.988 | 0.952 | 3.8% | 8.8% | 14.9% | 38.2% | 17.7% | 38.3% | 38.3% | -13.7% | -13.7% | -13.7% |
| 6 Age < 30 (N = 2751) | 1.537 | 1.497 | 2.7% | 4.4% | 8.0% | 21.2% | 8.7% | 17.9% | 17.9% | -2.1% | -2.1% | -2.1% |
| 7 Age 30–59 (N = 21,557) | 1.065 | 0.946 | 12.6% | 11.2% | 16.2% | 52.7% | 21.9% | 28.4% | 28.4% | 1.1% | 1.1% | 1.1% |
| 8 Age 60+ (N = 12,003) | 0.654 | 0.561 | 16.6% | 11.4% | 17.5% | 60.1% | 20.1% | 34.9% | 34.9% | -0.9% | -0.9% | -0.9% |
| 9 Sample: Urban only (N = 25,054) | 1.230 | 1.073 | 14.6% | 8.0% | 13.9% | 47.0% | 16.5% | 23.8% | 23.8% | -1.8% | -1.8% | -1.8% |
| 10 Sample: Rural (N = 11,257) | 0.589 | 0.453 | 30.0% | 20.0% | 19.6% | 48.8% | 44.0% | 9.7% | 9.7% | 12.6% | 12.6% | 12.6% |
| 11 Beijing & Urban (N = 1210) | 1.512 | 1.384 | 9.2% | 1.8% | 11.0% | 35.8% | 10.5% | 50.5% | 50.5% | -13.3% | -13.3% | -13.3% |
| 12 Shanghai & Urban (N = 1382) | 1.424 | 1.187 | 20.0% | 16.4% | 19.4% | 19.4% | 25.3% | 25.9% | 25.9% | 8.2% | 8.2% | 8.2% |
| 13 Tianjin & Urban (N = 928) | 1.419 | 1.209 | 17.4% | 8.2% | 12.9% | 104.3% | 8.8% | 42.6% | 42.6% | 2.5% | 2.5% | 2.5% |
| 14 Chongqing & Urban (N = 902) | 1.171 | 1.045 | 12.1% | 9.2% | 12.2% | 58.3% | 13.0% | 23.9% | 23.9% | 3.6% | 3.6% | 3.6% |

Note: 1. Columns (1), (2) and (3) relate to the count (*NCorrect*) measure of financial literacy. The mean gender gap is calculated as the male–female difference as a % of the mean female level; 2. The mean response rates for the other dependent variables is available on request; 3. The baseline estimates are sourced from Table 7, row 11; 4. In all sub-samples the male and female regressions follow the regressions reported in Table 6; 5. Estimates weighted to be geographically representative.

Source: China Household Finance Survey, 2015.

5.4.3 | Age

Rows (6) to (8) provide an analysis disaggregated by age. Younger respondents are, as previously observed, significantly more financially literate than their older counterparts. Our age-based analysis shows that the adjusted gender gap in financial literacy is lower (4.4%) amongst the young (less than 30 years of age) than it is amongst older respondents (e.g., 11.2% for those aged 30–59). This is somewhat encouraging.

5.4.4 | Geography

The geography results (rows 9 to 14) are of particular interest. Across mainland China the adjusted gender gap (column (4)) is larger in rural China (at 20%) than it is in urban China (at 8%). It shows that women benefit (in terms of financial literacy outcomes) from residing in an urban location where there is greater gender equality and thus incentives and opportunities to acquire financial literacy. The estimates for each of the four municipalities (selecting on the urban samples only) show that the gender gap is equal to 1.8% in Beijing, 8.2% in Tianjin, 9.2% in Chongqing and 16.4% in Shanghai. The larger gap in Shanghai is not an unusual finding. It demonstrates that the gender gap in financial literacy does not necessarily narrow with economic developments and with higher levels of financial literacy amongst individuals in more developed regions. It parallels findings in Preston and Robert (2019) who show that, within the OECD, Australia has an above average level of financial literacy and an above average gender gap in financial literacy. We shed further light on the Shanghai result in section 5.6 below.

