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FOLLOW US, NOT? GENDER DIFFERENCES IN FINANCIAL LITERACY IN GLOBAL LEADER OF GENDER EQUALITY*

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Abstract. Gender differences in financial literacy are examined in this research. A considerable body of research suggests women are inferior to men when it comes to financial literacy. Various social factors (e.g., gender inequality) are typically attributed as antecedents of this reality. We set out to investigate whether gender differences in financial literacy are present in Iceland, the most gender-equal country in the world. If financial literacy is based on social norms and issues, gender differences in financial literacy should be less in countries like Iceland, where women are highly economically and otherwise empowered. Using a representative sample from the Icelandic population and controlling for a host of factors, we find women to be less financially literate than men despite substantial gender equality in Iceland.

Keywords: financial literacy; gender; Iceland

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JEL Classifications: F65, G53, J16

1. Introduction

Women tend to be less financially literate than men (Lusari and Mitchell, 2008; Fonseca et al., 2012; Bucher-Koenen et al., 2017; Lusardi et al., 2010; Agnew and Harrison, 2015), which has generally been attributed to socially constructed issues, such as inequality (Bussey and Bandura, 1999; Agarwal et al., 2015; Lusardi, Mitchell and Curto, 2010). Suppose socially related issues are to explain the differences in financial literacy between men and women. In that case, the difference should be low or zero in the most gender-equal country in the world, Iceland.

Good financial literacy brings lifelong benefits to people in many forms (Guðjónsson, Jonsdóttir, and Minelgaite, 2022), such as in retirement planning (Lusardi and Mitchell, 2007a, Lusardi and Mitchell, 2007c; Arenas de Mesa

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et al., 2008; Chan and Stevens, 2008; Hastings, Mitchell and Chyn, 2011; Bernheim and Garrett, 2003; Lusardi and Mitchell, 2014), mortgages (Moore, 2003; Campell, 2006; Stango and Zinman, 2009; Gerardi, Goette, and Meier, 2013), good credit card record (Mottola, 2013; Utkus and Young, 2011; Allgood and Walstad, 2013), avoiding costly financial traps, such as taking payday loans (Lusardi and Scheresberg, 2013; Ernst, Farris, and King, 2004; Agarwal, Skiba, and Tobacman, 2009; Bertland and Morse, 2011) and being defrauded (FINRA Investor Education Foundation, 2006; Blanton, 2012).

However, general findings show that financial literacy is low, both among older (Lusardi and Mitchell 2011a;) and younger people (Mandell, 2008; Shim et al., 2010; Chen and Volpe, 1998; Le Baron et al., 2018; Chowa and Despard, 2014; Anderson and Card, 2015), and across countries (Lusardi and Mitchell 2014; Lusardi and Mitchell 2011c; van Rooij, Lusardi and Alessie, 2011).

Financial literacy does, however, differ demographically between various groups in societies. People with higher education perform better than the uneducated (Lusardi and Mitchell 2011c; Christelis, Jappelli, and Padula 2010; Lusardi 2012), and those who score highly in cognitive ability perform better than those who score lower (McArdle, Smith, and Willis, 2009; Lusardi, Mitchell, and Curto, 2010). Those who live in rural areas fair worse than those who live in cities (Klapper and Panos, 2011) and financial literacy may also be clustered with different regions (Beckmann 2013; Fornero and Monticone, 2011; Bumcrot, Lin, and Lusardi 2013). In addition, family background and parental education matter in terms of financial literacy (Lusardi, Mitchell, and Curto, 2010; Chiteji, and Stafford, 1999; Li, 2009; Shim et al., 2009; LeBaron et al., 2018) and finally, women are less financially literate than men (Lusardi, and Mitchell, 2008).

Chen and Volpe (2002) found women to have less knowledge about financial topics than men. Furthermore, they found women generally have less enthusiasm for, lower confidence in, and less willingness to learn about personal finance topics than men (Chen, Volpe, 2002). Other research demonstrates similar findings. Zissimopoulos, Karney, and Rauer (2008) found that less than 20% of middle-aged college-educated women could answer a fundamental compound interest question compared to about 35% of college-educated males of the same age.

Women are less financial literate than men in general in many studies around the globe (Bucher-Koenen et al., 2014; Lusardi et al., 2010; Falahati and Paim, 2011; Hung, Yoong, and Brown, 2012; Klapper, Lusardi, and Panos, 2013; Yu et al., 2015; Agnew and Harrison, 2015), both when they are old (Lusardi, Mitchell and Curto, 2014; Atkinson and Messey, 2012; Lusardi, 2011; Bucher- Koenen et al., 2014) and when they are young (Lusardi, Mitchell and Curto, 2010; Driva, Luhrmann and Winter, 2016; Becchetti, Caiazza, and Coviello, 2013; Butters, Asarta, and McCoy, 2012).