5.5 | Parental and attitudinal effects

Capturing the effects of social norms and gender culture on financial literacy is, as noted, not easy and is constrained by accessible data. Thus far our approach has been to show that financial literacy amongst women is higher, and the adjusted gender gap generally lower, in areas where the culture is less traditional (e.g., urban regions). Xiao and Asadullah (2020) use an approach similar to ours to examine how much of the gender gap in labor force participation in China may be explained by gender differences in social norms. However, to capture the latter they draw on three attitudinal questions regarding opinions about gender roles (e.g., men should focus on career, whereas women should focus on family; during a recession, female workers should be dismissed first; housework should not be shared by couples equally). Unfortunately, such attitudinal questions are not available within the CHFS (the survey data we are using), although the latter does ask about attitudes towards filial piety (a traditional Chinese custom).

Respondents to the 2015 survey were asked [English questionnaire translation] “Which character trait do you prefer for your child to have?: (1) Obey their parents, filial piety; (2) Independent thinking, having his or her own ideas.” We use this information to construct a binary variable equal to one if the respondent holds traditional preferences re filial piety (i.e., indicated a preference that their child would obey their parents); and zero otherwise. Table 9 reports the regression estimates with filial piety as the dependent variable. The estimates show that traditional views are stronger amongst older Chinese respondents, those with less schooling, those who are single and rural residents. The geographic controls also show that relative to women in

TABLE 9 Probit regression estimates of filial piety, males and females, aged 18+, China, 2015.

| VARIABLES | (1) Pooled | (2) Men | (3) Women |
|--------------|----------------------|----------------------|----------------------|
| Male | 0.015*** (0.008) | | |
| Age | 0.005*** (0.000) | 0.005*** (0.000) | 0.005*** (0.000) |
| Schooling | -0.028*** (0.001) | -0.028*** (0.002) | -0.027*** (0.002) |
| FinCourse | -0.051*** (0.018) | -0.053* (0.028) | -0.050** (0.023) |
| Single | 0.096*** (0.020) | 0.119*** (0.032) | 0.085*** (0.026) |
| Wsd | 0.026** (0.013) | 0.014 (0.016) | 0.037 (0.023) |
| OthUrban | -0.105*** (0.009) | -0.099*** (0.013) | -0.110*** (0.012) |
| Shanghai | -0.214*** (0.019) | -0.221*** (0.026) | -0.205*** (0.027) |
| Beijing | -0.150*** (0.021) | -0.095*** (0.027) | -0.234*** (0.033) |
| Tianjin | -0.109*** (0.020) | -0.104*** (0.027) | -0.115*** (0.032) |
| Chongqing | -0.113*** (0.022) | -0.112*** (0.031) | -0.113*** (0.031) |
| Observations | 36,311 | 17,212 | 19,099 |

Note: 1. Estimates weighted to be geographically representative. 2. Absolute value of standard errors reported in parentheses. 3. Effect is statistically significant at: *** $p < 1\%$; ** $< 5\%$ and * $< 10\%$. 4. Reported estimates are average marginal effects.

Source: China Household Finance Survey, 2015.

rural areas, women in Beijing are 23.4% less likely to preference filial piety in their children. The corresponding share for women in Shanghai is 20.5%. In Chongqing this falls to 11.3%. Interestingly, the pattern differs for men. While men in Shanghai are 22.1% less likely to preference filial piety than their rural counterparts, the gap between rural men and men in Beijing is only 9.5%.

When we add the “filial piety” variable to the financial literacy regressions and apply the O-B decomposition technique to examine the gender gap in financial literacy we find that the adjusted gender gap previously estimated and reported in Table 7 (column (1), row (11)) increases from 10.5% to 10.8% (results available on request). This is because men, on average, hold more traditional views (as captured by this filial piety variable) and that more traditional views correlate with having lower financial literacy. If women were to hold more traditional views their financial literacy would be worse and the adjusted gender gap larger. We also find

that 6% of the raw gender gap in financial literacy may be explained by gender differences in attitudes concerning filial piety (with the effect significant at the 1% level of significance). Nearly two-fifths (18%) of the explained component is driven by this attitudinal variable. (Note, we did not include this variable in earlier regressions as it may be endogenous if it is capturing omitted individual-specific factors that affect financial literacy).

5.6 | Within-Gender Analysis

In this section we adopt a ‘within-gender’ approach to shed further light on the role of culture in explaining the gender gap in financial literacy. Our particular interest is in understanding why the adjusted gender gap in urban Shanghai (column (4), row (12) of Table 8) is larger (at 16.4%) than in other urban areas investigated (see Table 8, rows 11 to 14). Our ‘within-gender’ empirical approach involves comparing women in Shanghai with women in Chongqing. As before we confine our attention to “*NCorrect*”. We include the “filial piety” control in these regressions, noting the potential endogeneity concerns. Descriptive statistics show that there is a significant difference in terms of attitudes to filial piety between women in Shanghai and women in Chongqing (see Table 9). In other words, women in Chongqing are, as expected, more likely to subscribe to traditional values.

The estimates are reported in Table 10. They show that there is a 13% (raw) difference in the financial literacy of women in Shanghai and women in Chongqing. Panel A (for the detailed components) shows that if women in Chongqing had the same average age (which is older) as women in Shanghai the gender gap would be wider (because older women are less financially literate than younger women). The significant coefficient on the ‘filial piety’ variable shows the opposite effect, that is, the gap would be less if women in Chongqing had the same preferences regarding filial piety as women in Shanghai. On its own differences in attitudes towards filial piety explains 13.5% of the raw gap (i.e., $0.019/0.141$). However, although we have included an explicit control to capture cultural values, the more interesting finding in Table 10 is the large and significant unexplained gap in financial literacy (row (6)) and the small and insignificant explained gap (row (5)). In essence differences in observed characteristics (age, education, marital status and filial piety) have, as a group, no explanatory effect when it comes to explaining differences in financial literacy between women in Shanghai and women in Chongqing. The gap isn’t the product of institutional differences such as political systems as this is a within-country effect.

It is our contention that the insignificant explained component (due to differences in observed characteristics) and the large and highly significant unexplained component (due to differences in coefficients) is capturing, amongst other things, unobserved cultural factors which correlate with a higher levels of financial literacy investments by women in Shanghai vis a vis their same sex counterparts in Chongqing. Part of the unobserved effect may relate to cultural differences in the learning environment when young. If girls in Shanghai are encouraged or incentivised to learn about financial decision making at a younger age than girls in Chongqing this could explain why the observed characteristics controlled for in our regression are only able to account for a small share of the within-gender financial literacy gap between women in Shanghai and Chongqing.

We also undertook a “within-gender” analysis comparing women in Shanghai with women in Beijing to investigate why the adjusted gender gap in financial literacy in Shanghai (16.4%) was so much larger than in Beijing (1.8%). The results are not reported but are available on

TABLE 10 Decomposition of within-gender Shanghai-Chongqing financial literacy gaps, aged 18+, 2015.