Women's low financial literacy results in bad credit card behaviour (Mottola, 2013; Allgood and Walstad, 2011; Allgood and Walstad, 2013) and they get worse credit terms in financial services than men (Alesina et al., 2013). Women also participate less in the stock market than men (van Rooij et al., 2011), a gender gap that diminishes when it is controlled for financial literacy (Almenberg and Dreber, 2015). Finally, low levels of financial literacy, particularly among women, helps to explain around 40% of wealth inequality within the USA (Lusardi, Michaud, & Mitchell, 2017).

While Chen and Volpe (2002) found financial literacy to be lower for younger women compared to younger men, it should be noted that women's social statuses have changed over time. For example, Lusardi and Mitchell (2008) found older women in the USA to have lower financial literacy skills than younger women.

Education, expectations of education, and social status within the family and society may all explain differences in financial literacy between genders (Bottazzi and Lusardi, 2020). For example, finance is considered a male-

dominated field (Boggio et al., 2014), and maternal gender attitudes lead to girls performing worse in math than boys on PISA (Dossi et al., 2019). Daughters and sons learn differently from their parents when it comes to financial matters (Edwards, Allen, and Hayhoe, 2007; Jorgensen and Savla, 2010; Newcomb and Rabow, 1999), and a mother's background has a particular role in determining the financial literacy of girls, (Bottazzi and Lusardi, 2020). Interestingly, women catch up in terms of financial literacy as they approach widowhood (Hsu, 2011; Faff, Hallhan, and McKenzie, 2011).

Financial literacy is strongly related to sociodemographic characteristics and family financial sophistication, and boys from wealthy parents tend to do particularly well (Lusardi, Mitchell and Curto, 2010). Financial attitude, family influence, and peer group pressure influence the level of financial literacy among engineering students i.e., social pressure (Biony Thomas and Subhashree, 2020) and for highly educated individuals (academics), women are significantly more risk averse than men, but that changes when the individuals have better financial education (Hibbert, Lawrence and Prakash, 2013).

Social differences between different countries and ethnic groups within the same country may explain differences in financial literacy between men and women (Nicolini, Cude and Chatterjee, (2013). While women were found to be less financially literate in developed Western countries, in less developed countries, both women and men were just as financially illiterate (Lusardi and Mitchell, 2008). In former West Germany, women performed better in financial literacy than in former East Germany (Bucher-Koenen and Lusardi, 2011). Both men and women from poor households show low financial literacy, where perhaps social issues such as poverty are the reason for variations rather than gender (Agarwal et al., 2015). Finally, Finucane et al. (2000) found that risk-taking differed between women and men who were Caucasian, but there were no variations between the genders in other ethnic groups.

Since financial literacy differences between the genders is a social construction and varies among culture and countries (Lusardi and Mitchell, 2008; Bucher-Koenen and Lusardi, 2011; Nicolini, Cude and Chatterjee, 2013), and Iceland is often regarded as one of the, if not the most, gender equal countries in the world in various aspects (United Nation, World Economic Forum, 2020; Hausmann, et al., 2011; Olafsdottir, 2018; Economist, 2017; Georgetown Institute for Women, Peace and Security, 2017), we ask whether there is a difference in the financial literacy of Icelandic women and Icelandic men?

2. Method

A simple regression model is applied with similar variables to those used by Lusardi and Mitchel (2011), Mottola (2013), Agarwal et al., (2015) and Potrich (2018). The model is presented below.

$$\text{FinLit} = \alpha_0 + \beta_1\text{Gen} + \beta_2\text{Edu} + \beta_3\text{Age} + \beta_4\text{Mar} + \beta_5\text{Inc} + \varepsilon,$$

The dependent variable FinLit is knowledge of financial literacy. Our primary independent variable of interest Gen is gender and is constructed with the value 1 if the participant is male and 2 if she is a female. Education, Edu is our first control variable; in our case, we examine the difference between those who have a university education, both undergraduate degrees as well as graduate degrees (value 1) and those who do not have a university education (might have no- or other education, value 0). Our second control variable is age (Age), while our third control variable Mar, is marital status, relating to those who are married (marked no. 1) and those who are not (marked with 0). Our final control variable, Inc, is income. We divide income into two groups, those who get less than 300.000 ISK (average income) and those who receive above that amount.

3. Data

Several questions that measure financial literacy were included in a survey made in cooperation with the Social Science Research Institute at the University of Iceland, with grades rated from 1(lowest possible outcome) to 7 (highest possible outcome).

We used questions from Atkinson and Messy (2012); Agarwal, Barva, Jacob and Varma (2015); Bora Deb (2017); and Greimel-Fuhrmann and Sigoner (2017). The questions were based on what Atkinson and Messy (2012) used when they studied financial literacy in OECD countries. An Icelandic translation was already available for these questions, based on previous research by Karlsson and Asgersdottir (2009). The demographical background questions were on gender, education, age, income, and marital status. The measurement used was a simple Likert scale. The participants were given grades for their financial literacy, where 7 was the highest possible outcome and 1 was the lowest.