| | (1) Females | (2) Males |
|---|-------------------|-------------------|
| (1) Mean value Shanghai | 1.187 | 1.424 |
| (2) Mean value Chongqing | 1.045 | 1.171 |
| (3) Gap (1–2) | 0.141** | 0.253*** |
| | (0.067) | (0.072) |
| (4) % raw gap (3/2•100) | 13% | 22% |
| (5) Explained component (characteristics) | –0.015 | –0.017 |
| | (0.036) | (0.037) |
| (6) Unexplained component (coefficients) | 0.156** | 0.269*** |
| | (0.067) | (0.067) |
| (7) % of raw gap explained | –10.6% | –6.7 |
| (8) % of raw gap unexplained | 110.6% | 106.7% |
| (9) Total | 100% | 100% |
| (10) %Adjusted Gap (6/2•100) | 15% | 23% |
| Panel A: Details of explained component: | | |
| (11) Age | –0.056*** (0.019) | –0.055*** (0.019) |
| (12) Education | 0.032 (0.022) | 0.019 (0.023) |
| (13) Marital status | –0.009 (0.008) | 0.003 (0.011) |
| (14) Course | –0.002 (0.003) | –0.001 (0.006) |
| (15) Filial Piety | 0.019** (0.009) | 0.017* (0.010) |
| (15) Total explained | –0.015 (0.036) | –0.017 (0.037) |
| Number of observations | 1189 | 1095 |

Note: 1. Estimates weighted to be geographically representative. 2. Absolute value of standard errors reported in parentheses. 3. Components/estimates statistically significant at: *** $p < 1\%$; ** $< 5\%$ and * $< 10\%$. 4. Estimates may not sum due to rounding. Source: China Household Finance Survey, 2015.

request. In brief, we conclude that there are two main effects at play. The first is that men in Shanghai are, on average, more financially literate than their counterparts in Beijing. This makes sense given that Shanghai is China's financial capital. It is consistent with men in Shanghai having more incentives, opportunities and network effects conducive to financial literacy investments than men elsewhere. The second is that women in Shanghai are less financially literate than their counterparts in Beijing. This reflects an educational effect with women in Beijing more educated than their counterparts in Shanghai. It also reflects a cultural difference between women in Shanghai and Beijing. Women in Beijing have, historically, been more exposed to messages concerning gender equality (Booth et al., 2018).

6 | SUMMARY AND CONCLUSION

Using data from the 2015 China Household Financial Survey (CHFS) this paper investigates the extent, pattern and source of the gender gap in financial literacy amongst adults in China. Our



particular goal is to examine the role or effect of culture on the financial literacy of women and on the gender gap in financial literacy.

As with other empirical studies, our results show that age is a key determinant of financial literacy. However, in contrast to findings elsewhere, we observe a strong cohort effect in China. Younger adults have significantly higher financial literacy than older adults. In other countries age is more commonly shown to have inverse U-shaped relationship with financial literacy (e.g., Lusardi & Mitchell, 2014). The relationship between geographic location and financial literacy is as expected. Financial literacy amongst women is significantly higher in urban areas and in more developed eastern cities where the gender culture is less strict (e.g., Shanghai and Beijing). Economic development does not, however, guarantee a smaller gender gap. For China as a whole, the adjusted gender gap in financial literacy is equal to 10.5% (based on a count of the number of correct answers). This falls to 4.4% amongst young people (aged less than 30) which is encouraging. In the four urban municipalities investigated--Beijing, Tianjin, Chongqing and Shanghai--the (adjusted) gender gap in financial literacy is, respectively, 1.8%, 8.2%, 9.2% and 16.4%. We believe that the larger gender gap in Shanghai (China's financial capital) reflects, amongst other things, greater opportunities and incentives for Shanghai males to acquire financial literacy.

Additional evidence as to the effect of culture on financial literacy is obtained from within-gender decompositions. The first compares women in Shanghai with women in Chongqing. The second compares women in Shanghai with women in Beijing. In the former the (raw) financial literacy differential is equal to 13% (favoring women in Shanghai), in the latter it is equal to 16.6% (favoring women in Beijing). A Blinder-Oaxaca decomposition shows that two-thirds of the 16.6% Beijing-Shanghai gap is due to differences in characteristics, with education the main driver. In the case of the 13% Shanghai-Chongqing differential, the gap is entirely due to coefficient effects. In other words, it stems from differences in the way women in these two cities produce or acquire financial literacy. We argue that this difference is the product of differing gender norms and values between the two cities; that is, it is driven by cultural effects. We accept that there may be other unobservable factors driving the result (e.g., network effects, social media effects), however, we contend that the dominant force is cultural. This is supported by descriptive analysis in the paper. The finding supports other recent literature documenting the relationship between gender culture and financial literacy (Bottazzi & Lusardi, 2021; Davoli & Rodríguez-Planas, 2022; Driva et al., 2016; Grohmann & Schoofs, 2021; Rink et al., 2021).

Our findings should be of interest to policy makers and commercial organizations, particularly those interested in consumer well-being and gender equality within China. Further research is, of course, required to better understand the particular channels through which culture affects financial literacy. Is culture working through gender stereotypes and is it this which leads to an under investment in financial literacy (as per Driva et al.'s (2016) analysis)? Does it relate to household decision making and/or differences in the effect of household decision making on the financial literacy of different groups (as per Fonseca et al., 2012)? Unfortunately, we are unable to test these specific channels with the data to hand. Data that captures these potential mechanisms together with attitudinal information (e.g., attitudes towards gender roles) could help further illuminate the gendered culture effects uncovered in this paper. Research aimed at understanding when the gender gap begins in China would also provide valuable insights.

From a policy perspective our analysis suggests that, within China, interventions to improve the financial literacy of women and close the gender gap in financial literacy, should focus on

the cultural context and messages concerning gender equality rather than on efforts to “fix the woman” (e.g., financial literacy education). Policy makers should also monitor the effect of campaigns such as “women-return-to-the-home” (Xiao & Asadullah, 2020) on the financial literacy outcomes of girls and women.

Given the economic disadvantage that women face on account of their relatively lower levels of financial literacy, it would also be prudent to pursue interventions aimed at minimizing the risks that women, as financial consumers, likely face in China. Such interventions may take the form of financial advisors specifically trained to help women make informed financial decisions and/or training that focuses on a simple “rule-of-thumb” approach to basic financial decisions (Drexler et al., 2014). Given the heterogeneity observed in this paper, such interventions need to be tailored to meet the needs of different sub-groups. Research might also fruitfully examine gender differences in financial self-efficacy (Furrebøe & Nyhus, 2022). The latter concerns the ability and confidence to apply financial literacy to financial decisions (*ibid.*).

6.1 | Limitations

Although the CHFS is a useful dataset for the study at hand, as with most datasets it does suffer from a number of limitations. A particular limitation for our purposes is the fact that the CHFS is a household survey and that the respondents are those deemed (by the interviewer) to be the household member best placed to answer questions on the family's economic circumstances. Accordingly, while we may make statements about the financial literacy of households in China, we are less able to make representative statements about the situation for all adult males and females in China. That said, the fact that the respondents are considered to be “best placed to answer questions on household finances”, it is likely the case that the gender gap uncovered in this paper provides a lower estimate of the gap.

Additionally, although previous studies confirm that the financial literacy questions in the CHFS do not suffer from a gender bias in framing (Ooi, 2020), there is a higher tendency among the survey respondents to select the “do not know” and “refused to answer” when answering the financial literacy questions. This is a pattern observed in other Chinese based studies (Gui et al., 2021). Future research may wish to consider employing alternative or additional, more nuanced, financial literacy questions (particularly with respect to stocks and funds) when testing financial literacy in China.

A third limitation is that the study is cross-sectional and at a point in time (2015). We are not able to observe individuals over-time. Future research may choose to use this study as a benchmark against which improvements (or not) may be considered.

Finally, to the extent that it is possible, future research may also wish to move beyond a male–female difference approach when examining the gender gap to consider other gender identities. This is a particular gap in the literature (China and beyond) and is likely to also help further inform the effect of culture on the financial literacy outcomes of men and women.

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CONFLICT OF INTEREST STATEMENT

The paper uses data from the China Household Finance Survey (CHFS) which is administered by The Survey and Research Center for China Household Finance at Southwestern University of Finance and Economics. The findings and views reported in this paper, are those of the authors and should not be attributed to the Survey and Research Center or Southwestern University of Finance and Economics.