To answer the research question, "Is there a gender difference in financial literacy in Iceland, the most gender-equal country in the world?" we employed a survey in a corporation with the Social Science Research Institute at the University of Iceland. The survey was randomly sent to 1,500 individuals in Iceland. The participants were 18 years or older and residents from all parts of the country. The sample was stratified by gender, age, and location within Iceland to represent the population as well as possible. 1,465 were reached out to, and 840 responded, amounting to 57%.

Financial literacy knowledge is our dependent variable; where we asked several questions that measure financial literacy, and the answers were graded from 1(lowest possible outcome) to 7 (highest possible outcome). The average grade was 5.07, and the standard deviation was 1.77.

The primary independent variable of interest, gender, is represented similarly between males, 49%, and females, 51% out of the total of 817 individuals. Our control variables were education, where 45% had finished university while 55% had not. Roughly 60% of the total sample had an average monthly income lower than 300.000 ISK, while 40% had an average monthly income of 300.000 ISK or more. Only 8% of the sample were married, and 92% were not. While this result may appear peculiar, it should be mentioned that large numbers of the population in Iceland live in a consensual union (Hagstofan, 2019). The descriptive statistics are listed here in Table 1 below.

Table 1. Descriptive Statistics

Variable				
Financial Literacy	Average (5,07)	St.dev (1,77)	Max (7)	Min (1)
Age	Average (49)	St.dev (15)	Max (90)	Min (19)
Gender	Men (49%)	Women (51%)		
Education	University (45%)	No university (55%)		
Income Average	Less than av. (60%)	More than av. (40%)		
Marital status	married (8%)	Not married (92%)		

Source: Authors

4. Results

In this research, hierarchical multiple regression was used to assess the ability of the control measures (gender, education level, age, marital status, and income) to predict the level of financial literacy after controlling for the influence of education level, age, marital status, and income. Preliminary analyses were carried out to ensure no violation of the assumption of normality, homoscedasticity, linearity, and multicollinearity.

Education level, age, marital status, and income were entered at Step 1, explaining 11.60% of the variance in financial literacy. After the entry of the gender at Step 2, the total variance explained by the model as a whole was 15.5%, $F(5, 723) = 26.53$, $p < 0.000$. The control measures explained an additional 3.9% of the variance in financial literacy after controlling for education level, age, marital status and income, $R^2 \text{ change} = 0.039$, $F \text{ change}(1, 723) = 32.952$, $p < 0.000$. In the final model, three measures were statistically significant, education had the highest beta value ($\beta = 0.23$, $p < 0.000$), gender had the second highest beta value ($\beta = -0.21$, $p < 0.000$), and the third highest beta value was for income ($\beta = 0.15$, $p < 0.000$). Age was insignificant, but marital status was marginally significant ($\beta = -0.06$, $p < 0.090$). See Table 2.

Table 2. Regression results

Predictor variables	Regression 1	Regression 2
Age	0,053	0,042
Education	0,207***	0,234***
Marital Status	-0,084	-0,09*
Income	0,207***	0,150***
Gender		-0,206***
R ²		0,155
R ² Change		0,039

Source: Authors

Concluding remarks

Women are less financially literate in developing countries (Lusari and Mitchell, 2008), developed countries (Fonseca et al, 2012; Chen and Volpe, 2002), and the most gender-equal country in the world, Iceland, as our results show. We argued that gender differences in financial literacy aligned with the social argumentation (Lusari and Mitchell, 2008; Chen and Volpe, 2002) used. Therefore, it came as a surprise to find that financial literacy was also lower for women in Iceland. The reason could be that although there is substantial gender equality in Iceland, there is still a difference in favour of men. Indeed, women are less financially literate in other quite gender-equal countries, such as the UK, Germany, and Norway (GGG, United Nation, World Economic Forum, 2020).

Another reason could be that gender differences in financial literacy have a biological rather than a social cause. In experiments made by Eckel and Grossman (2008), who found female students to be more risk averse than male students, and by Niederle and Vesterlund (2007), who found that women shy away from competition while men embrace it, the researchers argued that financial behaviour varied between the genders due to biological differences. Bucher-Koenen et al. (2017) identified a gender gap in financial literacy independent of socioeconomic background and cultural context, where young women, who have higher education and labour participation than young men, also show less financial literacy than men. In addition, those who are good in numeracy, cognitive abilities and mathematics are adept in financial literacy (Scheresberg, 2013; Haistings et al., 2013; Banks and Oldfield, 2007; Christelis et al., 2010; Skagerlund et al., 2018). In addition, Munoz-Murillo, Álvarez-Franco and Restrepo-Tobón (2020) found experimental evidence that when controlled for cognitive

abilities, the role of gender in financial literacy vanished. Further such experiments could be conducted to explain whether there is a financial literacy difference between men and women; however, such research is time-consuming, expensive and could raise ethical and controversial questions.

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