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REFERENCES

- Agnew, S. & Cameron-Agnew, T. (2015) The influence of consumer socialisation in the home on gender differences in financial literacy. *International Journal of Consumer Studies*, 39, 630–638.
- Almenberg, J. & Dreber, A. (2015) Gender, stock market participation and financial literacy. *Economics Letters*, 137, 140–142.
- Berik, G., Dong, X. & Summerfield, G. (2007) China's transition and feminist economics. *Feminist Economics*, 13(3–4), 1–33.
- Blau, F.D. & Kahn, L.M. (2017) The gender wage gap: extent, trends, and explanations. *Journal of Economic Literature*, 55(3), 789–865.
- Blinder, A. (1973) Wage discrimination: reduced form and structural estimates. *Journal of Human Resources*, 84, 436–455.
- Booth, A., Fan, E., Meng, X. & Zhang, D. (2018) Gender differences in willingness to compete: The role of culture and institutions. *Economic Journal*, 128, 734–764.
- Bottazzi, L. & Lusardi, A. (2021) Stereotypes in financial literacy: Evidence from PISA. *Journal of Corporate Finance*, 71, 101831.
- Brown, M. & Graf, R. (2013) Financial literacy and retirement planning in Switzerland. *Numeracy*, 6(2), 1–21.
- Bucher-Koenen, T., Alessie, R.J., Lusardi, A. & Rooij, M.V. (2021) Fearless woman: financial literacy and stock market participation. NBER Working Paper Series, Working Paper 28723. <http://www.nber.org/papers/w28723>
- Cameron, L., Meng, X. & Zhang, D. (2017) China's sex ratio and crime: behavioural change or financial necessity. *Economic Journal*, 129, 790–820.
- China Household Finance Survey (CHFS). (2015) CHFS CAPI Questionnaire 2015 (English Version), June 2015.
- Cucinelli, D., Trivellato, P. & Zenga, M. (2019) Financial literacy: the role of the local context. *Journal of Consumer Affairs*, 53, 1874–1919.
- Cupák, A., Fessler, P., Schneebaum, A. & Silgoner, M. (2018) Decomposing gender gaps in financial literacy: new international evidence. *Economic Letters*, 168, 102–106.
- Davoli, M. & Rodríguez-Planas, N. (2022) Culture, gender and financial literacy. *IZA Discussion Paper*, 15054, 1–38.
- Drexler, A., Fischer, G. & Schoar, A. (2014) Keeping it simple: financial literacy and rules of thumb. *American Economic Journal: Applied Economics*, 6(2), 1–31.
- Driva, A., Lührmann, M. & Winter, J. (2016) Gender differences and stereotypes in financial literacy: off to an early start. *Economic Letters*, 146, 143–146.
- Fairlie, R.W. (2005) An extension to the Blinder-Oaxaca decomposition technique to Logit and Probit Models. *Journal of Economic and Social Measurement*, 30, 305–316.
- Fincher, L.H. (2014) *Leftover Women: The Resurgence Of Gender Inequality In China?*. London: Zed Books.
- Fonseca, R., Mullen, K.J., Zamarro, G. & Zissimopoulos, J. (2012) What explains the gender gap in financial literacy? The role of household decision making. *Journal of Consumer Affairs*, 46, 90–106.
- Furrebøe, E.F. & Nyhus, E.K. (2022) Financial self-efficacy, financial literacy, and gender: a review. *Journal of Consumer Affairs*, 56(2), 743–765.

- Gao, E., Zuo, X., Wang, L., Lou, C., Cheng, Y. & Zabin, L. (2012) How does traditional Confucian culture influence adolescents' sexual behavior in three Asian cities? *Journal of Adolescent Health*, 50(3), S12–S17.
- Grohmann, A. & Schoofs, A. (2021) Financial literacy and intra-household decision making: evidence from Rwanda. *Journal of African Economies*, 30(3), 225–250.
- Gui, Z., Huang, Y. & Zhao, Z. (2021) Whom to educate? financial literacy and investor awareness. *China Economic Review*, 67, 1–22. Available from: <https://doi.org/10.1016/j.chieco.2021.101608>
- Hanewald, K., Jia, R. & Liu, Z. (2021) Why is inequality higher among the old? Evidence from china. *China Economic Review*, 66, 1–19. Available at: Available from: <https://doi.org/10.1016/j.chieco.2021.101592>
- Hein, W., Steinfield, L., Ourahmoune, N., Coleman, C.A., Zayer, L.T. & Littlefield, J. (2016) Gender justice and the market: a transformative consumer research perspective. *Journal of Public Policy and Marketing*, 35(2), 223–236.
- Hopkins, B.E. (2007) Western cosmetics in the gendered development of consumer culture in China. *Feminist Economics*, 13(3–4), 287–306.
- Hsu, J.W. (2016) Aging and strategic learning: The impact of spousal incentives on financial literacy. *Journal of Human Resources*, 51, 1036–1067.
- Hu, Y. & Scott, J. (2016) Family and gender values in China: generational, geographic, and gender differences. *Journal of Family Issues*, 37(9), 1267–1293.
- Huang, D., Yang, S. & Liu, T. (2020) Life expectancy in Chinese cities: Spatially varied role of socioeconomic development, population structure, and natural conditions. *International Journal of Environmental Research and Public Health*, 17, 6597. Available at: Available from: <https://doi.org/10.3390/ijerph17186597>
- Jann, B. (2006) FAIRLIE: Stata Module to Generate Nonlinear Decomposition of Binary Outcome Differentials. Available at: <https://ideas.repec.org/c/boc/bocode/s456727.html>
- Jann, B. (2008) The Blinder-Oaxaca decomposition for linear regression models. *The Stata Journal*, 8(4), 453–479.
- Karakurum-Ozdemir, K., Kokkizil, M. & Uysal, G. (2019) Financial literacy in developing countries. *Social Indicators Research*, 143, 325–353.
- Liao, L., Xiao, J., Zhang, W. & Zhou, C. (2017) Financial literacy and risky asset holdings: evidence from China. *Accounting and Finance*, 57, 1383–1415.
- Longobardi, S., Maria, M. & Regoli, P.A. (2018) Can problem-solving attitudes explain the gender gap in financial literacy? Evidence from Italian students' data. *Quality and Quantity*, 52, 1677–1705.
- Lusardi, A. & Mitchell, O.S. (2014) The economic importance of financial literacy: Theory and evidence. *Journal of Economic Literature*, 52, 5–44.
- Ma, Y. (2021) Cosmetics Market in China – Statistics & Facts. *Stat* Available at: <https://www.statista.com/topics/1897/cosmetics-in-china/#dossierKeyfigures>. Accessed 15.6.21
- MacPhail, F. & Dong, X. (2007) Women's market work and household status in rural China: evidence from Jiangsu and Shandong in the late 1990s. *Feminist Economics*, 13(3–4), 93–124.
- Nguyen, T.T., Darnell, A., Weissman, A., Frongillo, E.A., Mathiesen, R., Lapping, K. et al. (2020) Social, economic, and political events affect gender equity in China, Nepal, and Nicaragua: a matched, interrupted time-series study. *Global Health Action*, 13(1), 1–10. Available at: Available from: <https://doi.org/10.1080/16549716.2020.1712147>
- Niu, M., Wei, Y., Xu, Q. & Yang, M. (2021) Reviewing the influences of education gender issues of female students in the rural society of China. *Proceedings of the 2021 International conference on Public Relations and Social Sciences*, 748–753.
- Oaxaca, R. (1973) Male-female wage differentials in urban labor markets. *International Economic Review*, 14, 693–709.
- OECD. (2022) Recommendation of the Council on Financial Literacy, OECD/Legal/0461.
- Ooi, E. (2020) Give mind to the gap: measuring gender differences in financial knowledge. *Journal of Consumer Affairs*, 54, 931–950.
- Preston, A. & Wright, R.E. (2019) Understanding the gender gap in financial literacy: Evidence from Australia. *Economic Record*, 95, 1–29.
- Preston, A. & Wright, R.E. (2022) Gender, financial literacy and pension savings. *Economic Record*, 1–26.
- Preston, A. & Wright, R.E. (2022a) Financial literacy amongst young people: When does the gender gap begin? IZA Discussion Paper, No. 15287.

- Rink, U., Walle, Y.M. & Klasen, S. (2021) The financial literacy gender gap and the role of culture. *The Quarterly Review of Economics and Finance*, 80, 117–134.
- Risman, B.J. (2004) Gender as a Social Structure. *Gender and Society*, 18(4), 429–450.
- Robson, J. & Peetz, J. (2020) Gender differences in financial knowledge, attitudes, and behaviors: Accounting for socioeconomic disparities and psychological traits. *Journal of Consumer Affairs*, 54, 813–835.
- Scott, L., Williams, J.D., Baker, S.M., Brace-Govan, J., Downey, H., Hakstian, A.M. et al. (2011) Beyond poverty: Social justice in a global marketplace. *American Marketing Association*, 30(1), 39–46.
- Steinfeld, L., Sanghvi, M., Zayer, L.T., Coleman, C.A., Ourahmoune, N., Harrison, R.L. et al. (2019) Transformative intersectionality: Moving business towards a critical Praxix. *Journal of Business Research*, 100, 366–375.
- Steinfeld, L.A. (2021) 1, 2, 3, 4. I declare...empowerment? A material-discursive analysis of the marketisation, measurement and marketing of women's economic empowerment. *Journal of Marketing Management*, 37(3–4), 320–356.
- Steinfeld, L.A., Coleman, C.A., Zayer, L.T., Ourahmoune, N. & Wendy Hein, W. (2019) Power logics of consumers' gendered (in) justices: Reading reproductive health interventions through the transformative gender justice framework. *Consumption Markets and Culture*, 22(4), 406–429.
- Taylor, C. (1992) The politics of recognition. In: Gutman, A. (Ed.) *Multiculturalism: Examining the Politics of Recognition*. Princeton, NJ: Princeton University Press, pp. 25–73.
- Tinghög, G., Ahmed, T.A., Barraffrem, K., Lind, T., Skagerlund, K. & Västfjäll, D. (2021) Gender differences in financial literacy: the role of stereotype threat. *Journal of Economic Behavior and Organization*, 192, 405–416.
- Wei, S. & Zhang, X. (2011) The competitive saving motive: Evidence from rising sex ratios and savings rates in China. *Journal of Political Economy*, 119(3), 511–564.
- World Economic Forum (WEF). (2021) Global Gender Gap Report 2021. March.
- Xiao, S. & Asadullah, M.N. (2020) Social norms and gender differences in labor force participation in China. *Feminist Economics*, 26(4), 114–148.
- Xu, G. & Feiner, S. (2007) Meinü Jingji / China's beauty economy: Buying looks, shifting value, and changing place. *Feminist Economics*, 13(3–4), 307–323.
- Xu, N., Shi, J., Zhao, R. & Yan, Y. (2020) Financial literacy and formal credit accessibility: Evidence from informal businesses in China. *Finance Research Letters*, 36. Available at: Available from: <https://doi.org/10.1016/j.frl.2019.101327>
- Zhang, Y. & Huang, T. (2020) Gender discrimination at work is dragging China's growth. *Peterson Institute for International Economics*, 16 June. Women's Economic Empowerment Research Initiative. Retrieved 14 January 2022 from. Available from: <https://www.piie.com/blogs/china-economic-watch/gender-discrimination-work-dragging-chinas-growth>

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